EPA Standard of Performance for New Residential Wood Heaters

Certification Test Report

Non-Confidential Business Information (Non-CBI)

Manufacturer: Morsø Jernstøberi A/S
Heater Type: Wood-Fired, Freestanding Room Heater
Model: 7110B

Prepared for: Morsø Jernstøberi A/S
Furvej 19
DK-7900 Nykøbing Mors
Denmark

Prepared by: OMNI-Test Laboratories, Inc.
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Test Period: January 14-15, 2019

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DTI Report Number: 300-ELAB-2380-EPA

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AUTHORIZED SIGNATORIES

This report has been reviewed and approved by the following authorized signatories:

Evaluator:

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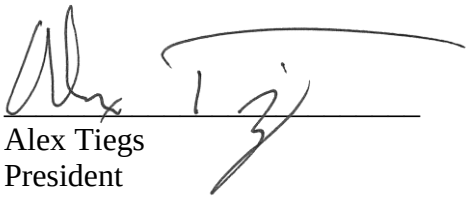
Reviewer:



Alex Tiegs
President

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Section 1

Sampling Procedures and Test Results

INTRODUCTION

Morso Jernstoberi A/S retained *OMNI* to perform U.S. Environmental Protection Agency (EPA) third party certification on the 7110B frestanding room heater. The 7110B is a cast iron freestanding wood burning room heater. The firebox is constructed of cast iron. Usable firebox volume was measured to be 0.8299 cubic feet and the stove is vented through 6" flue collar located on the stove top.

Testing was performed at Danish Technological Institute (DTI) located at Kongsvangalle 29, DK-8000 Aarhus C, Denmark. Report number 300-ELAB-2380-EPA dated July 16, 2019 was generated by DTI and submitted to OMNI for review and third-party certification.

This report is organized in accordance with the EPA-recommended outline and is summarized in the Table of Contents immediately preceding this section. The results in this report are limited to the item submitted.

SAMPLING PROCEDURE

The 7110B was tested in accordance with the U.S. EPA 40 CFR Part 60, Subpart AAA – Standards of Performance for New Residential Wood Heaters using EPA ASTM E2515 and E3053 *per* EPA Alt-125's requirements for cordwood testing in accordance with the CFR. No 28R. Particulate emissions were measured using sampling trains consisting of two Teflon coated 47mm filters (front and back).

The model 7110B was tested for thermal efficiency and carbon monoxide (CO) emissions in accordance with CSA B415.1-10 using Birch cordwood.

SUMMARY OF RESULTS

The weighted average emissions of the four test runs included in the results indicate a particulate emission rate of 1.15 grams per hour. Particulate emissions were sampled on one of the high burn fuel loads. The 7110B results are within the emission limit of 2.5 g/hr for affected facilities tested with cordwood, manufactured on or after May 15, 2020.

The proportionality results for all 3 test runs were acceptable when calculated at a 10-minute sample rate. Quality check results for each test run are presented in Section 2 of this report.

INDIVIDUAL RUN SUMMARIES

Run 1 - HF Test procedures followed to produce a high burn rate with a primary air setting of fully open. Observed burn rate was calculated at 2.71 kg/hr. Emissions results were calculated using particulate sampling from kindling, start-up fuel, and test fuel load combined (cold to hot). Burn rate, and efficiency were calculated using data from the test fuel load only (hot to hot). No sampling anomalies occurred; this test run was determined to be valid for inclusion in the weighted average.

Run 2 - MF Test procedures were followed to produce a medium burn rate with a primary air setting of 5 mm open from the factory set minimum setting. Observed burn rate was calculated at 1.44 kg/hr. Emissions and efficiency results were calculated using a hot to hot burn cycle, a coal bed generated by the high burn procedure was used. No sampling anomalies occurred; this test run was determined to be valid for inclusion in the weighted average.

Run 3 - HF Test procedures followed to produce a high burn rate with a primary air setting of fully open. Observed burn rate was calculated at 2.46 kg/hr. Emissions sampling did not occur during this procedure, it was conducted to create a coal bed for run 4.

Run 4 - LF Test procedures were followed to produce a low burn rate with a primary air setting of full closed, a factory installed stop is used to prevent the air control from fully closing. Observed burn rate was calculated at 1.12 kg/hr. Emissions and efficiency results were calculated using a hot to hot burn cycle, a coal bed generated by the high burn procedure was used. No sampling anomalies occurred; this test run was determined to be valid for inclusion in the weighted average.

Table 1 – Particulate Emissions

Run	**Burn Rate** Calculated from a Hot to Hot burn cycle (kg/hr dry)	**ASTM E2515 Emissions** (g/hr)	**ASTM E3053 Weighting Factor** (%)	**ASTM E3053 Weighted Emissions** (g/hr)
1	2.71	[1.]2.84	20	0.568
2	1.44	1.07	40	0.428
4	1.12-	0.38	40	0.152
The sum of weighted particulate emission of 3 test runs: 0.868 + 0.256 + 0.212 = **1.15 g/hr.**				

1. Based on a cold start including kindling and start-up fuel.

Table 2 – Particulate Emissions (First Hour)

Run	**ASTM E2515 Emissions – First Hour** (g/hr)
1	3.42
2	2.31
4	1.09

Table 3 – B415.1 Efficiency and CO Emissions

Run	**Heat Output (BTU/hr)**	**HHV Efficiency (%)**	**LHV Efficiency (%)**	**ASTM E3053 Weighted HHV Efficiency**	**CO Emissions (g/MJ Output)**	**CO Emissions (g/kg Dry Fuel)**	**CO Emissions (g/min)**
1	36,554	69.0	74.1	13.8	0.74	10.2	0.473
2	20,818	76.0	81.7	30.4	2.78	42.6	1.018
4	16,457	79.0	82.9	31.6	2.07	32.2	0.60
Weighted average HHV efficiency of 3 tests: 13.8 + 30.40 + 31.6 = **75.8 %.**							
Average CO emissions: (0.473 + 1.018 + 0.60)/3 = **0.697 g/min**							

Table 4 – Test Facility Conditions

Run	Room Temperature (°F)		Barometric Pressure (Hg)		Air Velocity (ft/min)	
	Before	**After**	**Before**	**After**	**Before**	**After**
1	69.9	73.4	29.48	29.52	<50	<50
2	73.4	75.2	29.52	29.56	<50	<50
4	75.92	75.2	29.46	29.48	<50	<50

Table 5 – Kindling and Start-up Fuel Description Summary

Run	**Kindling Weight Wet Basis** (lbs)	**Start-up Fuel Weight Wet Basis** (lbs)	**Residual Start-up fuel weight (lbs)**
1	1.54	2.31	1.19
3	1.66	2.48	0.88

Table 6 – Fuel Measurement and Cordwood Description Summary – TEST

Run	**Test Fuel Wet Basis** (lbs)	**Firebox Volume** (ft^3)	**Fuel Loading Density Wet Basis** (lbs/ft^3)	**Test Fuel Dry Basis** (lbs)	**[1.]Test Fuel Consumed During Test Dry Basis (lbs)**
1	7.94	0.83	9.56	6.61 + 1.5	7.2[1]
2	9.48	0.83	11.42	7.9	7.9
3	8.40	0.83	10.12	6.914 + 1.6	7.7[1]
4	9.96	0.83	12.00	8.23	8.23

1. Includes start-up and kindling fuel for high burn tests 1, 3

Table 7 – Dilution Tunnel Gas Measurements and Sampling Data Summary

Run	Length of Test (hh:mm;ss)	Average Dilution Tunnel Gas Measurements	
		Velocity (ft/sec)	**Temperature (°F)**
1	1:17:50	24.081	106
2	2:30:50	23.490	92
4	3:20:55	22.146	88

Appendix A
User Manual / Labels

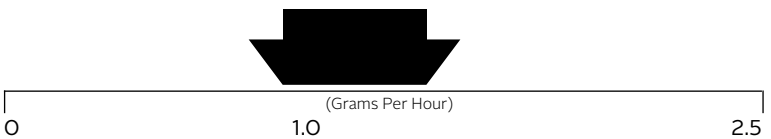
Manufactured by: Morsø
Model: 7110 B

U.S. ENVIRONMENTAL PROTECTION AGENCY

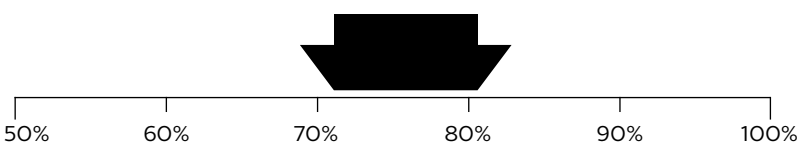
Certified to comply with 2020 particulate emission standards using cord wood.

SMOKE

THIS MODEL



EFFICIENCY



Particulate emission using ASTM E3053-17 cordwood test method:

Emission
1.1 g/h

Wood heaters with higher efficiencies cost less to operate.

HEAT OUTPUT
16,457 to 36,554 Btu/Hr

Use this to choose the right size appliance for your needs.
ASK DEALER FOR HELP

This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PREVENT HOUSE FIRES:
Install and use only in accordance with manufacturer's installation and operating instructions and local codes. Contact local building or fire officials about restrictions and installation inspection in your area. In absence of any local codes, installation must meet minimum requirements of NFPA 211 in USA, and B365 in Canada. Refer to manufacturer's instructions and local codes for precautions required for passing chimney through a combustible wall or ceilling. Inspect and clean chimney system frequently in accordance with manufacturer's instructions.
For use with solid wood fuel only. Do not connect this unit to a chimney flue serving another appliance. Do not use grate or elevate fire. Build wood fire directly on hearth.
Use a residential type masonry or listed type HT factory-built chimney.
High Temperature (H.T.) Chimney Standard UL-103-1985 (2100º F.) for the USA, and High Temperature (650ºC) Standard ULC S-629 for Canada.
NOTE: Replace glass only with factory supplied ceramic. Operate only with door closed. Do not operate with start device open or ajar.
Do not obstruct beneath the heater

PREVENT CREOSOTE FIRES: Inspect and clean chimney frequently. Under certain conditions of use creosote buildup may occur rapidly.

CAUTION: Fully open combustion air control before opening the fuel feed door.

PRÉVENTION DES FEUX DE MAISON:
Installez et utilisez seulement en accord avec les instructions d'installation et d'opération du manufacturier et des codes locaux. Contactez les autorités locales en charge des constructions et de la prévention contre le feu au sujet des restrictions et l'inspection des installations dans votre région. Dans l'absence des codes locaux, l'Installation doit être conforme aux exigences de NFPA 211 aux États-Unis, et B365 au Canada. Référez-vous aux instructions du manufacturier et des codes locaux pour les précautions exigées pour passer une cheminée à travers un mur ou un plafond combustibles. Inspectez et nettoyez le système de la cheminée frequemment en accord avec les instructions du manufacturier.
Pour une utilisation avec des combustibles solides uniquement. Ne pas brancher cette unité à une cheminée utilisée pour une autre installation.
N'utilisez pas un âtre et n'élevez pas la feu. Édifiez le bois de feu directement sur le foyer.
Utilisez une cheminée maçonnée de type résidentiel ou une cheminée préfabriquée répertoriée de type HT. Cheminée Haute Température (HT), norme UL-103-1985 (2100 °F) pour les États-Unis et Haute Température (650 °C), norme ULC S-629 pour le Canada.
NOTE: Remplacez la vitre seulement avec de la céramique fournie par l'usine.
Opérer seulement avec la porte fermée. Ne pas opérer si le démarreur d'opération est ouvert ou entrouvert.
Ne pas obstruer sous le poêle.

PRÉVENEZ LES FEUX DE CRÉOSOTE: Inspectez et nettoyez la cheminée fréquemment. Sous certaines conditions d'usage, le résidu de créosote peut se faire rapidement.

AVIS: Ouvrez complétement le contrôle d'air de combustion avant d'ouvrir la porte du foyer.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Certified to comply with 2020 particulate emission standards using cord wood.
This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual. Test results using EPA Method 28R test method:

Certifié conforme aux normes EPA de 2020 les émissions de particules solides utilisant le bois de corde.
Ce poêle doit être revisé et reparé périodiquement pour une utilisation correcte.
Il est contre la loi fédérale d'utiliser ce poêle contredit les instructions de ce manuel.
Résultats des tests utilisant la méthode d'essai EPA Méthode 28R:

PARTICULATE EMISSION / EMISSION DE PARTICULATE :	**1,1 g/h**
HEAT OUTPUT / PUISSANCE CALORIFIQUE:	**16,457 - 36,554 BTU/Hr**

OMNI-Test Laboratories, Inc.

Portland
Oregon USA

Solid Fuel Room Heater
Fournaise de Pièce Au Gas Solide
Tested to/Testé à:
UL 1482-2011(R2015), ULC -S627-00

morsø

DK-7900
Nykøbing Mors
Denmark

Report No./Rapport Nu: 0192WS004E & 0192WS004S

Model/Modèle: 7110 B

Serial No./
Nu.de Série ☐

DATE OF MAUFACTURE / DATE DU MANUFACTURE

2019	2020	2021	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

DO NOT REMOVE THESE LABELS / NE PAS ENLEVER CES ÉTIQUETTES

MADE IN DENMARK / FABRIQUÉ AU DANEMARK

By appointment to The Royal Danish Court

morsø

Installation and Operating Instructions

Morsø 7110 B

For use in North America

Save these instructions

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
E-Mail: stoves@morsoe.com · Website: www.morsoe.com

Congratulations on the purchase of your new Morsø stove!

Morsø, which is the largest supplier for the Danish market, has manufactured stoves of the highest quality since 1853. By following the instructions overleaf, we are sure that you will enjoy the use and the benefits of your stove for many years to come.

Contents

Read this entire manual before you install and use your new room heater. If this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Failure to follow instructions may result in property damage, bodily injury, or even death.

Contact local building officials about restrictions and installation inspectionrequirements in your area.

Save these instructions

Optional Accessories
A wide range of accessories (such as handling gloves, fireside tools, glass cleaner and heat-proof paint) are available for use with your Morsø stove. They help with day-to-day running and maintenance. Contact your Morsø dealer for more information.

The Morsø 7110 B have been tested by OMNI-Test Laboratories, Inc. The test standards are ANSI/UL-1482-2012 (R2015) for the United States and ULC S627-00 for Canada.

Tested & Listed By O-TL **Portland Oregon USA**

OMNI-Test Laboratories, inc.
Report Number: 0192WS004E

The stove is listed for burning wood only. Do not burn other fuels.

U.S. ENVIRONMENTAL PROTECTION AGENCY. Certified to comply with 2020 particulate emission standards using cord wood.

Average particulate emission using ASTM E3053-17 cord wood test method is 1.1 g/h
Under specific test conditions this heater has been shown to deliver heat at rates ranging from 16,457 to 36,554 Btu/hr.
This appliance was determined to have an average higher heating efficiency value of 75 % when tested in accordance with B415.1."

This wood heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this manual.

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

We suggest that our woodburning hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Woodburning Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).

Wood Energy Technical Training www.wettinc.ca

Cast iron
Cast iron is a live material. There are no two ovens that are identical. This is partly due to the tolerances of the casting process, partly because the ovens are a work of craftsmanship. Minor unevennesses may also occur in the cast iron surface.

1.0 Installation of your Morsø stove

Installation of woodburning stoves must be safe and legal.

The installation must conform standard CAN/CSA-B365, Installation Code For Solid-Fuel-Burning Appliances and Equipment
Make-shift compromises during installation can have consequences, the Installation of the woodburning stoves must be safe and legal.
If your Morsø stove is not installed correctly, it may cause a house fire. To reduce the risk of fire, the installation instructions must be followed carefully. Contact the local building officials about restrictions and installation inspection in your area.

If your Morsø stove is not installed correctly, it may cause a house fire. To reduce the risk of fire, the installation instructions must be followed carefully. Contact the local building officials about restrictions and installation inspection in your area.

Before you start installing your stove, make sure that:
- The stove and chimney connection are placed far enough from combustible materials to meet all clearance requirements.
- The floor protection must be adequate and must be made correctly according to the requirements.

All neccessary approvals are needed from the local building officials.

The data plate, which is located on the back of the stove, provides information regarding safety testing information, name of certified testing laboratory, and installation requirements.

Installation requirements vary in different districts, and the local building officials have the final authorization to approve your installation. You should discuss the installation with them before beginning. Please ask your dealer for further information.

Do not connect to any air distribution duct or system.

Important: If the installation instructions are not followed carefully, it may cause dangerous situations like chimney - and house fires. Follow the instructions carefully and do not deviate from them as it may cause injuries to people or property.

1.1 Checking loose parts in the stove

After unpacking, check that the fire bricks are firmly in position and have not shifted in transit. Check also that the air control works freely.
See separate Assembly Instructions for Legs, Fitting for handle, and Baffles Before starting the initial fire, place the two cast iron baffles above the three stainless pipes that supplies the secondary air. The baffles are enclosed in the stove on delivery. Afterwards, place the carbowool blanket carefully above the two cast iron baffles.
Make sure that the upper heating shield, the cast iron baffles, and the carbowool blanket are placed correctly before the fire is started.

Standard Accessories
A Morsø glove and ceramic flue connection gasket are standard accessories that usually can be found in the ashpan or firebox area.

1.2 The chimney / flue system

Note that the flue system must be independently secured and must not rely on the stove for support.

The stove must not be connected to a chimney flue serving any other appliance. (Several flues may run up a single chimney stack; use one flueway per appliance).

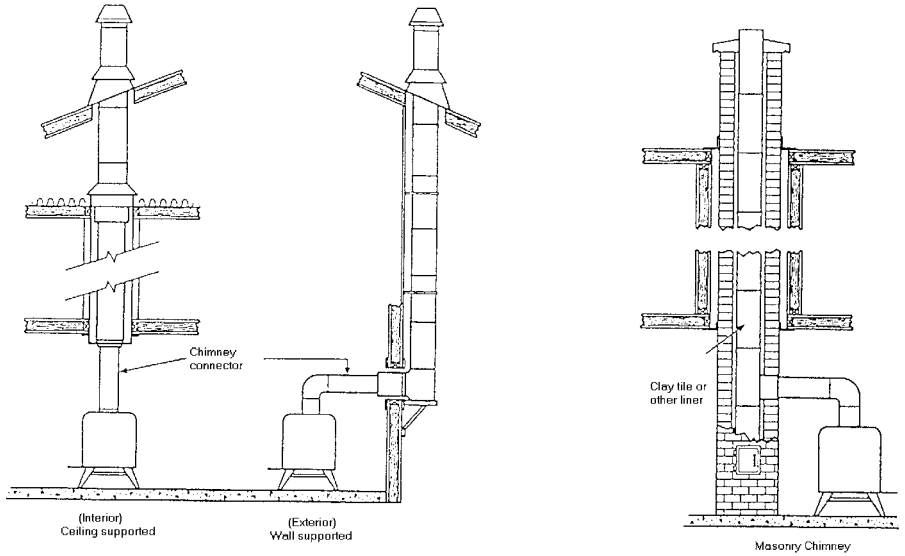
Use a code-approved masonry chimney with a flue liner or listed type HT factory-built chimney.

High Temperature (H.T.) Chimney Standard UL-103-1985 (2100° F.) or a code-approved masonry chimney with flue liner for the USA, and High Temperature (650°C) Standard ULC S-629 for Canada.

The internal dimensions of the chimney connector and chimney must not be less than 6 inches diameter (or equivalent cross section), and should not be significantly larger than this. Too large a section will tend to allow the flue gases to cool excessively, causing sluggishness or unpredictability in the stove's performance.

We recommend the length of the chimney system should be at least 16 feet (not required) above the stove in normal domestic situations, measured from the flue collar to the top of the chimney.
Local conditions like for example - roof constructions, large trees nearby and high altitude, may influence the chimney draft and height. Therefore, contact the local professional chimney sweep or your Morsø dealer.

Typical factory-built or masonry chimney installations



1.3 Flue Connection

The stove is supplied from the factory with a flue collar fitted to the top plate and a round blanking plate blocking off the rear flue exit (behind the rear shield plate).

Use a 24 MSG black or blue chimney connector or listed double wall chimney connector. Refer to local codes and the chimney manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling. Remember to secure the chimney connector with a minimum of three screws to the product and to each adjoining section. The collar can be fitted to the rear outlet. Simply knock out the round panel on the rear heat shield plate to reveal the cast iron plate. Untwist the blanking plate and the flue collar and swap their positions. Re-secure by pushing down and tighten the enclosed screws. Position the stove and connect to the flue system.

Wear gloves and protective eyewear when drilling, cutting or joining sections of chimney connector.

1.4 Connection to the existing chimney

A chimney connector is the double-wall or single-wall pipe that connects the stove to the chimney. The chimney itself is the masonry or prefabricated structure that encloses the flue. Chimney connectors are used only to connect the stove to the chimney.

Double-wall connectors must be tested and listed for use with solid-fuel burning appliances. Single-wall connectors should be made of 24 gauge or heavier gauge steel. Do not use galvanized connector; it cannot withstand the high-temperatures that smoke and exhaust gases can reach, and may release toxic fumes under high heat. The connector must be 6 inches (150mm) in diameter.

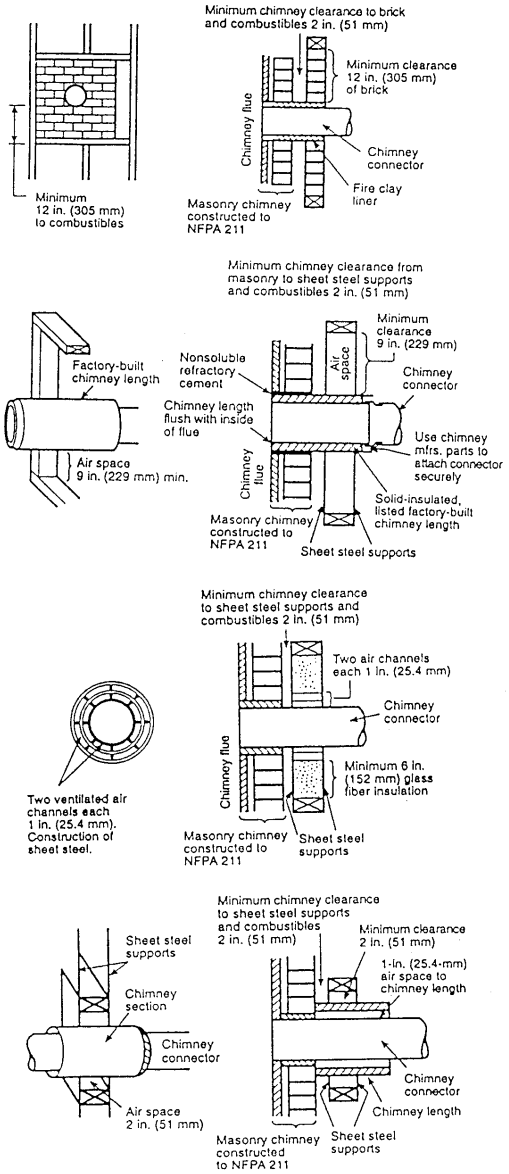
If possible, do not pass the chimney connector through a combustible wall or ceiling. If passage through a combustible wall is unavoidable, refer to the sections on Wall Pass-Throughs. Do not pass the connector through an attic, a closet or similar concealed space when installing the chimney connectors.

It is important to keep the flue gases moving smoothly in the right direction. Do not vent into a large void at this location; rather form one continuous section all the way up. Use mild bends (e.g. 45° vs. 90°) rather than sharp angles where a change of direction is required. All parts of the venting must be accessible for cleaning purposes.
In horizontal runs of chimney, maintain a distance of 18 inches from the ceiling. Keep it as short and direct as possible, with no more than two 90 degree turns. Slope horizontal runs of connector upward 1/4 inch per foot (20 mm per metre) going from the stove toward the chimney. The recommended maximum length of a horizontal run is 3 feet (1 metre), and the total length should be no longer than 8 feet (2.5 metres).
Information on assembling and installing connectors is provided by the manufacturer's instructions exactly as you assemble the connector and attach it to the stove and chimney.

Be sure the installed stove and chimney connector are correct distances from near by combustible materials. See the clearance paragraph page 8.

Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365.

Chimney Connector Systems and Clearances from Combustible Walls for Residential Heating Appliances



A Minimum 3.5-in thick brick masonry all framed into combustible wall with a minimum of 12-in brick separation from clay liner to combustibles. The fireclay liner shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.

B Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1-in. or more of insulation with a minimum 9-in. air space between the outer wall of the chimney length and combustibles.

C Sheet steel chimney connector, minimum 24 gauge in thickness, with a ventilated thimble, minimum 24 gauge in thickness, having two 1-in. air channels, separated from combustibles by a minimum of 6-in. of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gauge in thickness.

D Solid insulated, listed factory-built chimney length with an inside diameter 2-in. larger than the chimney connector and having 1-in. or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gauge thickness, with a minimum 2-in. air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12-in. chimney section spaced 1-in. away from connector using sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports securely fastened to wall surfaces of minimum 24 gauge thickness. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

1.5 Positioning the stove

Distance to walls and lintel

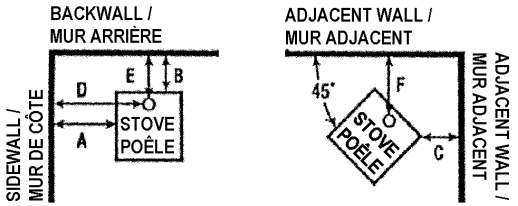
When the stove is positioned near combustible materials, observe all current local and national building regulations with regards to clearances. Whatever regulations apply to your area, do not in any case install the stove within 8 inches of combustible materials around the sides or 16 inches above the top of the stove (fireplace installations require greater clearances above the stove - see below in the clearance chart). These distances may need to be increased if the materials are sensitive to heat. Note also that wall paper and other decorative materials may become detached with the effects of heat and care should be taken to ensure that they do not fall towards the stove in such an event.

When the stove is positioned near non-combustible materials, a gap of 4 inches or more is recommended for cleaning purposes and to ensure that heat circulates around the stove and out into the room.

If using rear exit, the floor protection must extend beneath the chimney connector and 2-in beyond each side.

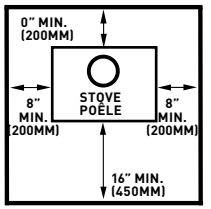
CLEARANCE REQUIREMENTS	STANDARD RESIDENTIAL INSTALLATION SINGLEWALL & DOUBLEWALL CONNECTOR	
	USA	CANADA
A. Sidewall to unit	16"	18" - 457 mm
B. Backwall to unit	6.5"	9.5" - 241 mm
C. Cornerwall to unit	8.5"	8.5" - 216 mm
D. Sidewall to connector	23"	25" - 635 mm
E. Backwall to connector	10"	13" - 330 mm
F. Cornerwall to connector	17.5"	17.5" - 445 mm
G. Unit to ceiling	56.5"	56.5" - 1435 mm
H. Floor to ceiling	84"	84" - 2134 mm

MINIMUM CLEARANCES TO COMBUSTIBLES:
DEGAGEMENTS MINIMAUX AUX MATERIAUX COMBUSTIBLES:



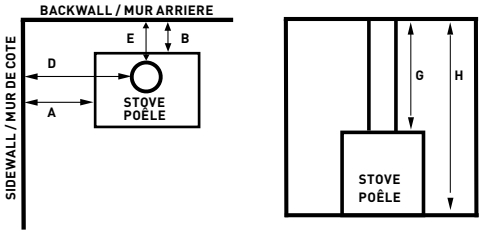
CLEARANCE REQUIREMENTS	ALCOVE INSTALLATION WITH DOUBLE WALL CONNECTOR
A. Sidewall to unit	19" (483 mm)
B. Backwall to unit	9.5" (241 mm)
C. Cornerwall to unit	N/A
D. Sidewall to connector	26" (660 mm)
E. Backwall to connector	14" (356 mm)
F. Cornerwall to connector	N/A
G. Unit to ceiling	20.5" (521 mm)
H. Floor to ceiling	48" (1219 mm)

POÊLE FLOOR PROTECTION REQUIREMENTS



FLOOR PROTECTOR MUST BE NON-COMBUSTIBLE MATERIAL. IT MUST EXTEND BENEATH HEATER, AND TO THE FRONT / SIDES / REAR AS INDICATED

ALCOVE INSTALLATION



Maximum alcove depth must be no more than 32" (813mm)

Distance to furniture

The recommended minimum distance from stove to furniture is 30 inches. Note that some furniture is more easily affected by heat and may need to be moved to a greater distance. This is your responsibility.

In addition other combustible materials, away from the stove. In general, a distance of 30 inches must be maintained between the stove and moveable combustible item such as drying clothes, newspapers, firewood etc.

1.6 Mobile Home Installation

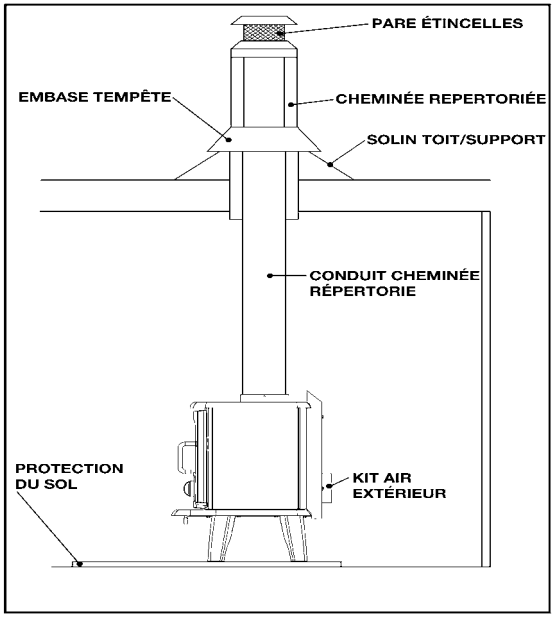
(Mobile home installation is only applicable for USA)

The Morsø 7110 B can be installed in a mobile home if equipped with an outside combustion air kit, a terminal cap with a spark arrestor, and if it meets the following installation requirements:

- The stove must be secured to the mobile home structure by bolting through the hearth pad and into flooring.
- The stove must be installed with a listed Type HT chimney connector, HT Chimney, and terminal cap with spark arrestor. Never use a single wall connector (stovepipe) in a mobile home installation.
- Floor protection requirements in section 1.5 must be followed precisely.
- In Canada, this appliance must be connected to a 6" (152 mm) factory-built chimney conforming to CAN/ULC-629M, STANDARD FOR FACTORY BUILT CHIMNEYS. Floor protection as referenced in section 1.5 must be followed, as well as use of Canadian Floor Protector.
- Follow the chimney and chimney connector manufacturer's instructions when installing the flue system for use in a mobile home.
- Outside air kit should be installed according to installation guide in the kit.
- Intake air piping can be installed through the floor into a vented crawl space or through the wall of the residence to obtain outside air.
- Install in accordance with 24 CFR, Part 3280 (HUD).
- NOTE: Top sections of chimney must be removable to allow maximum clearance of 13.5' from ground level for transportation purposes.

WARNING:
NEVER DRAW COMBUSTION AIR FROM A WALL, FLOOR OR CEILING CAVITY OR FROM ANY ENCLOSED SPACE SUCH AS AN ATTIC OR GARAGE.
DO NOT INSTALL IN A SLEEPING ROOM.

CAUTION:
THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED (I.E., DO NOT CUT THROUGH FLOOR JOIST, WALL STUD, CEILING TRUSS, ETC.)
DO NOT USE A GRATE TO ELEVATE FIRE - BUILD FIRE DIRECTLY ON HEARTH.



Note:
Acid Protection
If acid-washing the masonry around the stove, protect the stove surface with an acid-proof cover.

Fresh Air Inlet
Unless there is deemed to be sufficient ambient leakage of air into the room via doorways, windows and the like, a dedicated fresh air inlet will be needed. This inlet should have 2 square inches (1250 square mm) of free air space. This is particularly important where the room is well sealed, or where an extractor hood or ventilation system disturbs the natural air pressure. Such an inlet should not be on a wall that is usually subject to negative pressure from normal wind pattern. Avoid placing the inlet directly across the room from the stove, thus causing a cold air draft.

2.0 Operation

2.1 Before you start firing

For Use with Solid Wood Fuel Only. Do Not Overfire, If Heater or Chimney Connector Glows You Are Overfiring. Inspect and Clean Chimney Frequently. Under Certain Conditions of use creosote buildup may occur rapidly. Because of risk of smoke and flame spillage, operate only with door fully closed.

Caution:
Hot while in operation. Keep children, clothing and furniture away. Contact may cause skin burns.
Do not use chemicals or fluids to start the fire.
Do not burn garbage or flammable fluids.
Do not use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter or fluid or similar liquids to start or freshen up a fire in this heater. Keep all such liquids away from the heater while it is in use.

Choosing your fuel
All types of natural wood can be burned on your stove, but they must be well-seasoned and dry. Once the wood is cut to length, it should be split down middle - to suit the dimensions given below - to allow moisture to evaporate.
Cut the wood to a length of max 18 inches (45 cm) and approx. 3 to 3.5 inches (7-8 cm) in section. If you can weigh your wood, aim for around 2 lbs. For correct combustion and heat output, wood fuel should contain no more than 20% moisture; this can easily be checked by using the Morsø Moisture Meter (part # 62929900).
To naturally season wood fuel, stack and store it under cover in an airy location where fresh air can move through each piece. Some soft woods may take as little as one good summer to season whereas harder woods such as oak, maple, and elm may require seasoning up to 18 months. Avoid overly dry wood that is gray in color as under certain conditions it can cause performance problems, such as back-puffing and sluggishness. Well seasoned wood will be light to hold and will show signs of cracking from the center-out in the ends. If your wood spits or sizzles when burnt, and your stove's door glass persistently mists up, your wood is not properly seasoned. Never use drift wood (from the sea), whose salt content may cause corrosion, nor construction wood that may have been impregnated with chemicals.

Caution: Do not place fuel within the installation clearances for the stove or within the space required for loading fuel and ash removal.

To optimize efficiency:
Burning wet wood has a negative impact on efficiency

Starting the First Fire
The initial fire should be small, so that the stove paint can cure and the main plates of the stove can settle into position. Some fumes will be given off by the paint. Ventilate the room during this phase.
The setting of the air control, lighting techniques and loading intervals will depend on chimney draft, the fuel used, the heat required and so on. Some basic techniques are outlined below.
In principle
Your stove is fitted wih Primary and Secondary air inlets.
Primary Air is controlled using the lever situated under the ash lip of the stove. Moving the control lever to right position will open the air inlet and will allow a supply of preheated air to enter the firebox via the 'airwash' system situated inside the stove and the above glass.

Secondary Air is left to the firebox using the specially designed baffle at the back of the fire-box. The secondary air is injected into the flue gases above the fire resulting in a cleaner, more efficient combustion process. The supply of secondary air is fixed open and is not adjustable. For extra safety, your stove has been fitted with a removable handle.

2.2 Lighting and loading intervals

When first lighting the stove, a large volume of air is needed. When the stove is cold, you should leave the door open an inch or two for the first few minutes and open the primary air supply completely. While the door is open, do not leave the stove unattended.
The ash door should never be open while the stove is in operation.
To form a reasonable bed of ash on the floor of the stove, you should use 5-6 inches thickness (2-4 pound) of dry kindling at the initial lighting. Always maintain a 1-1.5 inch (2-3 cm) layer of ash on the floor of the combustion chamber at all other times.

1. We recommend using the "top-down" method to light your wood-burning stove. It is the most environmentally-friendly method of lighting. Use two firelighters and approx. 2-4 lbs of dry kindling sticks to quickly create a glowing layer of wood. Place the firelighters directly under the top layer of kindling sticks.This minimizes soot formation on the glass. Soot formation on the glass is often caused by too vigorous burning in contact with cold surfaces. If you avoid the formation of soot when lighting the fire and build up a layer of hot embers, you will have minimal soot formation when getting the fire burning again later.

2. Fully open the secondary air supply that is controlled by lever beneath the ash lip.

3. Light the fire.

4. After the paper/fire lighters have caught fire, leave the fire door ajar about 1", so that the chimney draws well.

5. After 5-10 minutes the chimney draft should be established, at this point close the fire door. If all the necessary conditions are met, a nice layer of embers will start to accumulate after another 15 - 20 minutes.

6. Refuelling of your stove should be done while there are still glowing embers in the bed. Spread the embers across the bottom, but concentrated mostly towards the front of the stove.
We recommend using fuel load with a weight of 4 lbs (2 pieces) and up to 10 lbs (5 pieces).

Always keep the fuel load beneath the lowest secondary air tube. The space in front of and above the lowest air tube is reserved for volatile gas combustion only.

When refuelling your stove, it is recommended that you open the stove door gently for the first 1-2", then wait for a few seconds for the pressure in the flue to equalise; you are now safe to proceed and open it all the way. By using this technique smoke spillage can be eliminated particularly in poor chimney draft conditions. The stove door should not be opened when the stove is being fired vigorously.

7. Place two pieces of fuel weighing roughly 2-4 pound and measuring about 10" in length across the embers in one layer, with spacing of roughly 1/2" between the pieces of wood.

8. When the primary air supply is opened all the way and the door is closed, the new fuel will ignite in a few minutes.

9. Once the new fuel has taken, adjust the secondary air amount to the desired setting; optimal combustion will continue until glowing embers are produced.
Under normal chimney draft conditions, expect to refuel your stove every 60 - 70 minutes.

10. A new charge of wood can be added by repeating steps 6 & 7.
We recommend using fuel load with a weight of 4 lbs (2 pieces) and up to 10 lbs (5 pieces).
Always keep the fuel load beneath the lowest secondary air tube. The space in front of and above the lowest air tube is reserved for volatile gas combustion only.

Do not for any reason attempt to increase the firing of your heater by altering the air control adjustment range outlined in these directions.

This wood heater has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

Warning: Fireplace stoves must never be left unattended with doors open.

If doors are left partly open, gas and flame may be drawn out of the fireplace stove opening, creating risks from both fire and smoke. We recommend you to fit a smoke detector in the room where the stove is installed.

DO NOT OVERFIRE THIS HEATER. Overfiring may cause a house fire, or can result in permanent damage to the stove. If any part of the stove glows, you are overfiring.

The maximum recommended weight of wood fuel per load is 10 lbs (5 split logs).

Under normal firing, the average flue temperature in the stove pipe, measured 20 cm above the stove, is approx. 300° C (550°F). The maximum flue temperature in the stove pipe must not exceed 450° C (750°F). If the flue temperature exceeds 450°C (750°F), it is considered as over firing and may cause premature wear and tear of the stove.

To help gauge the correct running temperature of your stove, we recommend you use the Morsø Flue Gas Thermometer (part # 62901200). The Flue Gas Thermometer magnetically attaches onto the stove pipe approx 20 cm (8") above the stove's top plate and measures the surface temperature of the stove pipe. Please see your authorized Morsø Dealer for availability.

Draft conditions
If smoke or fumes come out of your stove when lightning up and reloading, or if the fire simply will not respond, a poor draft is almost certainly to blame. (In a very few cases, there may be insufficient fresh air getting into the room - see installation advice above). Take advice from your stove supplier on how best to upgrade your flue system to improve draft.

Rules of woodburning
If you want less heat, put fewer logs on the stove and reduce the amount of air. It is still important to maintain a good layer of embers.
Less heat - less wood - less air
Greater heat - more wood - more air
Soot deposits will settle on the glass if the stove is run too slowly or if your wood is not well seasoned.

Carbon monoxide detectors
It is required in some jurisdictions to install smoke and carbon monoxide detectors where heaters are installed. Install at least one smoke detector on each floor of your home to ensure your safety. It should be located away from the wood appliance and close to the sleeping areas. Locating a smoke detector too close to a wood appliance can cause the smoke detector alarm to sound if a puff of smoke is emitted while the wood appliance door is open during reloading. Follow the smoke detector manufacturers placement, installation, and maintenance instructions

3.0 Maintenance

When perfoming maintenance on your stove, always protect yourself, using safety goggles and gloves

3.1 Exterior Maintenance

The stove surface is painted with heat-resistant Senotherm paint. It is best kept clean by vacuuming with a soft brush attachment or by wiping with a lint-free cloth.
Over a period of time, the painted surface may become slightly grey. A can of Morsø touch-up spray paint should be available from your stove supplier. This can be applied - in accordance with the instructions - in just a few minutes. When first firing after touching up, the stove will give off a slight smell as the paint cures. Make sure to ventilate the room well during this phase.

3.2 Internal maintenance

Glass

If the stove is generally run at the correct temperatures, there should be little or no dirt on the glass. If dirt does settle during lighting, most will burn off as temperatures increase.For heavier deposits that will not burn off, use morsø glass cleaner, applied when the glass is cold, in accordance with the instructions. Never use abrasive cleaners on the glass surface.

Reasons for dirty glass

- Fuel too wet
- Logs too large or not split
- Combustion temperatures too low

Do not clean the glass while hot
Replace broken glass immediately.
Do not operate your stove if the glass in the door is damaged.

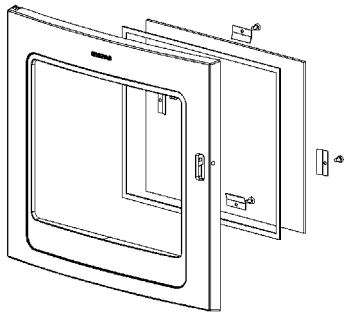
If you need to replace the glass, it should be replaced with the high temperature ceramic class supplied by Morsø, contact your Morsø dealer.

Installing the glass

Never install the glass when the stove is in function.

Ceramic glass replacement

Ceramic glass cannot be recycled because it has a higher melting point that ordinary glass. If ceramic glass is mixed with ordinary glass, the raw material is spoiled, and the reclaiming process may be halted. Take care that the ovenproof glass does not end up among ordinary recycled waste. That will be a great benefit to the environment.
Note: Should be handed in to a recycling station as ceramic glass.



1. When you open the door, you will find two small M4 unbraco screws, one in each hinge. Unscrew the two screws, lift the door off the hinges and place it face down on a sheet of cardboard or other nonabrasive fabric.

2. Unscrew the 4 bolts that secure the glass. (In the event that a bolt sheers off when being unscrewed, remove the remaining body of the bolt by drilling down its centre with 1/8 inch high speed steel drill bit. Smaller drill bits may be successful, but do not use a lager bit. Make sure the bit stays away from the edges of the bolt - this may damage the thread in the cast iron).

3. Remove the old ceramic gaskets and clean up the surface underneath with wire wool or emery paper to remove loose particles.

4. Place the new gasket material in position around the perimeter of the window area, making sure to pinch them to the length in such a way that they make a continuous seal. Leave no gaps.

5. Place the new glass in position on the strips and screw home the fresh bolts and fitting by hand.

6. Finally, give each of the bolts an extra half turn or so. The glass should held tight enough by that cleaning will not dislodge it. Do not over-tighten the bolts as this may put excessive pressure on the glass, resulting in cracking - important!

To reduce the risk of breaking the glass, avoid striking the glass or slamming the door.

Internal service parts

The flame-path equipment - consisting of the ashpan, grate, firebricks, Cast iron fire plates, glass, baffle and flue collar - are subject to the extremes of heat produced by the fire. From time to time, one or other of these parts may need replacing as a matter of routine maintenance.

NOTE: The flame-path equipment, the ceramic rope and the paint finish are not covered by guarantee.

All of these service parts can be bought from your morsø dealer, and we recommend that damaged parts are replaced as soon as possible to avoid collateral damage.
Should the baffle be distorted by an overfire, the stove will still function, although its efficiency may be compromised. Replace it as soon as possible.

Reasons for fast internal wear and tear

Persistent heavy firing
Soot and ashes left to accumulate

Gasket
The gasket around the perimeter of the doors may harden over a period of time. It should be replaced if it becomes difficult to close the doors or if air starts to leak in around the perimeter of the doors, causing the fire to become a little less controllable. A morsø rope gasket kit is available from your stove supplier.

3.3 Cleaning the Stove and the Flue

Check for soot above the baffle plate and around the flue outlet every month or so to start with. If the stove suddenly becomes sluggish, check for a soot fall around the flue collar or in the flue/chimney.
The chimney and chimney connector should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.
Clean the flue/chimney - all the way from the stove to the flue terminal point above the house.

A good routine is to clean the flue after each heating season in any case, and inspect prior to the season to ensure that bird's nests or other blockages have not occurred during the off season.

Ash disposal
Empty the ashpan on a daily basis or as needed. Ash allowed to build up towards the underside of the grate will trap heat and could cause premature failure of the grate.

Empty the ashpan according to this procedure:
Open the front door, and use a shovel or poker to stir excess ash through the ash slots in the grate down into the ash pan. Then, open the ash door and take out the ash pan, making sure to keep it level to avoid spilling ash.

Dispose the ash in a metal container with a tight fitting lid.
The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally disperded, they should be retained in the closed container until all cinders have thoroughly cooled.
Return the ash pan to its original position in the stove, and close the ash door.

Caution:
Never empty a stove in operation.
Never use your household or shop vacuum cleaner to remove ash from the stove; always remove and dispose of the ash properly.

Creosote - formation and need for removal
When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. When burning wood, the chimney and chimney connector should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.

Chimney sweeping
Inspect the system regularly during the heating season as part of a regular maintenance schedule. To inspect the chimney, let the stove cool completely. Then, using a mirror, sight up through the flue collar into the chimney flue. If you cannot inspect the flue system in this fashion, the stove must be disconnected to provide better viewing access.
Clean the chimney using a brush the same size and shape as the flue liner. Run the brush up and down the liner, causing any deposits to fall to the bottom of the chimney where they can be removed through the clean-out door.
Clean the chimney connector disconnecting the sections, taking them outside, and removing any deposits with a stiff wire brush. Reinstall the connector sections after cleaning, being sure to secure the joints between individual sections with sheet metal screws.
If you cannot inspect or clean the chimney yourself, contact your local Morsø Dealer or a professional chimney sweep.

If you do experience a chimney fire, act promptly and:
1. Close the air control.
2. Get everyone out of the house.
3. Call the Fire Department.

Annual maintenance
Before the heating season, perform a thorough cleaning, inspection and repair:
Thoroughly clean the chimney and chimney connector.
Inspect the chimney for damage and deterioration. Replace weak sections of prefabricated chimney. Have a mason make repairs to a masonry chimney.
Inspect the chimney connector and replace any damaged sections.
Check gasketing for wear or compression, and replace if necessary.
Check the glass for cracking; replace if needed.
Check door and handles for tightness. Adjust if needed.

ALWAYS USE ORIGINAL MORSØ SPAREPARTS

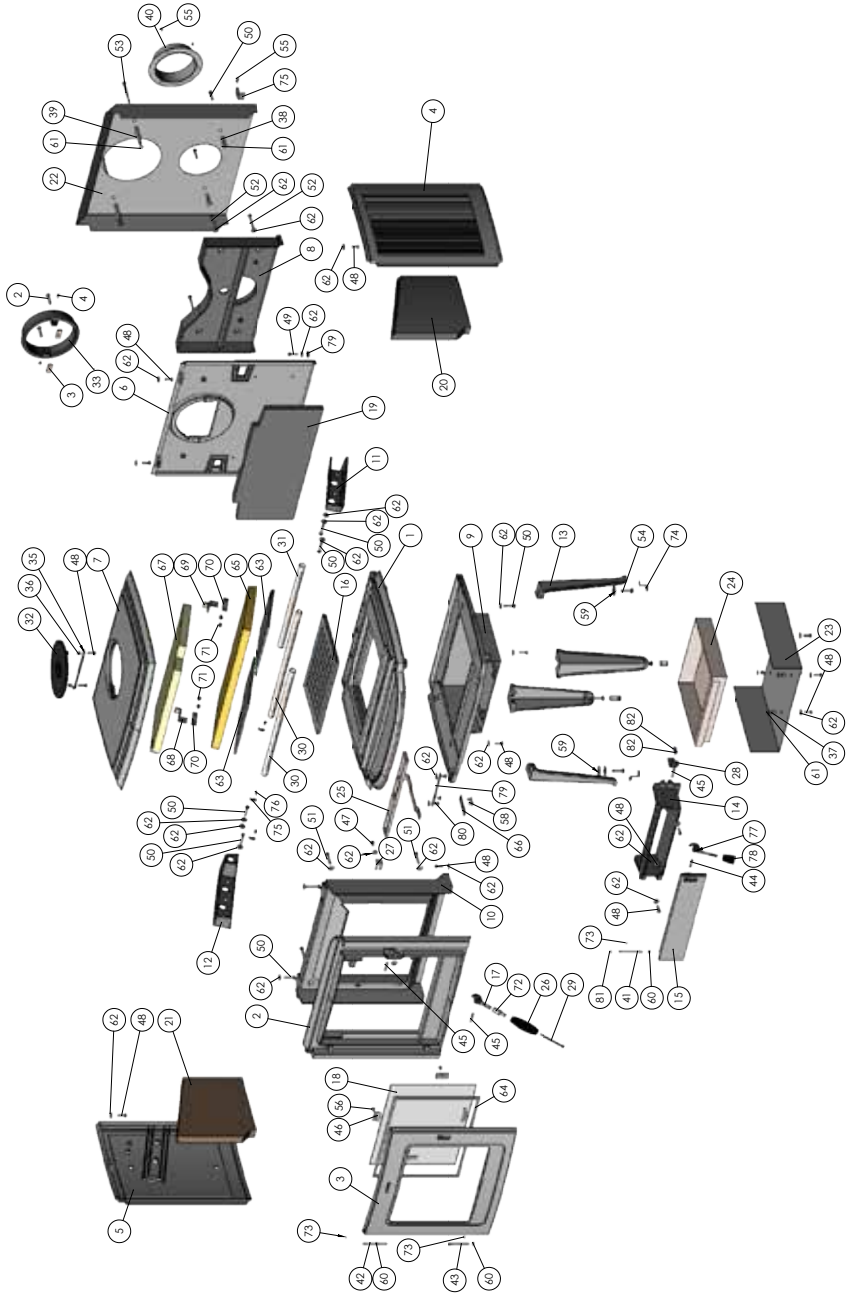
3.4 Leaving the stove for extended periods

Important:
If the stove is to be left unused for any period of time, clean it out thoroughly and leave the air control slightly open to allow airflow. Make sure that the flue does not allow rainwater to come anywhere near the stove; install a chimney cap, but do not block off the flue completely.
These measures should ensure there is a slight movement of air through the stove, and that the body of the stove remains dry, right into the corners.
Any ash left within an unfired stove can attract moisture like blotting paper. If moisture is allowed to settle within the stove, rust will form. Rust expands as it takes a grip. This can lead to undue pressure on the stove joints, and this in turn may result in damage to the stove.

NOTE: It is best to thoroughly clean the stove after the heating season has concluded. Adding a dessicant, such as kitter litter, into the ash pan helps absorb moisture during the summer months. Be sure to remove this prior to the heating season.

Thank you for buying a morsø stove.
We hope you have many years of carefree warmth in its company. Some initial experimentation with loading and running techniques will decide your normal routine. If you have any problems after this short learning phase, please refer to your stove dealer. Should they be unable to help for any reason, please contact us in writing at the address on the front of this publication.

3.5 Parts diagram for model Morsø 7110 B



3.6 Parts list for model Morsø 7110 B

Pos. No.	Parts	SKU number
1	Base plate	44710100
2	Front frame	44710200
3	Door	44710300
4	Side plate, right	44711900
5	Side plate, left	44712000
6	Rear plate	44710600
7	Top plate	44710700
8	Rear air duct	44710800
9	Button air duct	44710900
10	Front air duct	44711000
11	Secondary air duct, right	34711100
12	Secondary air duct, left	34711200
13	Leg	44711300
14	Frame for ash door	44711400
15	Ash door	44711500
16	Grate	34711600
17	Locking device, door	79711700
18	Ceramic glass	79710000
19	Brick, back	79710100
20	Brick, side, right	79710200
21	Brick, side, left	79710300
22	Radiant shielding, rear	71710100
23	Radiant shielding, bottom	54710200
24	Ash tray	71710300
25	Primary damper	71710400
26	Handle	71710500
27	Brick fitting	71710600
28	Fitting for pin at ach tray	71710700
29	Screw M5x80 DIN 912	73984200
30	Secondary tube, large	71710900
31	Secondary tube, short	71711000
32	Cover	44261000
33	Flue collar	44344100
34	Fitting w. thread for flue collar	44256700
35	Stop bar	544541
36	Distance tube Ø10x1 L = 8.5	545007
37	Distance tube Ø10x1 L = 10	541439
38	Distance tube Ø10x1 L = 20	542635
39	Distance tube Ø10x1 L = 67	54710100
40	Air adaptor	71360600
41	Hinge pin Ø5x75	545008
42	Hinge pin Ø5x75	54503000
43	Hinge pin Ø5x60 DIN 660	74701000
44	Cotter pin Ø6x30mm DIN 1481	791870
45	Cotter pin Ø6x35mm DIN 1481	79187200
46	Glass fitting	54146361
47	Screw M6X10 Din933	731610
48	Screw M6X20Din933	731620
49	Screw M6x25 DIN933	731625
50	Screw M6x35 DIN933	731635
51	Screw M6x40 DIN 933	731640
52	Screw M6x50 DIN 933	731650

3.6 Parts list for model Morsø 7110 B

Pos. No.	Parts	SKU number
53	Screw M6x80 Din931	73168000
54	Screw M8x30 DIN 933	731830
55	Screw Ø3.5X9.5 DIN 7981 fzb	791835
56	Screw M5x08 ISO7380	73850800
57	Screw M6x35 Din7991	74241900
58	Screw M6x10 Buttonhead	73861000
59	Washer 30x8.4x1.25 art9021	79189500
60	Washer 6mm DIN 125A brass	746006
61	Vistop terminal washer 6mm	746206
62	Washer M6x25 DIN 933	791891
63	Baffle plate, cast iron	34711800
64	Tightening tape for glass 8x3mm	79074500
65	Insulation blanket	79710500
66	Primary handle	71711161
67	Baffle plate, upper	79710400
68	Stop fitting, left, for baffle plate	71711200
69	Stop fitting, right, for baffle plate	71711300
70	Fitting for baffle plate	71711400
71	Screw M6x6 DIN 933	731606
72	Adaptor for handle	71710800
73	Screw M4x05 Din916-45H	739405
74	Fitting for leg	71711800
75	Locking fitting for sek. pipe	71712061
76	Screw M5x08 Din933	74150804
77	Locking device, ashdoor	79127000
78	Bakelite handle 36mm	79118200
79	Guide for primary damper	71711500
80	Screw M6x8 Buttonhead	73860800
81	Retaining Ring Washer 4mm DIN 6799	791824
82	Screw M5x10 Buttonhead	73851000

Guarantee
Product Registration

MORSØ 10 YEAR GUARANTEE CERTIFICATE

Behind every Morsø stove is more than 160 years of dedicated stove design and manufacturing experience. Quality control has always been at the heart of the production process and detailed measures have been put into place at all key stages of the build. Accordingly, provided that the stove has been supplied by an authorised Morsø dealer, Morsø will offer a 10-Year Manufacturers Guarantee against manufacturing defect to any of the main exterior body parts of its stoves.

Read more about "Morsø 10 years guarantee/product registration card" and REGISTER your new Morsø stove online:
http://international.morsoe.com/warranty-registration

Morsø Jernstøberi A/S - 12.07.2019 71711000

IMPORTANT!

How to heat safely for the environment and yourself!

- **Use only dry wood**
  Use only dry (max. 20% moisture content) and untreated wood. The fuel must be split and 3-5" thick.

- **Light**
  Light with dry kindling (use 2-4 lbs). Leave the door ajar and stay close to the stove during the lighting phase.

- **Good layer of embers**
  Be certain to have a good layer of embers before refilling. The wood should light within 2 minutes. If the logs do not ignite it may, in an extreme case, cause the flue gases to ignite which may pose a risk to material damage or personal injury.

- **Refuelling**
  When refuelling use 2-5 pieces of wood - no more than 10 lbs

- **Ensure adequate air**
  I.e. clear and yellow flames.

- **Never burn overnight**

By appointment to The Royal Danish Court

morsø

Morsø Jernstøberi A/S - 12.07.2019 - 71711000

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
E-Mail: stoves@morsoe.com · Website: www.morsoe.com

Appendix B
DTI Non-CBI Test Report 300-ELAB-2380-EPA

Non-CBI TEST REPORT

Report no.:
300-ELAB-2380-EPA

DANISH TECHNOLOGICAL INSTITUTE
Teknologiparken
Kongsvang Allé 29
DK-8000 Aarhus C
+45 72 20 20 00
info@dti.dk
www.dti.dk

Init.: JSA/
Order no.: 847607
No. of appendices: 29 (CBI)
No. of appendices: 26 (non-CBI)

Requested by:	Company:	Morsø Jernstøberi A/S
	Address:	Furvej 19
	Postcode/town:	DK-7900 Nykøbing Mors
	Country:	Denmark
	Email:	info@morsoe.com
	Web:	www.morsoe.com

Product: Wood stove Type: Morsø 7110B

Sample: Receipt at DTI, Aarhus: 14. January 2019

Test period: Date of testing: 14-15 January 2019

Procedure Testing of solid fuel appliance in accordance with DTI method "ELAB-PP-BR-15" based on a relevant selection of standards and methods:

ASTM E2515-11	Yes
ASTM E3053-17 (Cordwood)	Yes
US EPA Method 28R in combination with ASTM E2780-10 (Cribwood)	No
CSA B415.1-10	Yes
EPA Communication on alternative method for Cordwood testing	Yes

Result: The stove/ meets the requirements of NSPS §40 CFR Part 60.

Remarks: See paragraph 2 - Remarks.

Terms: Accredited testing was carried out in compliance with international requirements, and the general terms and conditions of The Danish Technological Institute. The test results apply to the tested products only. This test report may be reproduced in extract only if the laboratory has approved the extract in writing. Danish Technological Institute is Notified Body with identification number 1235 and DIN Certco test laboratory, PL 168.

Issued: Date 16.07.2019, Danish Technological Institute, Aarhus, Stoves&Boiler test lab

Signature:
Jes Sig Andersen
Senior Specialist

ilac-MRA DANAK
Test reg. no. 300

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Indhold

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1. Introduction

1.1. General

This report concerns testing of a free-standing cast iron stove of landscape format, type Morsø 7110B

1.2. Scope of testing

The appliance was tested to demonstrate compliance with the NSPS 2020 limits, using the alternative Cordwood test method broadly accepted by the administrator. Please find the letter of acceptance enclosed in appendix 1

1.3. Site

Testing was accomplished by Danish Technological Institute, Kongsvangallé 29, DK-8000 Aarhus C, Denmark in accordance to DTI's accredited EPA test procedure ELAB-PP-BR-15 (CBI information). The test procedure is amended in appendix 12 to the CBI report variant, but left out in the non-CBI report variant

1.4. Participants

DTI staff
Testing in the laboratory was accomplished by:

- Jes Sig Andersen, Senior Specialist
- Rene Lyngsø Hvidberg, Senior Specialist

Client staff
The test work was witnessed by:

- Frank Juel Nielsen, Morsø Jernstøberi A/S

1.5. Test specimen

The stove was manufactured by:

Company:	Morsø Jernstøberi A/S
Address:	Furvej 6
Postcode/town:	DK-7900 Nykøbing Mors
Country:	Denmark

The stove weighs 119 kg.

The stove is not equipped with a catalyst.

The dimensions of the firebox are:

Height (back):	203	mm (maximum loading limit)
Breadth:	445	mm
Depth:	260	mm
Volume:	0,0235	m^3 or 0,8299 ft^3 (usable firebox volume)

Variants: Danish Technological Institute has not assessed any variants.

1.6. Description of the wood heater

General: Morsø 7110B is a traditional type cast iron stove of landscape format. The stove is equipped with a loading door with a glass pane and an ash compartment.
Provisions of applying a maximum load limitation of E3053 was utilized. The Max Load limit is indicated by the top of the rear brick, just below the lowest secondary combustion air supply tube. The space in front of and above the lowest combustion air tube is reserved for volatile gas combustion only.

Materials of Construction: The unit is constructed primarily of cast iron with stainless steel secondary air tubes. The firebox is lined with three vermiculite firebricks (right and left side and back). The feed door has a 327 mm by 255 mm glass panel and lined with an 8 mm diameter fiberglass gasket.

Air Introduction System: Combustion Air enters the firebox through an opening located at the bottom/back of the appliance.
Through the air controller holes the primary combustion air is ducted down through the manifold that is located behind the door at the top of the door frame.
Secondary air enters the appliance through the bottom/back and is ducted internally to both sides of the firebox supplying three 1'' diameter tubes.

Combustion Control Mechanisms: The combustion air inlet is controlled by a handle located below the fuel loading door. Combustion air control mechanism is a sliding rod with flat plates attached that cover and uncover air inlets when the rod is pushed left or right. Only the primary combustion air is adjustable, the secondary combustion air is fixed.

Combustor: N/A

Internal Baffles: A cast iron baffle with ceramic wool on the top side is mounted in the upper portion of the firebox. The flame path is forced to the front of the firebox where it travels up through the opening between the baffle and primary air manifold. Above the ceramic wool blanket there is a second baffle made of vermiculite

Other Features: None

Flue Outlet: The 6" diameter flue outlet is located at the top of the appliance, to the back.

2. Aging prior to testing

The stove had been aged in excess of 50 hours of operation prior to the certification test, while pre-testing at Morsø.
There is an XLS file holding all the documentation of aging including plots of the course of the platform scale, the flue gas temperature and the flue draft. Further the full set of logger data is present.
The stove was pre-tested these days: the 22, 23, 24, 25, 28, 29, 30 and 31 of January and further the 1, 4, 5, 6, and 7 of February, each day of approximately 10 hours of operation, thus in total no less than 120 hours of operation with active combustion.
In order not to feed excessive page into the report, only plots of the course of the platform scale are shown in appendix 2. However, the full file has been presented to the third-party certifier, prior to commencement of the test work.

Please find documentation of aging in appendix 2.

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3. Summary of test results

3.1. Test schedule

The full certification test comprises one HF test run, one MF test run and one LF test run. On the 15th of January, a dummy HF test (no PM sampling) as performed in order to condition the firebed.

Date	Test I	Test II	Remarks
14-1-2019	HF test	MF test	Both valid tests
15-1-2019	Dummy HF	LF test	HF only to prepare firebed. The LF test was valid

3.2. Main results

	Burn rate kg dry matter/hour	Emission grams/hour
HF 14-1	2,71	2,84
MF 14-1	1,44	1,07
Dummy HF 15-1	2,46	
LF 15-1	1,12	0,38
Weighted average		1,1 (1,148)

Please see also the full set of test results in chapter 10

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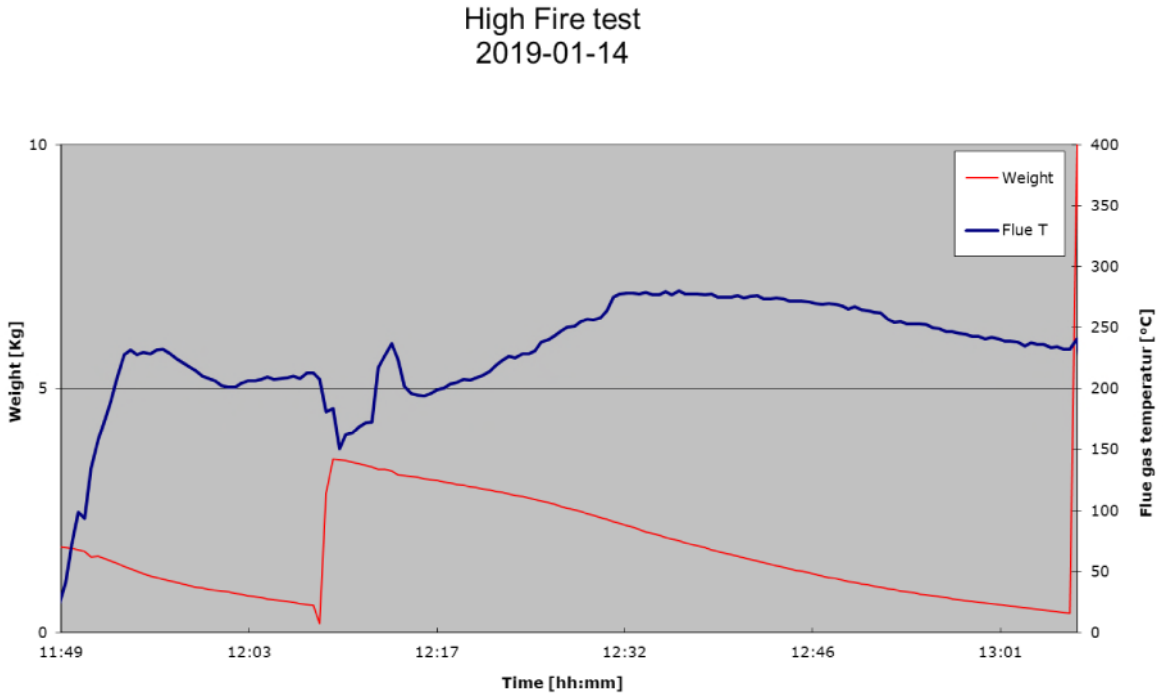
3.3. Summary of the HF and MF tests the 14-01-2019

Data logger file Id: 2019-01-14_08-27-30

11:49:10	Ignition of the Cold Start part test using the gas torch for 1 minute. The air valve is set in position 100% open. 0,700 kg of kindling (10% moisture wb) and 1,048 kg start-up fuel (17,0% moisture wb) is added
11:51:40	Ignition is over, the door is closed after 2½ min ajar. The air valve is maintained at 100% open
12:09:00	End of Kindling+Start-up at 540 grams of embers, taring of the platform scale, evening out of the embers and begin of High Fire test using 3,600 kg firewood (16,7% moisture wb)
12:09:45	End of loading time at 45 seconds.
12:15:45	The door was closed, and the air valve was kept in position 100% open, being the High Fire setting allowing maximum air supply
12:49:10	Change of the filter holder arrangement in the split extraction train at the hour at gas meter reading 28631,66 normal litres
13:07:00	End of High Fire test cycle at 377 grams of embers, taring of the platform scale, evening out of the embers, the air valve to position 100% open for ignition and begin of Medium Fire test using in total 4,343 kg of firewood (16,6% moisture wb).
13:07:45	End of the loading time after 45 seconds
13:10:45	The air valve was reduced from 73 mm open (100%) to 20 mm open.
13:11:45	The air valve is further reduced from 20 mm open to 15 mm open (21%)
14:07:00	Change of the filter holder arrangement in the split extraction train at the hour at gas meter reading 29181 normal litres
15:37:50	The Medium Fire test is over at platform scale reading 0 kg

Please find the corresponding sequence of images in appendix 3



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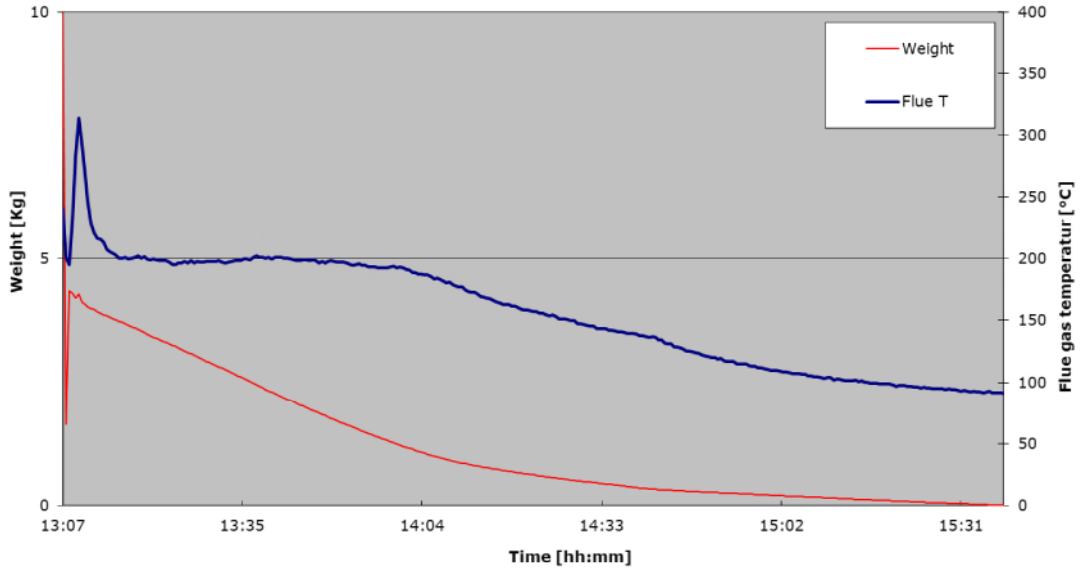
Medium Fire test
2019-01-14



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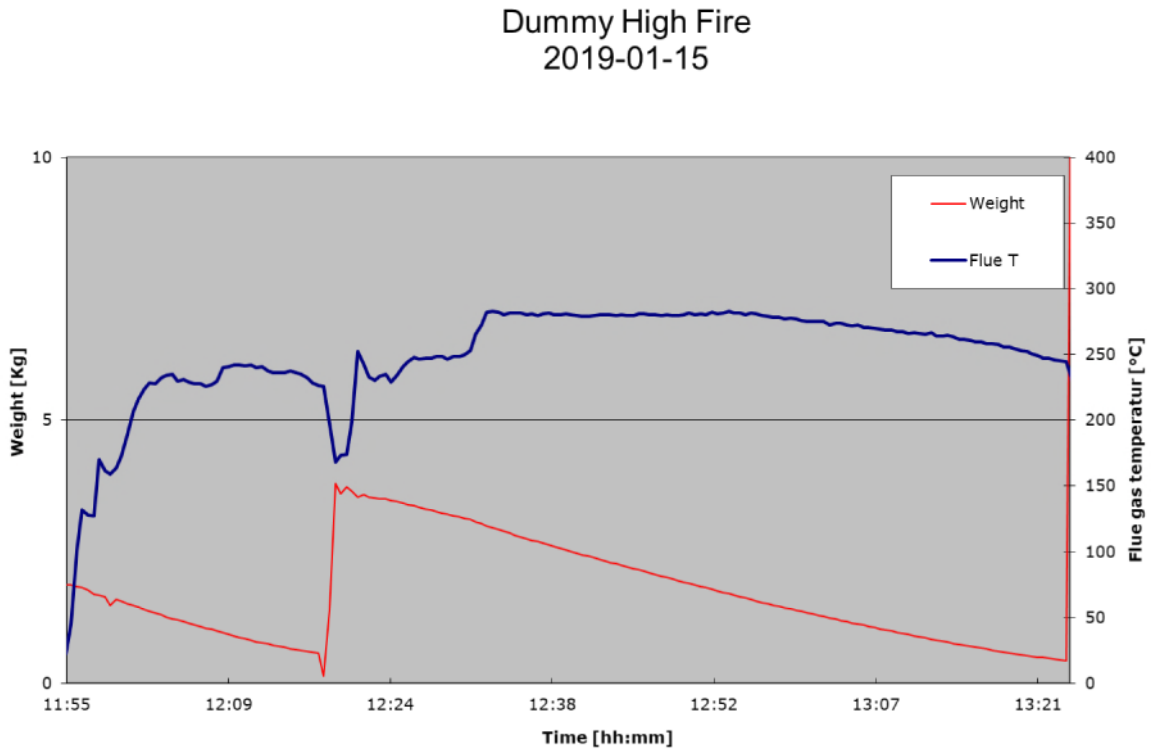
3.4. Summary of the dummy HF and LF test the 15-01-2019

Data logger file Id: 2019-01-15_08-47-07

11:55:15	Ignition of the Cold Start part test using the gas torch for 1 minute. The air valve is set in the left most position; 73 mm action or 100% open. 0,751 kg of kindling (10% moisture wb) and 1,127 kg start-up fuel (17,1% moisture wb) is entered
11:56:45	Ignition is over, the door is closed after 1½ min ajar. The air valve is maintained at 100% open
12:18:07	End of Kindling+Start-up at 560 grams of embers, taring of the platform scale, evening out of the embers and begin of dummy High Fire using 3,811 kg firewood (17,6% moisture wb)
12:18:57	End of loading time at 50 seconds
12:24:27	The door was closed, and the air valve was kept in position 100% open, being the High Fire setting allowing maximum air supply
13:24:30	End of dummy High Fire cycle at 413 grams of embers, taring of the platform scale, evening out of the embers, the air valve still in position 100% open for ignition and begin of Low Fire test using in total 4,518 kg of firewood (17,3% moisture wb).
13:25:15	End of the loading time after 45 seconds
13:28:00	The air valve was reduced from 73 mm open (100%) to 10 mm open (14%)
14:24:30	Change of the filter holder arrangement in the split extraction train at the hour at gas meter reading 30253,67 normal litres
16:45:25	The Low Fire test is over at platform scale reading 0 kg

Please find the corresponding sequence of images in appendix 4



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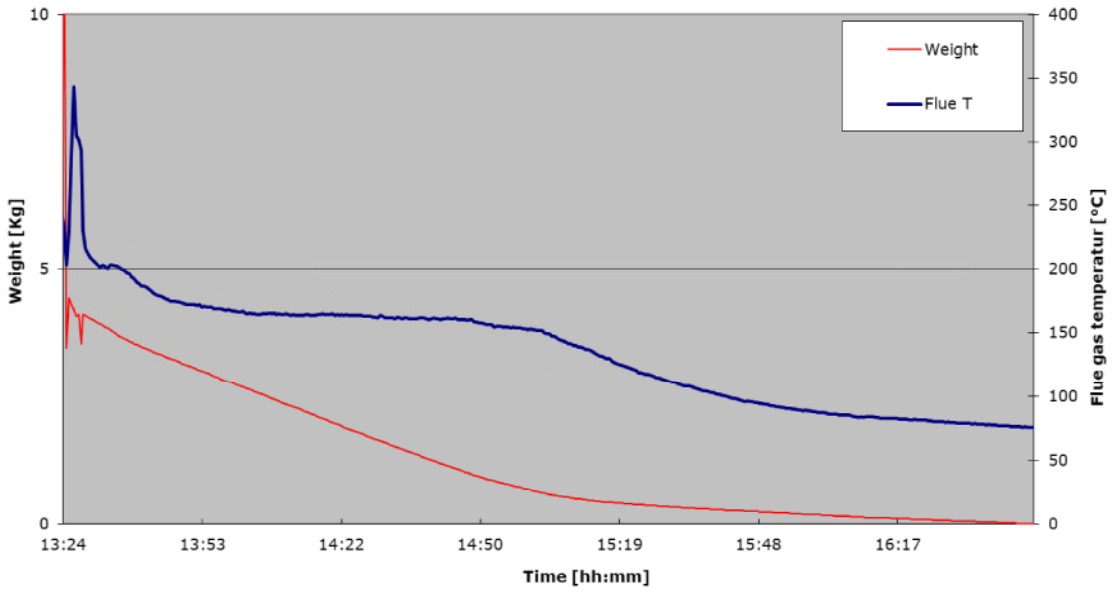
Low Fire test
2019-01-15



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3.5. Anomalies

None

3.6. High Fire net fuel consumption

Here the net fuel consumption for the high fire test is being established, respectively for determination of PM emission over the full test cycle including also the cold start part, and for burn rate calculation (plus determination of Heat Output, emission of CO end energy efficiency) related to the strict High Fire part test period only.
The high fire net fuel mass is expressed in dry matter, which is why, for the ASTM calculation, you'll see the High Fire fuel moisture entered as 0%

HF; 14-1-2019	Mass (kg AF)	%-moisture	Ref basis	Dry mass (kg)
Kindling	0,7	10,0	WB	0,630
Start-up fuel	1,048	17,0	WB	0,870
HF fuel load	3,6	16,7	WB	2,999
Total mass entered				4,499
Tare prior to loading	-0,54	0	na	-0,54
Bed of embers, end	-0,377	0	na	-0,377
Cascaded tare	-0,917	**Total wood consumption, dry**		**3,582**
Net dry fuel mass for PM calc		0		3,582
Net dry fuel mass for burn rate calc				2,622
Test duration (hours)	00:58:00		decimal	0,9666
Resulting HF burn rate (kg/h) dry				2,71

dummy HF; 15-1-2019	Mass (kg AF)	%-moisture	Ref basis	Dry mass (kg)
Kindling	0,751	10,0	WB	0,676
Start-up fuel	1,127	17,1	WB	0,935
HF fuel load	3,811	17,6	WB	3,140
Total mass entered				4,751
Tare prior to loading	-0,56	0	na	-0,56
Bed of embers, end	-0,413	0	na	-0,413
Cascaded tare	-0,973	**Total wood consumption, dry**		**3,778**
Net dry fuel mass for PM calc		0		3,778
Net dry fuel mass for burn rate calc				2,727
Test duration (hours)	01:06:23		decimal	1,105
Resulting HF burn rate (kg/h) dry				2,47

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3.7. Summary of test results

Test run number	Test designation	First hour emission rate (g/h)	Overall emission rate (g/h)	Burn rate (Kg/h)	Heat output (BT/h) at HHV	Emission of CO (g/MJ)	Overall efficiency (%) at HHV
1	HF	3,42	2,84	2,71	38.534	0,74	69,0
2	MF	2,31	1,07	1,44	21.946	2,78	76,0
3	Dummy HF			2,47			
4	LF	1,09	0,38	1,12	17.348	2,07	77,1

3.8. Weighted average calculation

Model name(s)	Morsø 7110B		
Usable Firebox Volume - ft_3	0,8299		
Convection air fan	No		
Average for Each Test Run Category	L	M	H
Burn Rate - kg/h DB	1,12	1,44	2,71
PM Emission Rate - g/h	0,38	1,07	2,84
CO Emissions Rate - g/h	36,0	61,1	28,4
Overall Efficiency - CSA B415.1-10			
% HHV Basis	77,1	76,0	69,0
% LHV Basis	82,9	81,7	74,1
Heat Output - Btu/h	16457	20818	36554
Category Weighting	40%	40%	20%

ASTM E3053 Weighted Averages			
PM Emission Rate - g/h	1,148		
CO Emissions Rate - g/h	44,504		
Overall Efficiency - CSA B415.1-10			
% HHV Basis	75		
% LHV Basis	81		
Heat Output Range - Btu/h	16457	to	36554

Arithmetic average CO emission for EPA g/h	41,8
Arithmetic avg CO emission for EPA g/min	0,7

*) please also find the arithmetic CO emi average in the Main results table, chapter 10

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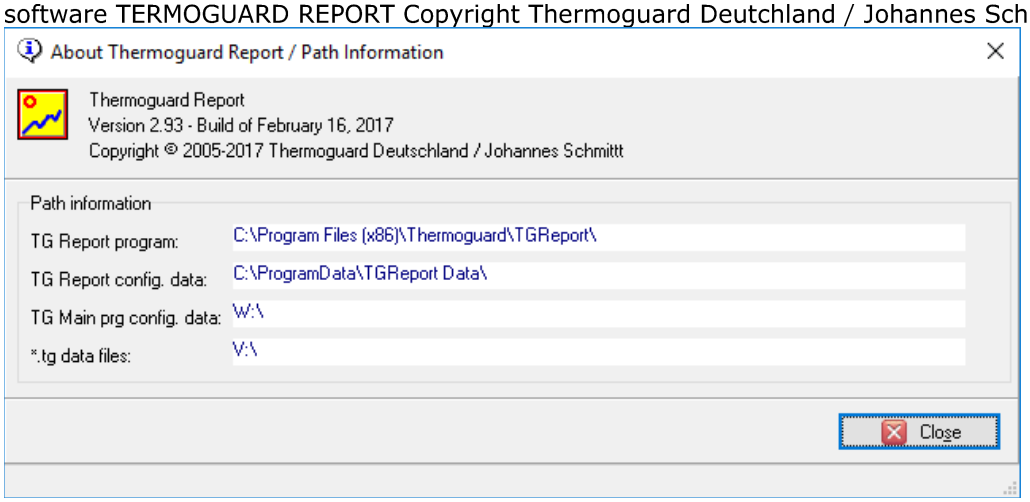
3.9. Test facility conditions

DTI is located at Kongsvangs allé 29, DK-8000 Århus Denmark, at sea level.
Latitude North: 56,1374
Longitude East: 10,1864
Altitude above sea level: 15 meters

Test facility room temperature, relative humidity and barometric pressure is monitored by the software TERMOGUARD REPORT Copyright Thermoguard Deutchland / Johannes Schmitt



3.10. Fuel properties

The test fuel was Birch wood split and cut according to the manufacturer' written instructions and compliant with the provisions of E3053, clause 8.4
The specific gravity of 0,65 dry weight to dry volume ratio was selected from E3053 Fig 2 page 6. Similarly, the gross calorific value of 20,12 MJ/kg or 8656 Btu/lb was selected from E3053 Annex A1, table A.1.1 page 17.
The length of the wood logs was 23-25 cm. The basic shape of the wood logs was approximated triangular, trapezoidal or rhombic respecting the minor to major ratio > 40% according to figures 1A and 1B of E3053

The composition of the HF and LF/MF fuel batches were calculated using the standard XLS Wood calculator adjunct to ASTM E3053-15

The nominal mass of the HF fuel load was 3,764 kg or 8,299 lb
The nominal HF mass range was 3,60-4,00 kg or 7,90-8,70 lb
The allowable mass range of the HF Core load was 1,70-2,40 kg or 3,70-5,40 lb
The allowable mass range of the HF Remainder load was 1,30-2,10 kg or 2,90-4,60 lb

The nominal mass of the LF/MF fuel load was 4,517 kg or 9,959 lb
The nominal LF/MF mass range was 4,29-4,74 kg or 9,46-10,46 lb
The allowable mass range of the LF/MF Core load was 2,03-2,94 kg or 4,48-6,47 lb
The allowable mass range of the LF/MF Remainder load was 1,58-2,48 kg or 3,49-5,48 lb

For all test fuel loads, only 5 logs were used; 3 core and 2 remainder.

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3.11. Summary of test fuel load properties

	Core 1	Core 2	Core 3	Remainder 1	Remainder 2	Remainder 3
HF mass (kg)	0,749	0,747	0,754	0,898	0,452	
HF moist. (% DB)	19,1	19,8	19,4	21,4	20,2	
MF mass (kg)	0,890	0,899	0,911	0,994	0,606	
MF moist. (% DB)	20,6	19,9	19,1	19,6	20,9	
Dummy HF mass (kg)	0,799	0,801	0,800	0,909	0,500	
Dummy HF moist. (% DB)	19,5	21,3	25,1	18,8	24,2	
LF mass (kg)	0,998	0,892	1,033	1,019	0,576	
LF moist (%DB)	23,1	22,2	19,3	20,5	19,4	

Please find the fuel load calculations enclosed in appendices 5-8

Example of batch of firewood

4. Test accomplishment

4.1. Remarks

The certification tests were accomplished in accordance with the manufacturers written test instructions (please find enclosed in appendix 9), the ASTM E3035-15 Cordwood test standard, the EPA ALT125 letter and the ASTM E2515-11 dilution tunnel and sampling standard.

4.2. Start-up operation

The Morsø 7110B stove has an integrated air control system offering control of all the combustion air supplied by means of a unitary control lever. For start-up, the lever is set in the left-most position, giving maximum combustion air.

Please find a detailed description of the start-up procedure in the manufacturers test procedure (appendix 9)

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4.3. Sampling arrangement

The PM specimen is extracted from the Full Flow Dilution Tunnel by means of a dual probe and filter holder system as specified by ASTM E2515-11, clause 6.1.1.1. The filter holders are of type 47 mm Pall 1235. There are 3 sets of backed-up filter holders for PM sampling and one single filter holder for the room blanc measurement.

During the course of the test, the filter holders in the PM sampling lines may be heated respectively cooled as appropriate, to control the filter temperature in the narrow range of 80-90 degrees F.

4.4. Fluepipe and chimney configuration

The chimney is composed by single wall uninsulated fluepipe in combination with half insulated system steel chimney compliant with ASTM E3053-17 clause 6.3

The single wall fluepipe extends to 2,63 m above the test rig floor. In combination, the insulated system chimney extends to 4,58 m above the test rig floor, compliant with ASTM E3953-17 clause 8.2.3

Please find a schematic drawing of the chimney configuration in appendix 11

The chimney was connected to the stove using the top flue outlet

5. Sampling methods

5.1. Particulate extraction system

The particulate matter is sampled in accordance with ASTM E2515-11. Two identical sampling trains are applied. The sampling trains consists each of a set of front and back Pall type 1235 Al 47 mm in-line filter holders. Filter are Pall TX-40 EMFAB Teflon-coated filters 47 mm membrane filters

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5.2. Calculation of PM emission

The calculations are enclosed in a format following the notation of equations of ASTM E2512-11

Please find the calculation of the High Fire test (test run #1) in appendix 14; the calculations of the Medium Fire test (test run #2) in appendix 15; the calculations of the dummy High Fire test (test run #3) in appendix 16 and the calculations of the Low Fire test (test run #4) in appendix 17
Test run #3 is a dry HF run only aiming at conditioning the firebed prior to the LF test.

6. Quality assurance

6.1. Instrument calibration

There is a set of EPA instrument calibration certificates in appendix 13

6.2. Logger data

Please find the sets of logger data, sampled every 5 seconds and recorded every 30 seconds in appendices 18 (HF test 140119), appendix 19 (MF test 140119), appendix 20 (dummy HF run the 150119) and in appendix 21 (LF test 150119)

Legend:

Rum - [°C]	Filter-1-H - [°C]	Filter-2-D1 - [°C]
1	2	3
Ambient temperature	Main train filter temp	Split train 1H filter temp

Row 1 is the original Danish notation incl metric
Row 2 is the data logger channel number
Row 3 -5 are the corresponding terms in English

7. Documentation material

Documentation material:

Assembly drawings in appendix 22

Parts drawings in appendix 23

Materials sheets in appendix 24

Label(s) in appendix 25

Picture(s) in appendix 26

User's manual in appendix 27

The drawings and parts drawings are amended to the CBI report variant only.

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8. Remarks

8.1. Internal correction of gasmeters

The Vögtlin Red-Y gasmeters have internal correction to as well normal temperature (here 0-degree C) and to pressure (here 1013 HPa)
Consequently, in the calculations, the gasmeter temperature end pressure is entered as 0 degr C respectively 1013 HPa.

8.2. Joint Cribwood and Cordwood spreadsheet

The spreadsheet used for calculation of the emissions is a joint Cribwood and Cordwood spreadsheet. When used for a Cordwood test there are some void spaces under the fuel mass calculation. Also, generally the fuel is referred to as 'Cribs' even though for good reasons, for Cordwood, wood logs are used.

8.3. Request of restriction of the air valve action

The action of the air valve must be restricted by means of a physical stop or by blanking out a corresponding proportion of the opening of the air valve plate, as to prevent use of the stove at any valve setting lower than the one used during the Low Fire test, here 10 mm open.

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9. Discussion of Results

None

10. Main results

	High Fire	Medium Fire	Dummy HF	Low Fire
Date	14-1-2019	14-1-2019	15-1-2019	15-1-2019
Run Number	1	2	3	4
Emission Rate g/Hr.	2,84	1,07		0,38
Burn Rate Kg/Hr.	2,71	1,44	2,46	1,12
BTU/Hr. (HHV)	36.554	20.818		16.457
Overall Efficiency (%) HHV	69,0	76,0		79,0
CO Emissions (g/MJ Output)	0,74	2,78		2,07
CO Emissions (g/kg Dry Fuel)	10,2	42,6		32,2
CO Emissions (g/hr)	28,4	61,1		36,0
ASTM E2515 Emissions – First Hour (g/hr)	3,42	2,31		1,09

Weighed particle emission rate, average of 3 test runs	1,1 g/h
Weighted average energy efficiency (at HHV) of 3 test runs	76 %
Arithmetical average emission of CO of 3 test runs	41,8 g/h
Arithmetical average emission of CO of 3 test runs	0,70 g/min

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11. Test details

11.1. Pretest

The stove had been breaked-in at the client's internal test lab. Documentation of excess of 50 hours of operation has been produced to the third part certifier, prior to commencement of the certification test.

Please find the documentation of conditional pretesting amended in appendix 2

11.2. Sample analysis

The probes and the filters and gaskets in pairs are weighed to final weight prior to and after exposure to pm material. In both instances final weight is established after a stay of minimum 24 hours in the desiccator cabinet.

Please find the details of all 3 test run pm capture in appendix 28.

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11.3. Data, test run 1 – High Fire test 14. January

Parameter	Value	Unit
Pitot factor (F_p)	0,9859	
Dynamic pressure duct, Pd	34	Pa
Static pressure duct, Ps	158	Pa
Date of testing	14-1-2019	dd-mm yyyy
Start of test	11:49:10	hh:mm:ss
End of test	13:07:00	hh:mm:ss
Test duration	1:17:50	hh:mm:ss
Mean stove surface temperature at the start	22,2	°C
Kindling and Start-up fuel load	1,748	kg
Start-up fuel moisture	17,0	% DB
Test fuel load	3,600	kg
Test fuel moisture	20,0	% DB
Resulting burn rate	2,71	kg (dry matter)/h
Particulate emission rate, first hour	3,42	g/h
Particulate emission rate, overall	2,84	g/h
Sampled gas volume (nl), train 1	529,1	Nl
Captured pm mass, train 1	3,8	mg
Sampled gas volume (nl), train2	528,1	Nl
Captured pm mass, train 2	3,9	mg
PM mass total (average)	3,69	g
Relative deviation in pm emission, train 1 to train 2	0,98	%
Absolute deviation in pm emission, train 1 to train 2	-0,02	g/kg (dry matter)
Mean flow rate probe, train 1	6,96	m/s
Mean flow rate probe, train 2	6,93	m/s
Mean flow rate duct	7,34	m/s
Flue gas temperature (mean)	226	°C
Flue draught (mean)	17	Pa

Parameter	Start value	End value	Units
Ambient temperature	21,0	23,0	°C
Relative humidity	20,7	19,5	%
Barometric pressure	998,3	999,8	hPa
Draft in front of the test rig	0,06	0,11	m/s
Flue gas temperature	20,4	230	°C

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11.4. Data, test run 2 – Medium Fire test 14. January

Parameter	Value	Unit
Pitot factor (F_p)	0,9859	
Dynamic pressure duct, Pd	34	Pa
Static pressure duct, Ps	158	Pa
Date of testing	14-1-2019	dd-mm yyyy
Start of test	13:07:00	hh:mm:ss
End of test	15:37:50	hh:mm:ss
Test duration	02:30:50	hh:mm:ss
Mean stove surface temperature at the start	NA	°C
Kindling and Start-up fuel load	NA	kg
Start-up fuel moisture	NA	% DB
Test fuel load	4,343	kg
Test fuel moisture	19,9	% DB
Resulting burn rate	1,44	kg (dry matter)/h
Particulate emission rate, first hour	2,31	g/h
Particulate emission rate, overall	1,07	g/h
Sampled gas volume (nl), train 1	1068,5	Nl
Captured pm mass, train 1	3,2	mg
Sampled gas volume (nl), train2	1059,4	Nl
Captured pm mass, train 2	2,9	mg
PM mass total (average)	2,68	g
Relative deviation in pm emission, train 1 to train 2	5,57	%
Absolute deviation in pm emission, train 1 to train 2	0,09	g/kg (dry matter)
Mean flow rate probe, train 1	7,02	m/s
Mean flow rate probe, train 2	7,00	m/s
Mean flow rate duct	7,16	m/s
Flue gas temperature (mean)	202	°C
Flue draught (mean)	17	Pa

Parameter	Start value	End value	Units
Ambient temperature	23,0	24,0	°C
Relative humidity	19,5	19,3	%
Barometric pressure	999,8	1001,1	hPa
Draft in front of the test rig	0,11	0,08	m/s
Flue gas temperature	230	90	°C

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11.5. Data test run 3 – Dummy High Fire 15. December

Parameter	Value	Unit
Pitot factor (F_p)	0,9365	
Dynamic pressure duct, Pd	32	Pa
Static pressure duct, Ps	139	Pa
Date of testing	15-1-2019	dd-mm yyyy
Start of test	11:55:15	hh:mm:ss
End of test	13:24:30	hh:mm:ss
Test duration	1:29:15	hh:mm:ss
Mean stove surface temperature at the start	24,2	°C
Kindling and Start-up fuel load	1,878	kg
Start-up fuel moisture	21,3	% DB
Test fuel load	3,811	kg
Test fuel moisture	21,5	% DB
Resulting burn rate	2,47	kg (dry matter)/h
Particulate emission rate, first hour	NA	g/h
Particulate emission rate, overall	NA	g/h
Sampled gas volume (nl), train 1	NA	Nl
Captured pm mass, train 1	NA	mg
Sampled gas volume (nl), train2	NA	Nl
Captured pm mass, train 2	NA	mg
PM mass total (average)	NA	g
Relative deviation in pm emission, train 1 to train 2	NA	%
Absolute deviation in pm emission, train 1 to train 2	NA	g/kg (dry matter)
Mean flow rate probe, train 1	NA	m/s
Mean flow rate probe, train 2	NA	m/s
Mean flow rate duct	NA	m/s
Flue gas temperature (mean)	223	°C
Flue draught (mean)	17	Pa

Parameter	Start value	End value	Units
Ambient temperature	22,8	24,4	°C
Relative humidity	30,5	31,4	%
Barometric pressure	999,3	997,5	hPa
Draft in front of the test rig	0,02	0,06	m/s
Flue gas temperature	22,8	245	°C

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11.6. Data test run 4 – Low Fire test the 15. January

Parameter	Value	Unit
Pitot factor (F_p)	0,9365	
Dynamic pressure duct, Pd	30,4	Pa
Static pressure duct, Ps	139	Pa
Date of testing	15-1-2019	dd-mm yyyy
Start of test	13:24:30	hh:mm:ss
End of test	16:45:25	hh:mm:ss
Test duration	03:20:55	hh:mm:ss
Mean stove surface temperature at the start	NA	°C
Kindling and Start-up fuel load	NA	kg
Start-up fuel moisture	NA	% DB
Test fuel load	4,518	kg
Test fuel moisture	20,9	% DB
Resulting burn rate	1,12	kg (dry matter)/h
Particulate emission rate, first hour	1,09	g/h
Particulate emission rate, overall	0,38	g/h
Sampled gas volume (nl), train 1	1454,2	Nl
Captured pm mass, train 1	1,7	mg
Sampled gas volume (nl), train2	1457,8	Nl
Captured pm mass, train 2	2,0	mg
PM mass total (average)	1,28	g
Relative deviation in pm emission, train 1 to train 2	8,98	%
Absolute deviation in pm emission, train 1 to train 2	-0,07	g/kg (dry matter)
Mean flow rate probe, train 1	7,27	m/s
Mean flow rate probe, train 2	7,30	m/s
Mean flow rate duct	6,75	m/s
Flue gas temperature (mean)	182	°C
Flue draught (mean)	15	Pa

Parameter	Start value	End value	Units
Ambient temperature	24,4	24,0	°C
Relative humidity	31,4	29,8	%
Barometric pressure	997,5	998,3	hPa
Draft in front of the test rig	0,06	0,08	m/s
Flue gas temperature	245	75	°C

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12. Test equipment

Testing was carried out at test rig C. (EPA setup)

Instrument	Traceability	Instrument number Test rig C
Scale, Mettler, 600 kg, KC 600	ELAB	270-A-1638
Thermo couples, EPA sampling train Type T	ELAB	Id No. 145092
Thermo couples, others, Type T and type K	ELAB	Id No.134396
DOP version II	-	-
Data acquisition unit, HP 34970A	DANAK 200	270-A-1630
Surface temperature, Technoterm 5500	DANAK 200	270-A-0976
Surface temperature, Dan 1200	DANAK 200	270-A-0876
Pressure gauge, Autotran 700 (flue draught)	ELAB	270-A-1632
Pressure gauge, Autotran 700 (Pd)	ELAB	Id No. 145065
Pressure gauge, Autotran 700 (Ps)	ELAB	270-A-1634
Calibrator, Jofra 650 SE	DANAK 200	270-A-0912
Scale, Mettler Toledo (15kg/1g)	ELAB	Id No. 5822
Scale, Mettler Toledo XS4002S (4,1kg/10mg)	ELAB	Id No. 135794
Scale, Mettler Toledo XS204 (220g/0,1mg)	DANAK 200	Id No. 7084
Disa Dantec flow analyser (Air velocity Laboratory)	DANAK 200	Id No. 424 (13486)
TSI Micromanometer and Pitottube (Air velocity Dillution tunnel)	DANAK 200	Id No. 4771 (270-A-2406)
Hygrometer (air humidity) Thermoguard	DANAK 200	Id No. 142357
Barometric reading (atmospheric pressure) Thermoguard / (Ahlborn)	DANAK 200	Id No. 7102
Pitot tube (air velocity in flue)	ELAB	270-A-1631-14
Dust measuring equipment (particle measuring equipment)	-	Id No. 145093
Gas meter, Red-y (-H) (Whole charge, With outlet)	DANAK 200	Id No. 144236
Gas meter, Red-y (-D) (Divided charge with outlet)	DANAK 200	Id. No. 144239
Flow meter (-R) (Room blanc)	DANAK-200	Id No. 144257
Thermo sensor, Dilution tunnel, Pt 100	DANAK 200	270-A-1628
PST leakage meter (Brooks glass tube)	ELAB	Id no. 83013
CO/CO_2 analyser, ABB IR	ELAB	270-A-2276
Spangas CO/CO_2, AGA (High CO and CO_2)	Swedac	Id no. 135573
Spangas CO/CO_2, AGA (Low CO)	Swedac	Id no. 135574
Moisture meter	ELAB	Id No. 145070

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Vacuum meter (-H) (Main train)	DANAK 200	Id No. 145074
Vacuum meter (-D) (Split train)	DANAK 200	Id No. 145076
Vacuum meter (-R) (Room)	DANKA 200	Id No. 145077
Pressure meter (-H) (Main train)	DANAK 200	Id No. 145078
Pressure meter (-D) (Split train)	DANAK 200	Id No. 145079
Thermometer (Fuel storage room)	ELAB	Id No. 145081

13. Appendices

Appendix 1: EPA Letter of acceptance, ALT 126
Appendix 2: Documentation of aging
Appendix 3: Images from the test sequence the 14. January 2019
Appendix 4: Images from the test sequence the 15. January 2019
Appendix 5: High Fire fuel load calculator 140119
Appendix 6: Medium Fire fuel load calculator 140119
Appendix 7: Dummy High Fire fuel load calculator 150119
Appendix 8: Low Fire fuel calculator 150119
Appendix 9: Manufacturer's test procedure
Appendix 10: Manufacturer's description of the stove
Appendix 11: Chimney configuration
Appendix 12: DTI test procedure EPA tests
Appendix 13: Set of calibration certificates
Appendix 14: HF ASTM calculations
Appendix 15: MF ASTM calculations
Appendix 16: Dummy HF ASTM calculations
Appendix 17: LF ASTM calculations
Appendix 18: Set of HF logger data 140119
Appendix 19: Set of MF logger data 140119
Appendix 20: Set of dummy HF logger data 150119
Appendix 21: Set of LF logger data 150119
Appendix 22: Assembly drawings
Appendix 23: Parts drawings
Appendix 24: Material sheets
Appendix 25: Label(s)
Appendix 26: Picture(s)
Appendix 27: User' manual
Appendix 28: Sample analysis
Appendix 29: CSA results

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

FEB 2 8 2018

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Justin White
Hearthstone QHPP, Inc.
#17 Stafford Ave.
Morrisville, VT 05661

Dear Mr. White,

I am writing in response to your letter dated January 12, 2018, regarding wood heaters manufactured by Hearthstone QHPP, Inc. (Hearthstone). This response, dated February 28, 2018, supercedes our previous response (dated February 26, 2018) to correct an inaccuracy regarding required changes to ASTM E3053-17.

You are requesting to use an alternative test method, using cord wood, as referenced in section 60.532(c) of 40 CFR part 60, Subpart AAA, Standards of Performance for New Residential Wood Heaters (Subpart AAA) to meet the 2020 cord wood alternative compliance option. The 2020 cord wood alternative compliance option states that each affected wood heater manufactured or sold at retail for use in the United States on or after May 15, 2020, must not discharge into the atmosphere any gases that contain particulate matter in excess of 2.5 g/hr. Compliance must be determined by a cord wood test method approved by the Administrator along with the procedures in 40 CFR 60.534. You have requested approval to use the procedures and specifications found in ASTM Method E3053-17, a cord wood test method titled, "Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel," in conjunction with ASTM E2515-11 and Canadian Standards Administration (CSA) Method CSA-B415.1-10, which are specified in 40 CFR 60.534.

We understand that Hearthstone is also requesting that the alternative method proposed above be approved to apply broadly to all wood heaters manufactured by Hearthstone meeting the requirements of Subpart AAA, from the approval date of this request until such time that Subpart AAA is revised or replaced to require a different cord wood certification method, providing all requirements of section 60.533 of Subpart AAA are met.

With the caveats set forth below, we approve your alternative test method request for certifying wood heaters using ASTM E3053-17 in conjunction with section 60.534 of Subpart AAA to meet the 2020 cord wood compliance option until such time that Subpart AAA is revised or replaced to require a different cord wood certification method. We also approve application of this alternative method to all wood heaters manufactured by Hearthstone meeting the requirements of Subpart AAA.

As required in Subpart AAA, section 60.354(d), you or your approved test laboratory must also measure the first hour of particulate matter emissions for each test run using a separate filter in one of the two parallel sampling trains. These results must be reported separately and also included in the total particulate matter emissions per run. Also, as required by Subpart AAA, section 60.534(e), you must have your approved laboratory measure the efficiency, heat output, and carbon monoxide emissions of the tested wood heater using CSA-B415.1-10. For measurement of particulate matter emission concentrations, ASTM 2515-11 must be used.

The following change to ASTM E3053-17 must be followed:

1. Coal bed conditions prior to loading test fuel. The coal bed shall be a level plane without valleys or ridges for all test runs in the high, low, and medium burn rate categories.

The following changes to ASTM E2515-11 must be followed:

1. The filter temperature must be maintained between 80 and 90 degrees F during testing.

2. Filters must be weighed in pairs to reduce weighing error propagation; see ASTM 2515-11, Section 10.2.1 Analytical Procedure.

3. Sample filters must be Pall TX-40 or equivalent Teflon-coated glass fiber, and of 47 mm, 90 mm, 100 mm, or 110 mm in diameter.

4. Only one point is allowed outside the +/- 10 percent proportionality range per test run.

A copy of this letter must be included in each certification test report where this alternative test method is utilized.

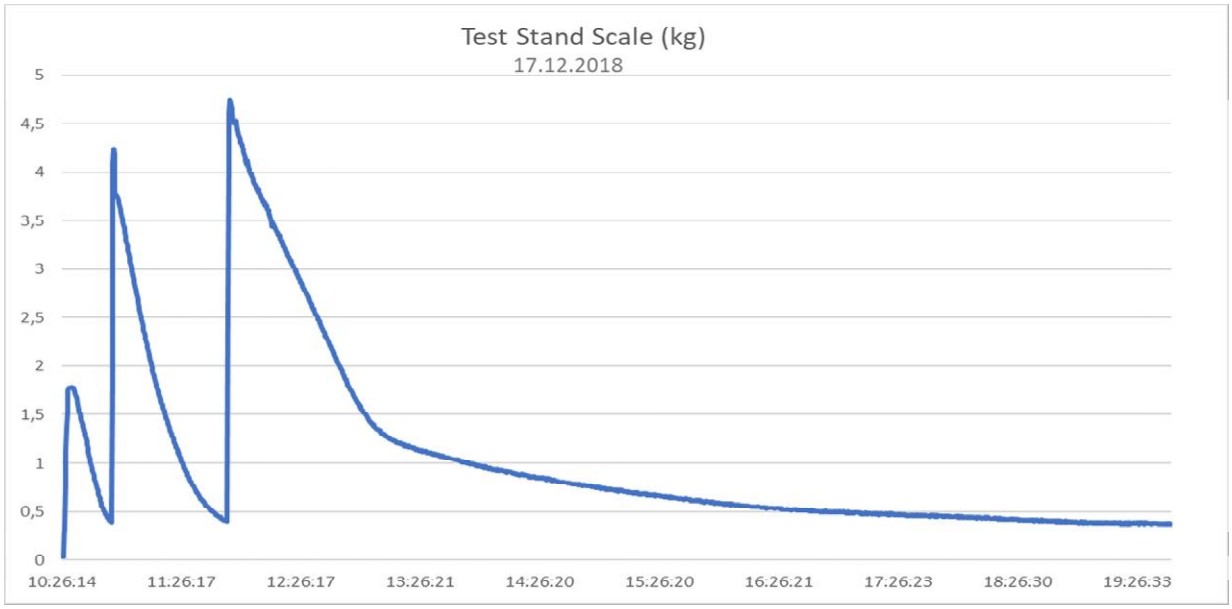
It is reasonable that this alternative test method approval be broadly applicable to all wood heaters subject to the requirements of 40 CFR part 60, Subpart AAA. For this reason, we will post this letter as ALT-125 on our website at *http://www3.epa.gov/ttn/emc/approalt.html* for use by other interested parties. As noted earlier in this letter, this alternative method approval is valid until such time that Subpart AAA is revised or replaced to require a different cord wood certification method, and at such time, this alternative will be reconsidered and possibly withdrawn.

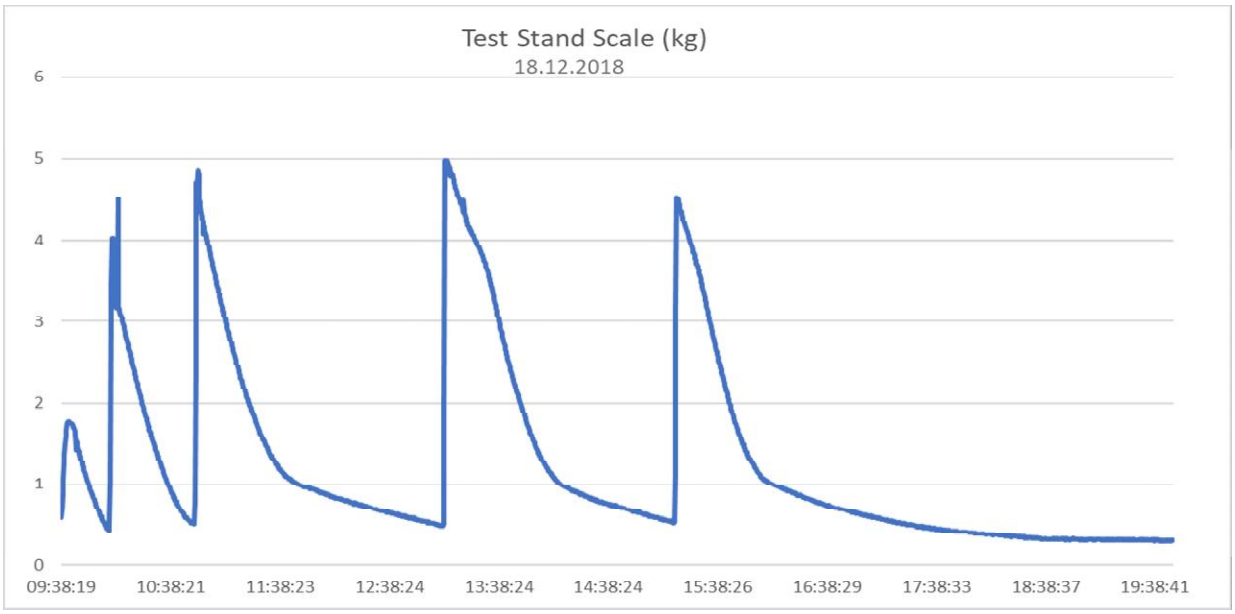
If you have additional questions regarding this approval, please contact Michael Toney of my staff at 919-541-5247 or toney.mike@epa.gov.

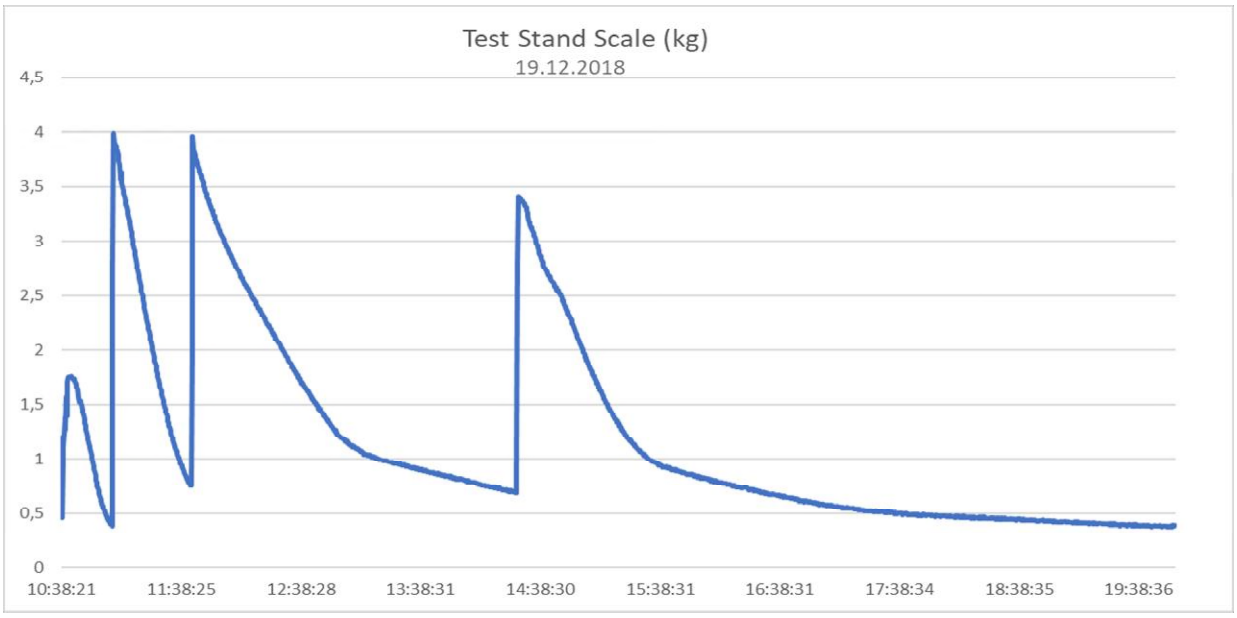
Sincerely,

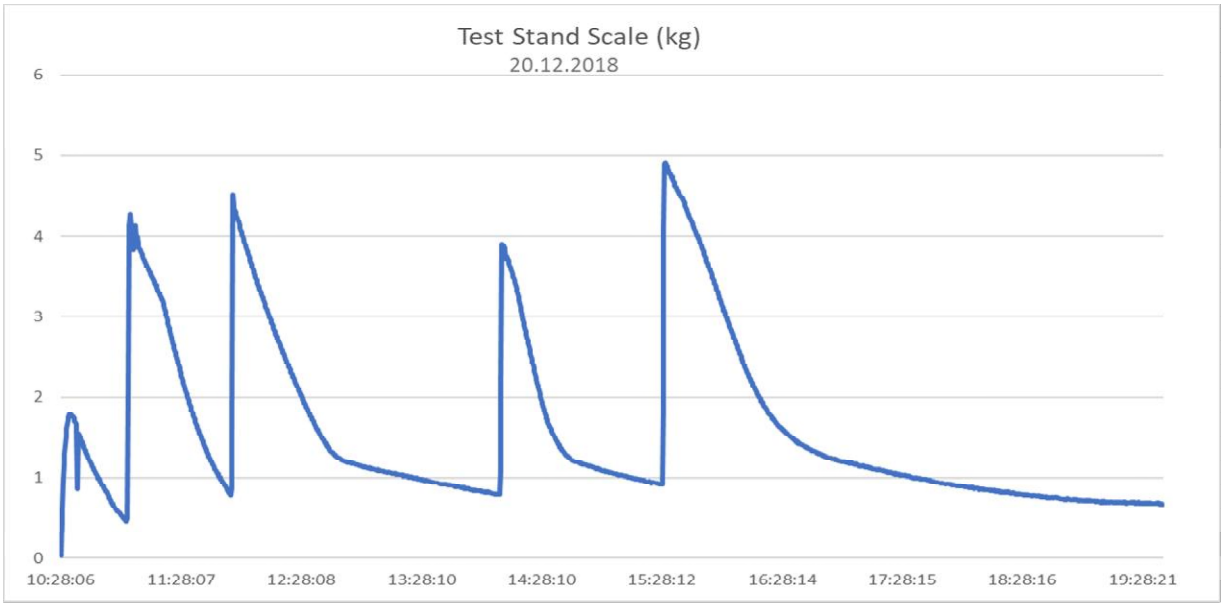
Steffan M. Johnson, Group Leader
Measurement Technology Group

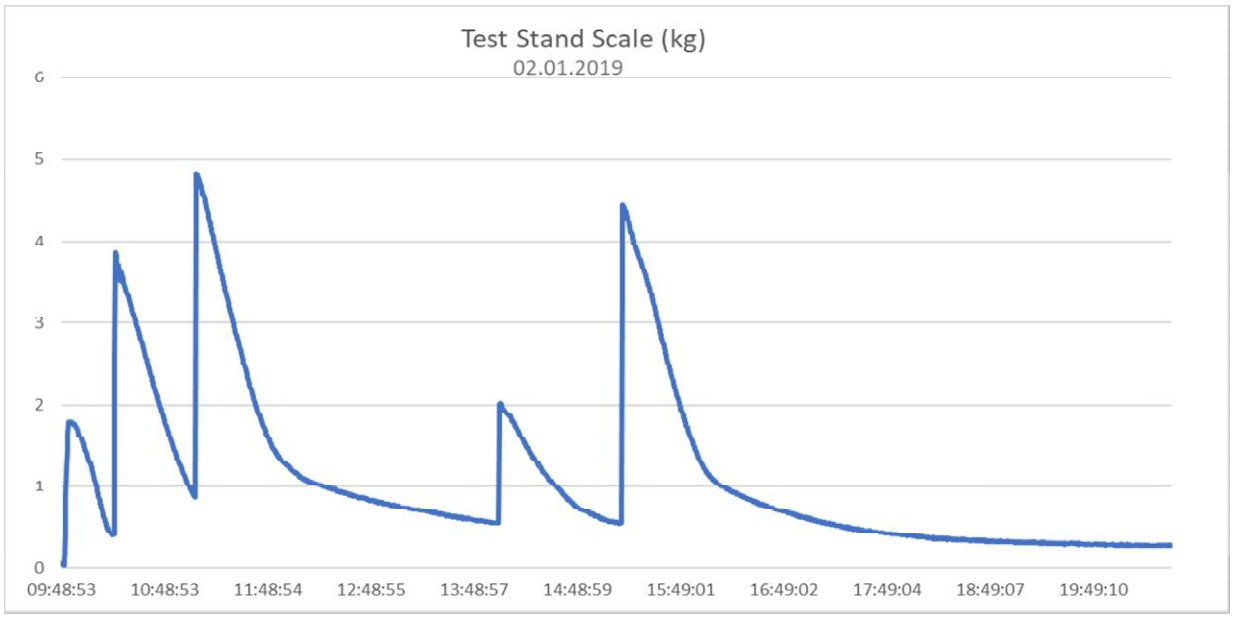
cc: Amanda Aldridge, EPA/OAQPS/OID
Adam Baumgart-Getz, EPA/OAQPS/OID
Rafael Sanchez, EPA/OECA
Michael Toney, EPA/OAQPS/AQAD

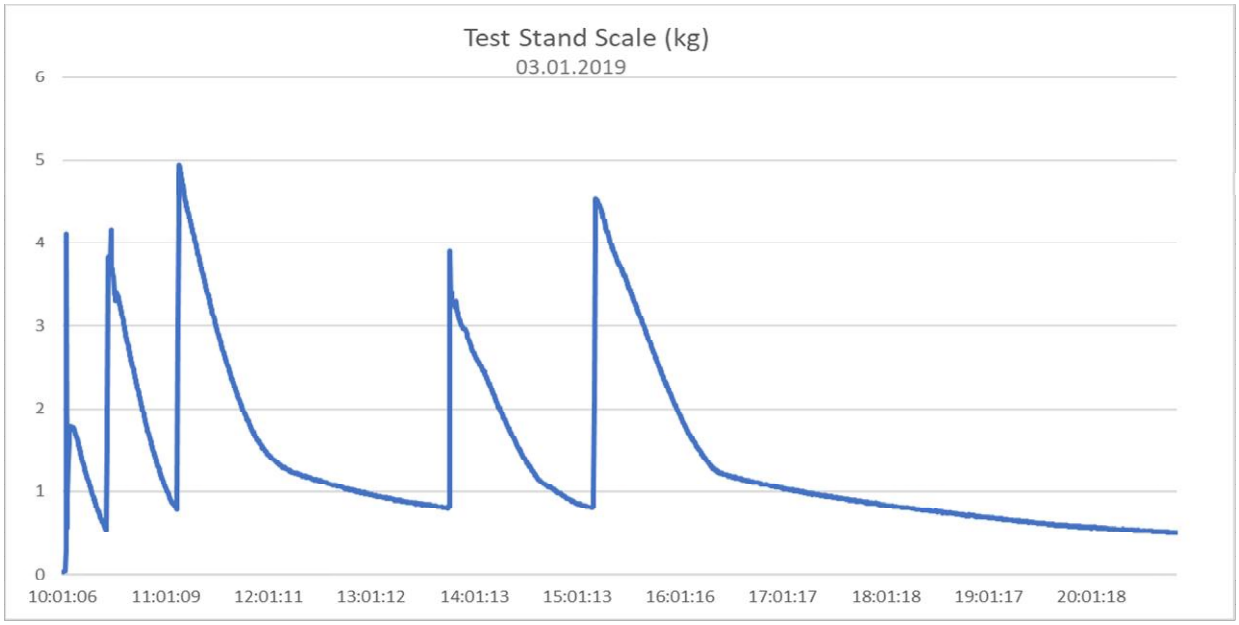

Test Stand Scale (kg)
17.12.2018
5
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
10.26.14
11.26.17
12.26.17
13.26.21
14.26.20
15.26.20
16.26.21
17.26.23
18.26.30
19.26.33


Test Stand Scale (kg)
18.12.2018
6
5
4
3
2
1
0
09:38:19
10:38:21
11:38:23
12:38:24
13:38:24
14:38:24
15:38:26
16:38:29
17:38:33
18:38:37
19:38:41


Test Stand Scale (kg)
19.12.2018
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
10:38:21
11:38:25
12:38:28
13:38:31
14:38:30
15:38:31
16:38:31
17:38:34
18:38:35
19:38:36


Test Stand Scale (kg)
20.12.2018
6
5
4
3
2
1
0
10:28:06
11:28:07
12:28:08
13:28:10
14:28:10
15:28:12
16:28:14
17:28:15
18:28:16
19:28:21


Test Stand Scale (kg)
02.01.2019
6
5
4
3
2
1
0
09:48:53
10:48:53
11:48:54
12:48:55
13:48:57
14:48:59
15:49:01
16:49:02
17:49:04
18:49:07
19:49:10


Test Stand Scale (kg)
03.01.2019
6
5
4
3
2
1
0
10:01:06
11:01:09
12:01:11
13:01:12
14:01:13
15:01:13
16:01:16
17:01:17
18:01:18
19:01:17
20:01:18

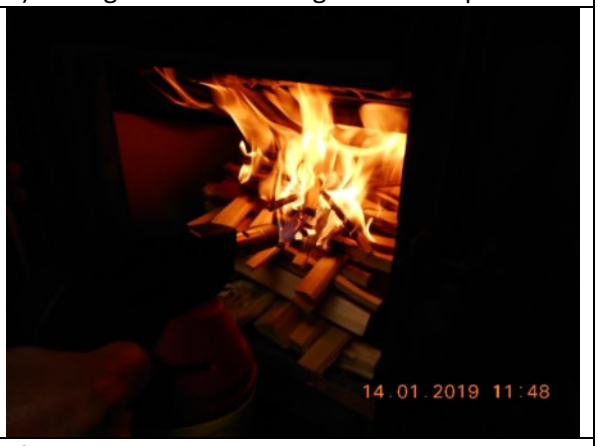
1) Course of preparation of HF fuel load

2) Configuration of HF fuel load

3) Measurement of fuel moisture

4) Arrangement of kindling and start-up fuel

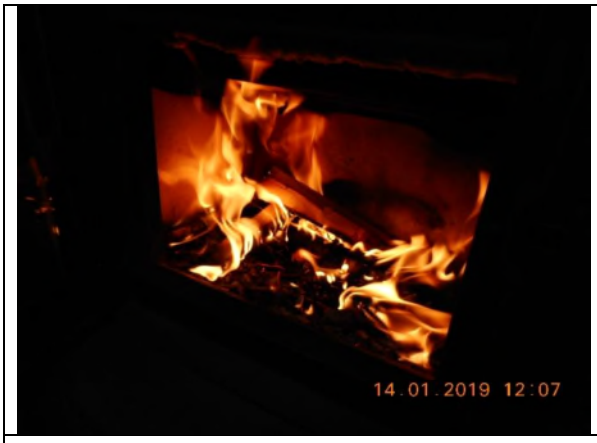
5) Check mass of kindling and start-up fuel



6) Ignition

7) The door apprx 10 cm ajar

8) Measurement of air velocity at the test rig



9) Firebed prior to loading of the HF batch

10) HF fuel batch in place in the firebox

11) Check of HF fuel mass (after tare operation)

12) HF fuel batch on fire

13) Repeated air velocity measurement

14) Preparation of MF batch of fuel

15) Arrangement of MF batch of fuel

16) Firebed at the end of the HF test

	
17) MF batch in place in firebox	18) Repeated air velocity measurement
	
19) Sampling lines flow measurement	20) Filer holders (Main, 2xSplit and Room)

1) HF batch of fuel ready for use

2) Arrangement of HF batch

3) Measurement of fuel moisture

4) Start-up fuel and kindling pieces ready

5) Arrangement of kindling and startup-fuel

6) Check of mass of kindling and start-up fuel

7) Ignition

8) The door apprx 10 cm ajar

9) Control of air valve lever action

10) Measurement of air velocity at the test rig

11) Measurement of fuel moisture

12) Arrangement of the LF batch of fuel

13) Firebed at the end of the HF test

14) LF batch of fuel in place in firebox

15) Repeated air velocity measurement

16) LF batch of fuel on fire

17) Char burn-out after the test is over

18) Detail of cleaned firebox

19) Detail of cascaded air supply in the baffle pl

20) Sealed stove ready for storing

Adjunct to ASTM E3053 Wood Heater Cordwood Test Method - May 10, 2017 Version

Cordwood Fuel Load Calculators - 10 lb/ft^3 Nominal Load Density

Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight

Values to be input manually

For All Usable Firebox Volumes - High Fire Test Only						
Nominal Required Load Density (wet basis)	160,185	kg/m³				
Usable Firebox Volume	0,0235	m³				
Total Nom. Load Wt. Target	3,764	kg				
Total Load Wt. Allowable Range	3,600	to	4,000	kg		
Core Target Wt. Allowable Range	1,700	to	2,400	kg		
Remainder Load Wt. Allowable Range	1,300	to	2,100	kg		
Core Load Pc. Wt. Allowable Range	0,600	to	0,900	kg		
Remainder Load Pc. Wt. Allowable Range	0,400	to	2,100	kg		
	Pc. #					
Core Load Piece Wt. Actual	1	0,749	kg	In Range		
	2	0,747	kg	In Range		
	3	0,754	kg	In Range		
Core Load Total. Wt. Actual		2,25	kg	In Range		
	Pc. #					
Remainder Load Piece Wt.	1	0,898	kg	In Range		
(1 to 3 Pcs.)	2	0,452	kg	In Range		
	3	0,000	kg	Out of Range		
Remainder Load Tot. Wt. Act		1,350		In Range		
Total Load Wt. Actual		3,600	kg	In Range		
Core % of Total Wt.		63%		In Range		
Remainder % of Total Wt.		38%		In Range		
Actual Load % of Nominal Target		96%		In Range		
Actual Fuel Load Density		153,2	kg/m³			
Kindling and Start-up Fuel						0
Maximim Kindling Wt. (20% of Tot. Load Wt.)		0,720	kg			
Actual Kindling Wt.		0,700	kg	In Range		
Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.)		1,080	kg			
Actual Start-up Fuel Wt.		1,048	kg	In Range		
Allowable Residual Start-up Fuel Wt. Range	0,360	to	0,720	kg		
Actual Residual Start-up Fuel Wt.		0,540	kg	In Range		
Total Wt. All Fuel Added (wet basis)		5,35	kg			
High Fire Test Run End Point Range	Low		High			
Based on Fuel Load Wt. (w/tares)	0,324	to	0,396	kg		
Actual Fuel Load Ending Wt.		0,377	kg	In Range		

Metric units 2

Mid-Point
0,750
1,250

45-65%
35-55%
95-105%

19,4%

29,1%

Mid-Point
0,540

Mid-Point
0,360

	Fuel Piece Moisture Reading (%-dry basis)						
	1	2	3	Ave.			Pc. Wt. Dry
2	18,7	19,2	19,5	19,1	In Range	1,386	lb
3	19,2	20,1	20,2	19,8	In Range	1,374	lb
4	18,7	19,6	19,8	19,4	In Range	1,393	lb
1	23,4	19,2	21,7	21,4	In Range	1,630	lb
5	20,1	19,8	20,6	20,2	In Range	0,829	lb
				NA	NA	NA	lb
	Total Load Ave. MC (%-dry basis)			20,0	In Range		
	Total Load Ave. MC % (wet basis)			16,7			
	Total Test Load Weight (dry basis) →					6,612	lb
	Kindling Moisture (%-dry basis)						
	10	10	10	10,0	In Range	0,636	lb
	Start-up Fuel Moisture Readings (%-dry basis)						
	20	21	23	21,3	In Range	0,864	lb
	Total Wt. All Fuel Added (dry basis) →					8,113	lb
	Total Wt. All Fuel Burned (dry basis) →					7,196	lb

y Basis	
0,629	kg
0,623	kg
0,632	kg
0,740	kg
0,376	kg
NA	kg
2,999	kg
0,289	kg
0,392	kg
3,68	kg
3,264	kg

Adjunct to ASTM E3053 Wood Heater Cordwood Test Method - May 10, 2017 Version

Cordwood Fuel Load Calculators - 12 lb/ft^3 Nominal Load Density

Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight

Values to be input manually

For Usable Firebox Volumes up to 3.0 ft^3 - Low and Medium Fire
Nominal Required Load Density (wet basis)
Usable Firebox Volume
Total Nom. Load Wt. Target
Total Load Wt. Allowable Range
Core Target Wt. Allowable Range
Remainder Load Wt. Allowable Range
Core Load Fuel Pc. Wt. Allowable Range
Remainder Load Pc. Wt. Allowable Range
Core Load Piece Wt. Actual
Core Load Total. Wt. Actual
Remainder Load Piece Wt.
(2 or 3 Pcs.)
Remainder Load Piece Weight Ratio - Small/Large
Remainder Load Tot. Wt. Act
Total Load Wt. Actual
Core % of Total Wt.
Remainder % of Total Wt.
Actual Load % of Nominal Target
Actual Fuel Load Density
Allowable Charcoal Bed Wt. Range (kg)
Actual Charcoal Bed Wt.
Actual Fuel Load Ending Wt.
Total Wt. of Fuel Burned During Test Run lb.

Metric units

192,222	kg/m³						
0,0235	m³						
4,517	kg						
4,291	to	4,743	kg				
2,033	to	2,936	kg				
1,581	to	2,484	kg				
				Mid-Point			
0,678	to	1,129	kg	0,903			
0,452	to	1,355	kg	0,903			
Pc. #						Fuel Piece Moisture Readin	
						1	2
1	0,900	kg	In Range		2	22,6	18,8
2	0,900	kg	In Range		4	19,2	21,6
3	0,900	kg	In Range		5	18,8	19,2
	2,70	kg	In Range				
Pc. #							
1	1,000	kg	In Range		3	20,6	19,5
2	0,600	kg	In Range		1	19.8	21,3
3		kg	NA				
	60%		In Range	≤ 67%		Total Load Ave. MC % (dry	
	1,600	kg	In Range			Total Load Ave. MC % (wet	
	4,300	kg	In Range			Total Test Load Weight (dry	
	63%		In Range	45-65%		Total Fuel Weight Burned D	
	37%		In Range	35-55%			
	95%		In Range	95-105%			
	182,979	kg/m³					
0,480	to	0,810		Mid-Point			
	0,540	kg	In Range	0,645			
	0,000	kg	Valid Test	≥ 90%			
	4,300	kg					

ıg (%-dry basis)						
3	Ave.		Pc. Wt. Dry Basis			
20,3	20,6	In Range	1,646	lb	0,746	kg
18,8	19,9	In Range	1,655	lb	0,751	kg
19,4	19,1	In Range	1,665	lb	0,755	kg
18,8	19,6	In Range	1,843	lb	0,836	kg
20,4	20,9	In Range	1,095	lb	0,496	kg
	NA	NA	NA	lb	NA	kg
basis)	19,9	In Range				
basis)	16,6					
y basis)			7,904	lb	3,585	kg
During Test Run (dry basis)			7,904	lb	3,585	kg

Adjunct to ASTM E3053 Wood Heater Cordwood Test Method - May 10, 2017 Version

Cordwood Fuel Load Calculators - 10 lb/ft^3 Nominal Load Density

Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight

Values to be input manually

For All Usable Firebox Volumes - High Fire Test Only						
Nominal Required Load Density (wet basis)	160,185	kg/m³				
Usable Firebox Volume	0,0235	m³				
Total Nom. Load Wt. Target	3,764	kg				
Total Load Wt. Allowable Range	3,600	to	4,000	kg		
Core Target Wt. Allowable Range	1,700	to	2,400	kg		
Remainder Load Wt. Allowable Range	1,300	to	2,100	kg		
Core Load Pc. Wt. Allowable Range	0,600	to	0,900	kg		
Remainder Load Pc. Wt. Allowable Range	0,400	to	2,100	kg		
	Pc. #					
Core Load Piece Wt. Actual	1	0,799	kg	In Range		
	2	0,801	kg	In Range		
	3	0,800	kg	In Range		
Core Load Total. Wt. Actual		2,40	kg	In Range		
	Pc. #					
Remainder Load Piece Wt.	1	0,909	kg	In Range		
(1 to 3 Pcs.)	2	0,500	kg	In Range		
	3	0,000	kg	Out of Range		
Remainder Load Tot. Wt. Act		1,409		In Range		
Total Load Wt. Actual		3,809	kg	In Range		
Core % of Total Wt.		63%		In Range		
Remainder % of Total Wt.		37%		In Range		
Actual Load % of Nominal Target		101%		In Range		
Actual Fuel Load Density		162,1	kg/m³			
Kindling and Start-up Fuel						0
Maximim Kindling Wt. (20% of Tot. Load Wt.)		0,762	kg			
Actual Kindling Wt.		0,751	kg	In Range		
Maximum Start-up Fuel Wt. (30% of Tot. Load Wt.)		1,143	kg			
Actual Start-up Fuel Wt.		1,127	kg	In Range		
Allowable Residual Start-up Fuel Wt. Range	0,381	to	0,762	kg		
Actual Residual Start-up Fuel Wt.		0,400	kg	In Range		
Total Wt. All Fuel Added (wet basis)		5,69	kg			
High Fire Test Run End Point Range	Low		High			
Based on Fuel Load Wt. (w/tares)	0,343	to	0,419	kg		
Actual Fuel Load Ending Wt.		0,413	kg	In Range		

Metric units 2

Mid-Point
0,750
1,250

45-65%
35-55%
95-105%

19,7%

29,6%

Mid-Point
0,571

Mid-Point
0,381

Fuel Piece Moisture Reading (%-dry basis)

	1	2	3	Ave.		Pc. Wt. Dry
1	18,2	19,4	20,8	19,5	In Range	1,474 lb
2	21,4	24	18,6	21,3	In Range	1,455 lb
3	26,4	25,6	23,2	25,1	In Range	1,410 lb
4	18,8	18,2	19,5	18,8	In Range	1,686 lb
5	21,6	26,2	24,8	24,2	In Range	0,888 lb
				NA	NA	NA lb

Total Load Ave. MC (%-dry basis) 21,5 In Range
Total Load Ave. MC % (wet basis) 17,7
Total Test Load Weight (dry basis) → 6,914 lb

Kindling Moisture (%-dry basis)

10	10	10	10,0	In Range	0,683 lb

Start-up Fuel Moisture Readings (%-dry basis)

20	21	23	21,3	In Range	0,929 lb

Total Wt. All Fuel Added (dry basis) → 8,526 lb
Total Wt. All Fuel Burned (dry basis) → 7,713 lb

y Basis	
0,669	kg
0,660	kg
0,640	kg
0,765	kg
0,403	kg
NA	kg
3,136	kg
0,310	kg
0,421	kg
3,87	kg
3,498	kg

Adjunct to ASTM E3053 Wood Heater Cordwood Test Method - May 10, 2017 Version

Cordwood Fuel Load Calculators - 12 lb/ft^3 Nominal Load Density

Core 45-65% of Total Load Weight, Remainder 35-55% of Total Load Weight

Values to be input manually

For Usable Firebox Volumes up to 3.0 ft^3 - Low and Medium Fire
Nominal Required Load Density (wet basis)
Usable Firebox Volume
Total Nom. Load Wt. Target
Total Load Wt. Allowable Range
Core Target Wt. Allowable Range
Remainder Load Wt. Allowable Range
Core Load Fuel Pc. Wt. Allowable Range
Remainder Load Pc. Wt. Allowable Range
Core Load Piece Wt. Actual
Core Load Total. Wt. Actual
Remainder Load Piece Wt.
(2 or 3 Pcs.)
Remainder Load Piece Weight Ratio - Small/Large
Remainder Load Tot. Wt. Act
Total Load Wt. Actual
Core % of Total Wt.
Remainder % of Total Wt.
Actual Load % of Nominal Target
Actual Fuel Load Density
Allowable Charcoal Bed Wt. Range (kg)
Actual Charcoal Bed Wt.
Actual Fuel Load Ending Wt.
Total Wt. of Fuel Burned During Test Run lb.

Metric units

192,222	kg/m³						
0,0235	m³						
4,517	kg						
4,291	to	4,743	kg				
2,033	to	2,936	kg				
1,581	to	2,484	kg				
				Mid-Point			
0,678	to	1,129	kg	0,903			
0,452	to	1,355	kg	0,903			
Pc. #						Fuel Piece Moisture Readin	
						1	2
1	0,998	kg	In Range		1	24,9	21,7
2	0,892	kg	In Range		2	23,4	23,4
3	1,033	kg	In Range		3	18,8	19,6
	2,92	kg	In Range				
Pc. #							
1	1,019	kg	In Range		4	22	19,4
2	0,576	kg	In Range		5	18,4	19,8
3		kg	NA				
	57%		In Range	≤ 67%		Total Load Ave. MC % (dry	
	1,595	kg	In Range			Total Load Ave. MC % (wet	
	4,518	kg	In Range			Total Test Load Weight (dry	
	65%		In Range	45-65%		Total Fuel Weight Burned D	
	35%		In Range	35-55%			
	100%		In Range	95-105%			
	192,255	kg/m³					
0,502	to	0,854		Mid-Point			
	0,560	kg	In Range	0,678			
	0,000	kg	Valid Test	≥ 90%			
	4,518	kg					

ıg (%-dry basis)						
3	Ave.		Pc. Wt. Dry Basis			
22,6	23,1	In Range	1,788	lb	0,811	kg
19,8	22,2	In Range	1,609	lb	0,730	kg
19,5	19,3	In Range	1,909	lb	0,866	kg
20,2	20,5	In Range	1,864	lb	0,845	kg
20	19,4	In Range	1,064	lb	0,482	kg
	NA	NA	NA	lb	NA	kg
basis)	20,9	In Range				
basis)	17,3					
y basis)			8,233	lb	3,735	kg
During Test Run (dry basis)			8,233	lb	3,735	kg

Manufacturers instruction for testing procedure

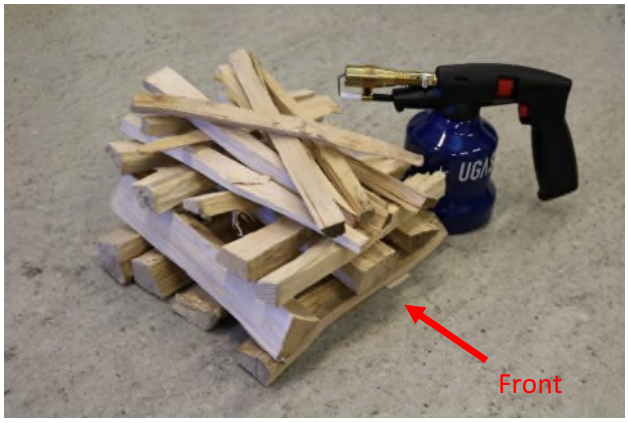
according to ASTM E3053-17

Morsø 7110 B High Fire Procedure

Test Fuel:
Recommended test fuel species is birch.
The guidelines of the Cordwood standard E3053-17 are followed in regards of moisture content and weight ratios for kindling, startup, core and sub loads.
The nominal length for High Burn core and sub load is 10'' (25 cm.)
When cutting the core and sub load wood into right weight then try to cut all the outer bark of.
The usable firebox volume is 0.812 ft^3 (0,023m^3)

Kindling and Startup:
Load configuration

Kindling left and startup load right
Kindling is 15-20 pieces. Weight of each pieces varies from 20-100 grams.
Startup load consist of 7-8 pieces. Weight of each pieces varies from 100-150 grams



Startup load at the bottom, distributed in two layers. Each layer is perpendicular to each other. The biggest startup pieces should be places in the back and bottom of the load.
On top of the startup load the kindling is distributed in four layers.
The upper kindling pieces is pointed towards the front, with smaller distance between each piece than in the back.
Front of load is parallel with stove front.

Load ignition

Set the air controller at maximum setting and fully open the stove door.

Use a “top-down” approach when igniting the fire.
Ignition point is in the front of the load and in between third and fourth layer of kindling from the top.

Ignite the load with a handheld propane torch. Only ignite the top three layers of kindling. Use the torch approximately 45-60 seconds.

Next, keep the stove door ajar for 3 to 5 minutes. The space between door and door frame is 0-1.5’’ (0-4 cm). Most important in this step is to view the flames and how it catches on, not to slow not to fast. That’s why minutes and spaces isn’t specified more precisely.

When the fire is steady within the time frame close the door. Keep air controller fully open.

High Fire loading and ignition:

The charcoal bed for the High Fire should be at the middle to the lower end of the allowable range. But keep an eye on the charcoal bed, don’t wait to the very end of the range, if the charcoal bed seems to burn out and getting too cold.

High Fire Load sample
Front/left side view

High Fire Load sample
Front view

The High Fire fuel load consist of five pieces. The preferred configuration of the load is a bottom layer of three pieces and second layer on top with two pieces. The load should be stacked compact without much air between each piece. The load should be orientated so that the log lengthwise is parallel with the stove door. It is important that the fuel load height is kept below the path of the secondary air outlet stream (baffle tubes)
Start the High Fire by fully open the stove door. Keep the air controller setting at maximum. Even out the smaller charcoal pieces. The bigger charcoal pieces at the back of the firebox should still be unbroken. Turn these charcoals around. This will revive the charcoal and they maybe even catch flames again. Relocate the bigger charcoal pieces to the back and left side of the firebox. Next load the fuel, keep a distance between

fuel load and the back wall of the firebox of approximately 1'' (2.5 cm). Keep bigger charcoal pieces close to the back and left side of the High Fire load.

After placement of the fuel load keep the door ajar. The space between door and door frame is 0-3'' (0-7.5 cm). Most important in this step is to view the flames and how it catches on. The air inlet flow should be at a speed which create an upward "swirl" clockwise around the compact fuel load. This will cause an ignition of the load primarily on the back and on the top. Try to maintain this "swirl" effect until the ignition of the load is stable. This step will approximately take 4-6 minutes from start. When the fire is stable the secondary nozzle air outlet from the baffle tubes will feed the fire and promote a "top-down" burn.

When the fire is steady within the time frame close the door. Keep air controller fully open.

The High Fire should be stopped at the upper end of the allowable weight range.

Manufacturers instruction for testing procedure

according to ASTM E3053-17

Morsø 7110 B Medium and Low Fire Procedure

Test Fuel:

Recommended test fuel species is birch.
The guidelines of the Cordwood standard E3053-17 are followed in regards of moisture content and weight ratios for kindling, startup, core and sub loads.
The nominal length for High Burn core and sub load is 10'' (25 cm.)
When cutting the core and sub load wood into right weight then try to cut all the outer bark of.
The usable firebox volume is 0.812 ft^3 (0,023m^3)

Low and Medium Fire loading and ignition:

The Low and Medium Fire test procedure is much like the High Fire test procedure.

When the Charcoal bed is in the allowable weight range it will be much more voluminous and hotter with bigger charcoal pieces than the coalbed seen from the kindling/startup. So, it is important to arrange and even out the coalbed in such a way that the fuel load do not build up in height. The fuel load height must be kept below the path of the secondary air outlet stream (baffle tubes).

The Low/Medium Fire fuel load consist of five pieces. The preferred configuration of the load is a bottom layer of three pieces and second layer on top with two pieces. The load should be stacked compact without much air between each piece. The load should be orientated so that the log lengthwise is parallel with the stove door.
Start the Low/Medium Fire by fully open the stove door. Keep the air controller setting at maximum. Even out the smaller charcoal pieces. There will be five bigger charcoal pieces from the previous High Fire which still will be unbroken. Turn these charcoals around. This will revive the charcoal and they maybe even catch flames again. Relocate these charcoal pieces to the back and left side of the firebox. Next load the fuel,

keep a distance between fuel load and the back wall of the firebox of approximately 1'' (2.5 cm). Keep bigger charcoal pieces close to the back and left side of the Low/Medium Fire load.

After placement of the fuel load keep the door ajar. The space between door and door frame should be 0-3'' (0-7.5 cm). Most important in this step is to view the flames and how it catches on. The air inlet flow should be at a speed which create an upward "swirl" clockwise around the compact fuel load. This will cause an ignition of the load primarily on the back and on the top. Try to maintain this "swirl" effect until the ignition of the load is stable. This step will approximately take 3-4 minutes from start. When the fire is stable the secondary nozzle air outlet from the baffle tubes will feed the fire and promote a "top-down" burn.

When the fire is steady within the time frame close the door, at latest half a minute before the allowable timeframe closes. Use the remaining time to adjust the primary air controller. The Low Fire air controller setting is 10 mm from closed position. The Medium Fire air controller setting is 15 mm from closed position.

The Low/Medium Fire ends when 100 % of the load is burnt.

Low/Medium Fire Load sample
Front/left side view

High Fire Load sample
Front view

WOOD HEATER DESCRIPTION

Appliance Manufacturer: Morsø Jernstøberi A/S

Wood Stove Model: 7110 B

Type: Freestanding, radiant-type wood fired room heater.

WOOD HEATER INFORMATION

Materials of Construction: The unit is constructed primarily of cast iron with stainless steel secondary air tubes. The firebox is lined with three vermiculite firebricks (right and left side and back). The feed door has a 327 mm by 255 mm glass panel and 8 mm diameter fiberglass gasket.

Air Introduction System: Air enters the firebox through an opening located at the bottom/back of the appliance.
Through the air controller holes the primary combustion air is channeled down through the manifold that is located behind the door at the top of the door frame.
Secondary air enters the appliance through the bottom/back and is channeled internally to both sides of the firebox supplying three 1'' diameter tubes.

Combustion Control Mechanisms: The combustion air inlet is controlled by a handle located below the fuel loading door. Combustion air control mechanism is a sliding rod with flat plates attached that cover and uncover air inlets when the rod is pushed left or right. Only the primary combustion air is adjustable, the secondary combustion air is fixed.

Combustor: N/A

Internal Baffles: A cast iron baffle with ceramic wool on the top side is mounted in the upper portion of the firebox. The flame path is forced to the front of the firebox where it travels up through the opening between the baffle and primary air manifold. Above the ceramic wool blanket there is a second baffle made of vermiculite

Other Features: None

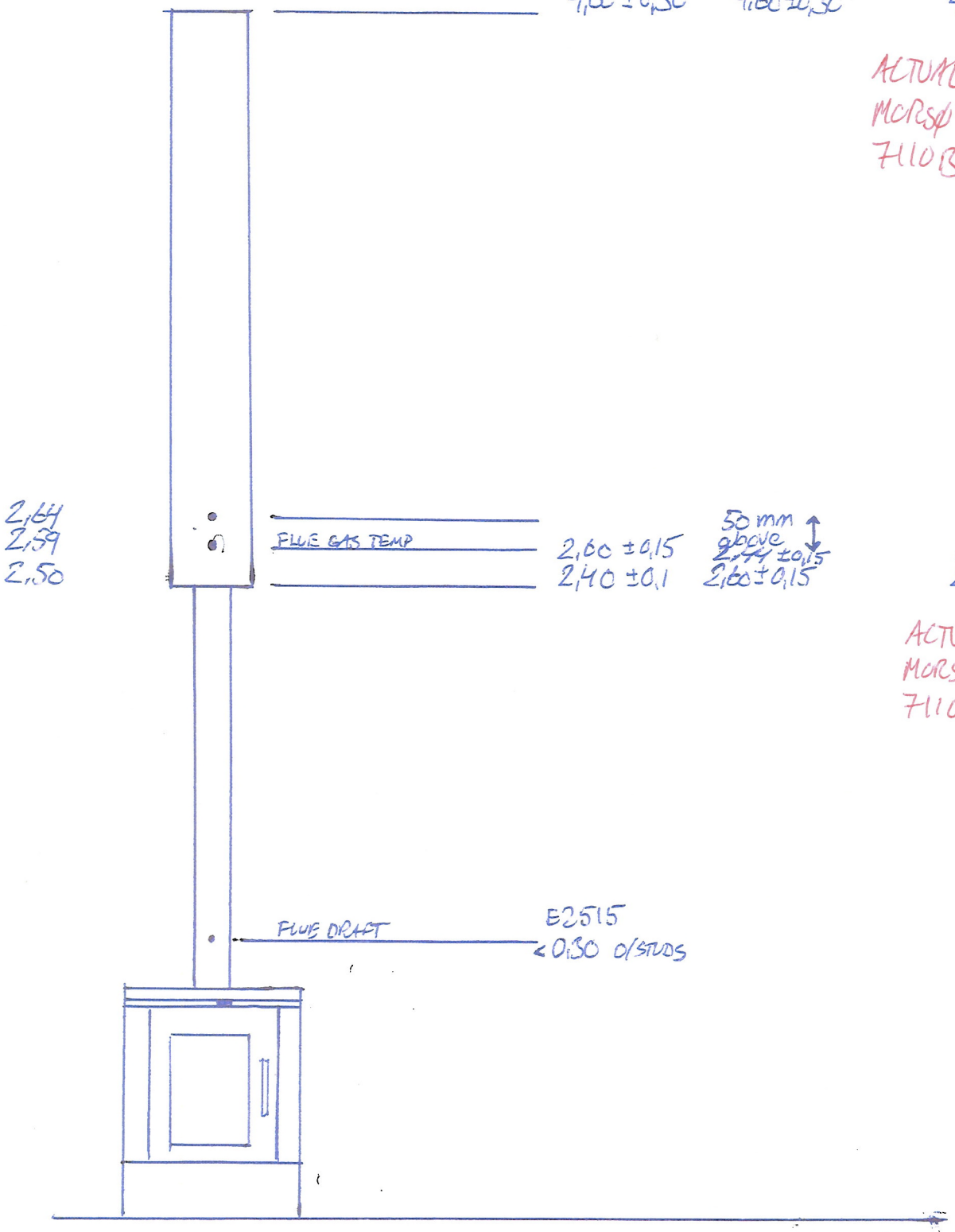
Flue Outlet: The 6" diameter flue outlet is located at the rear of the top of the appliance.

APPENDIX 11

EPA SKORSTEN

25/10 18 JFA

E2780-10 CRIB WOOD	CSA B415-1	E3053 CORDWOOD
4,60 ±0,30	4,60 ±0,30	4,60 ±0,30
ACTUAL MORSØ 7110B: 4,58		
2,64 2,59 2,50	50 mm above ~~2,44~~ ±0,15	2,44 ± 0,15 2,60 ± 0,10
FLUE GAS TEMP: 2,60 ±0,15 2,40 ±0,1	2,60 ±0,15	
ACTUAL MORSØ 7110B: 2,63		
FLUE DRAFT: E2515 <0,30 o/STUDS		



Internt kalibreringscertifikat vedr. kalibrering af vægte i DTI's laboratorier

Obligatorisk for vægte, som anvendes til vejninger, der er omfattet af DTI's DANAK akkrediteringer, bortset fra akkreditering nr. 200. Certifikatet må i uddrag kun gengives, såfremt DTI's kvalitetschef har godkendt uddraget.

Afdeling: DTI/ Energi	Laboratorium: ELAB
Afdelingsnummer: 270	Certifikatnummer: ELAB-36-2018

Dato for kalibrering/klassificering af lodder:	Dato for modtagelse af lodder:	Dato for kalibreringens udførelse:	Certifikatdato:	Vedr. akkr. Nr.:	Sidenummer:
12.11.2014/F1 09.04.2014 /M2 + ukendte 15x20kg fra murværk, 300kg i alt	03.09.2018	04.09.2018	04.09.2018	300	Side 1 af 1

Identifikation den kalibrerede vægt:	Ansvarlig:	Antal bilag:
270-A-1638, KC 600, 600kg, Stand C		

Vægtens max-kapacitet:	Vægtens deling i 1. range:	Vægtens deling i 2. range:	Vægtens kalibreringsværdi i 1. range:	Vægtens kalibreringsværdi i 2. range:	Vægtens serienummer:
600kg	d =1g		e =		

Kontrol af nivellering, nulpunkt og taraindretning

Temperatur: 24

Ved kalibreringens start:

Viser vægten nul i ubelastet tilstand? x ja

Er taraindretningen frakoblet? x ja

Står vægten stabilt og vandret? x ja

Vejeprøve

Overholdt xJa Nej

Belastningspunkt B	Visning, opvejning; I	Visning, nedvejning; I	Evt. tillægslast; opvejning/nedvejning	Fejlvisning, opvejning; F	Fejlvisning, nedvejning; F
0,0kg	0,000kg	0,000		-	-
1,0kg	1,000	1,000		-	-
6,0kg	6,000	6,000		-	-
16,0kg	16,000	16,000		-	-
100,0kg	99,986	99,986	+99,986	-	-
106,0kg	105,986	105,985		-	-0,001
116,0kg	115,983	115,984		-0,003	-0,002
200,0kg	199,939	199,940	+199,939	-	+0,001
206,0kg	205,939	205,939		-	-0,001
300,0kg	299,917	299,917	+299,917	-	-
306,0kg	305,916	305,916		-0,001	-0,001

Undersøgelse af repeterbarhed

Overholdt X Ja Nej

Ca. 10 % af Max	1. vejning	2.vejning	3.vejning	4.vejning	5.vejning
40,0kg	39,999	39,998	39,999	39,999	39,999
Ca. 80 % af Max	1. vejning	2.vejning	3.vejning	4.vejning	5.vejning
80,0kg	79,993	79,992	79,991	79,992	79,992

Prøvning af excentricitet

Overholdt xJa Nej

Ca. 33 % af Max	1. vejning (HB)	2.vejning (VB)	3.vejning (VT)	4.vejning (HT)	DIFF
80,0kg	79,990	79,977	79,977	79,991	**0,014kg**

Metodegrundlag:	Sporbarhed på anvendte lodder (oplys certifikatnummer og dato):	Kalibreringen er udført af:	Godkendt af:
Institutprocedure nr. 900-6.0-1	200-P-22776 (F1) og 200-P-22557 (M2)	REHV	

Grøn

Kalibrering af løse termofølere i EPA stand E

Måleskema til kontrol af temofølere i stand E (EPA)

Dato: 06-09-2018 Udført af: REHV

Brændeovnsprøvestand: D Emne Id nr.: 145092

Certifikat nr.: ELAB-36-2018

#nye korr.

Kalibrator ref.: 270-A-0912 (Jofra)

					(Brugt ved Kalibrering) Aktuel Korrektion		(Ny valgt korr.) Ny Korrektion		Ber.	Ber.	Ber.		
PC indgang	Sand temp.		Vist temp.	Fejl	Konst.	1. gard	Konst.	1. grad	Uden korr.	Ny korr.	Ny fejl.	Krav	
Rum temp.	-1	30	29,9	-0,1	0	1	0,1	1	29,9	30,0	0,0	1	
Filter-1-H	-2	30	29,9	-0,1	0	1	0,1	1	29,9	30,0	0,0	1	
Filter-2-D1	-3	30	29,9	-0,1	0	1	0,1	1	29,9	30,0	0,0	1	
Filter-3-D2	-4	30	29,8	-0,2	0	1	0,2	1	29,8	30,0	0,0	1	
Filter-4-R	-5	30	29,8	-0,2	0	1	0,2	1	29,8	30,0	0,0	1	
Køler-1-H	-6	30	29,8	-0,2	0	1	0,2	1	29,8	30,0	0,0	1	
Køler-2-D	-7	30	29,6	-0,4	0	1	0,4	1	29,6	30,0	0,0	1	
Gasm-H	-8	30	29,6	-0,4	0	1	0,4	1	29,6	30,0	0,0	1	12.09.2018 Kalibrering, Se særskilt kal. Dokument
Gasm-D	-9	30	29,6	-0,4	0	1	0,4	1	29,6	30,0	0,0	1	12.09.2018 Kalibrering, Se særskilt kal. Dokument
Gasm-R	-10	30	29,8	-0,2	0	1	0,2	1	29,8	30,0	0,0	1	
Gas-Disp	-11	30	29,7	-0,3	0	1	0,3	1	29,7	30,0	0,0	1	
Løs føler tilknyttet		30	29,9	-0,1	0	1	0,1	1	29,9	30,0	0,0	2	

Kalibrering af løse termofølere i brændeovnsprøvestand B, C og D

Måleskema til kontrol af temofølere i stand B, C og D

Dato: 04-09-2018 Udført af: REHV

Brændeovnsprøvestand: C Emne Id nr.: 134396

Certifikat nr.: ELAB-36-2018

Kalibrator ref.: 270-A-0912 (Jofra) #Ny indtastet 2018

				(Brugt ved Kalibrering) Aktuel Korrektion		(Ny valgt korr.) Ny Korrektion		Ber.	Ber.	Ber.	
PC indgang	Sand temp.	Vist temp.	Fejl	Konst.	1. gard	Konst.	1. grad	Uden korr.	Ny korr.	Ny fejl.	Krav
Rum temp.	30	30	0					#DIVISION/0!	#DIVISION/0!	######	1,5
Br.rum	85	85,1	0,1	1	1	0,9	1	84,1	85,0	0,0	2
Konv.	85	84,5	-0,5	-0,5	1			85,0	0,0	-85,0	3
Gasmåler	85	85,3	0,3	0,3	1			85,0	0,0	-85,0	2
Disp-T1	85	84,9	-0,1	0,1	1			84,8	0,0	-85,0	2
Disp-T2	85	85,2	0,2	0,2	1			85,0	0,0	-85,0	2
Disp-T3	85	85	0					#DIVISION/0!	#DIVISION/0!	######	2
Disp-T4	85	85,5	0,5	0,5	1			85,0	0,0	-85,0	2
Disp-T5	85	85,5	0,5	0,5	1			85,0	0,0	-85,0	2
Disp-K6	85	85,7	0,7	0,7	1			85,0	0,0	-85,0	2
Disp-K7	85	85,1	0,1	0,1	1			85,0	0,0	-85,0	2
Disp-K8	85	85,7	0,7	0,7	1			85,0	0,0	-85,0	2
Disp T Bag (disponibel-T)	85	85,1	0,1	0,1	1			85,0	0,0	-85,0	2
Disp T side	85	-	#VÆRDI!					#VÆRDI!	#VÆRDI!	#VÆRDI!	2
Dsip 1K	85	-	#VÆRDI!					#VÆRDI!	#VÆRDI!	#VÆRDI!	2
Disp 2K	85	-	#VÆRDI!					#VÆRDI!	#VÆRDI!	#VÆRDI!	2
Røg EN	85	85,8	0,8	1,5	1			84,3	0,0	-85,0	5
Røg EN	250	251,5	1,5	1,5	1	0	0	250,0	0,0	-250,0	5
Røg EN	350	351,4	1,4	1,5	1	0	0	349,9	0,0	-350,0	5
NS røg	85	85,1	0,1	-1	1	-1,9	1	86,1	84,2	-0,8	2
NS røg	250	250,9	0,9	-1	1	-1,9	1	251,9	250,0	0,0	2
NS røg	350	351	1	-1	1	-1,9	1	352,0	350,1	0,1	2
Før Kat.	85	85,5	0,5	3,2	1	1,5	1	82,3	83,8	-1,2	3
Før Kat.	250	253,2	3,2	3,2	1	1,5	1	250,0	251,5	1,5	3
Før Kat.	350	353	3	3,2	1	1,5	1	349,8	351,3	1,3	3
Ovf. Top	85	86,0	1	0,3	1	-1	1	85,7	84,7	-0,3	1
Ovf. Top	250	251,3	1,3	0,3	1	-1	1	251,0	250,0	0,0	1
Ovf. Top	350	351,1	1,1	0,3	1	-1	1	350,8	349,8	-0,2	1
Ovf. Bag	85	84,8	-0,2	-1,1	1	-1,6	1	85,9	84,3	-0,7	1
Ovf. Bag	250	250,5	0,5	-1,1	1	-1,6	1	251,6	250,0	0,0	1
Ovf. Bag	350	350,6	0,6	-1,1	1	-1,6	1	351,7	350,1	0,1	1
Ovf. Side-1	85	84,7	-0,3	-3,4	1	-2	0,99	88,1	85,2	0,2	1
Ovf. Side-1	250	251,9	1,9	-3,4	1	-2	0,99	255,3	250,7	0,7	1
Ovf. Side-1	350	351,7	1,7	-3,4	1	-2	0,99	355,1	349,5	-0,5	1
Ovf. Side-2	85	84,0	-1	0,3	0,9884	0,5	1	84,7	85,2	0,2	1
Ovf. Side-2	250	247,5	-2,5	0,3	0,9884	0,5	1	250,1	250,6	0,6	1
Ovf. Side-2	350	345,2	-4,8	0,3	0,9884	0,5	1	348,9	349,4	-0,6	1
Ovf. Bund	85	84,6	-0,4	-2	0,99	-2	0,99	87,5	84,6	-0,4	1
Ovf. Bund	250	250,7	0,7	-2	0,99	-2	0,99	255,3	250,7	0,7	1
Ovf. Bund	350	349,6	-0,4	-2	0,99	-2	0,99	355,2	349,6	-0,4	1

TEKNOLOGISK
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-E-20663

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Datalogger**

Fabrikat:	Hewlett Packard A/S	Model:	34970A
Serienr.:	**MY44006319**	Kundemærke:	**270-A-1992**
Område:	mV, V, mA	Klasse:	-
Inddeling:	0,001 mV / 0,00001 V / 0,0001 V	Type:	-
Udgangssignal:	-	Diameter:	-
Tilbehør:	-		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **03-09-2018**

Procedure: D1-7.1 & D1-7.3

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Dennis Dam Sørensen, 72 20 32 27, dds@teknologisk.dk

Godkendt og digitalt signeret 06-09-2018 af:

Jan Nielsen
Cand. Scient

ilac-MRA DANAK
CAL Reg.nr. 200

TERMOMETRILABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Voltmeter: Udført på Slot 2, kanal 01(201)

Område	Input	Visning	Korrektion	Usikkerhed
	mV	mV	mV	mV
0-100mV	0,0000	0,0003	-0,0003	0,0015
	100,0000	100,0039	-0,0039	0,0029
	V	V	V	V
0-1V	0,000000	0,000000	0,000000	0,000012
	1,000000	1,000034	-0,000034	0,000016
0-10V	0,000000	0,00000	0,00000	0,00012
	1,000000	1,00002	-0,00002	0,00012
	2,000000	2,00004	-0,00004	0,00012
	5,000000	5,00010	-0,00010	0,00013
	10,000000	10,00019	-0,00019	0,00017

Kalibrering af mA loggere:

Område	Input	Visning	Korrektion	Usikkerhed
0 - 10 V	mA	V	V	V
Kabel 12, kanal 112	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99992	0,00008	0,00021
Kabel 13, kanal 113	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00049	-0,00049	0,00021

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k=2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

Rumtemperatur: 23 ± 1°C

Sporbarhed:

270-A-2541 Calibrator Fluke 5520A/9855009 sporbar til DANAK reg. nr. 22

TERMOMETRILABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Kalibrering af mA loggere:

Område	**Input**	**Visning**	**Korrektion**	**Usikkerhed**
0 - 10 V	mA	V	V	V
Kabel 26, kanal 301	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00014	-0,00014	0,00021
Kabel 27, kanal 302	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00028	-0,00028	0,00021
Kabel 28, kanal 303	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00078	-0,00078	0,00021
Kabel 29, kanal 304	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00059	-0,00059	0,00021
Kabel 30, kanal 305	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99977	0,00023	0,00021
Kabel 31, kanal 306	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99966	0,00034	0,00021
Kabel 32, kanal 307	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99950	0,00050	0,00021
Kabel 33, kanal 308	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99950	0,00050	0,00021

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k=2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

Rumtemperatur: 23 ± 1°C

Sporbarhed:

270-A-2541 Calibrator Fluke 5520A/9855009 sporbar til DANAK reg. nr. 22

TERMOMETRILABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Kalibrering af mA loggere:
- fortsat

Område	Input	Visning	Korrektion	Usikkerhed
	mA	V	V	V
Kabel 34, kanal 309	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99900	0,00100	0,00021
Kabel 35, kanal 310	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99909	0,00091	0,00021
Kabel 36, kanal 311	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00004	-0,00004	0,00021
Kabel 37, kanal 312	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00071	-0,00071	0,00021
Kabel 38, kanal 313	0,0000	0,00000	0,00000	0,00012
	20,0000	1,99951	0,00049	0,00021
Kabel 39, kanal 314	0,0000	0,00000	0,00000	0,00012
	20,0000	2,00038	-0,00038	0,00021

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k=2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

Rumtemperatur: 23 ± 1°C

Sporbarhed:

270-A-2541 Calibrator Fluke 5520A/9855009 sporbar til DANAK reg. nr. 22

TERMOMETRILABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Thermocouple test - elektromotorisk kraft defineret i DS/EN 60584-1:2014

Type K - med ekstern cold junction v. 0 °C
Slot 2, kanal 02(202)

Simuleret TC-temp. °C	Input mV	Visning °C	Korrektion °C	Usikkerhed °C
0,0	0,0000	0,2	-0,200	0,078
100,0	4,0962	100,2	-0,200	0,078
200,0	8,1385	200,2	-0,200	0,078
400,0	16,3971	400,2	-0,200	0,078
600,0	24,9055	600,2	-0,200	0,078

Type T - med ekstern cold junction v. 0 °C
Slot 2, kanal 03 (203)

Simuleret TC-temp. °C	Input mV	Visning °C	Korrektion °C	Usikkerhed °C
0,0	0,0000	0,0	0,000	0,078
50,0	2,0357	49,9	0,100	0,078
100,0	4,2785	99,9	0,100	0,078
150,0	6,7041	149,9	0,100	0,078
200,0	9,2881	199,9	0,100	0,078

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k=2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

Rumtemperatur: 23 ± 1°C

Sporbarhed:

270-A-1908 Termopar TC type K
270-A-1907 Termopar TC type T
270-A-2541 Calibrator Fluke 5520A/9855009 sporbar til DANAK reg. nr. 22

DANISH TECHNOLOGICAL INSTITUTE	**KONTROL AF TRYKMÅLERE**
CP	**Test af kontinuerligt registrerende trykmålere**
Side 1 af 1	**Udstedt af: ELAB**

Logbog/kontrol – Autotran 700/ACI tryktransmittere

Emne nr.: Id nr. 148230 (0-25,4Pa)

Placering: Stand C, Røgtræk

Dato: 06-09-2018

Certifikat nr.: ELAB-36-2018

Signatur: KMSA

Ref. Udstyr: 270-A-2406 TSI

Ca. Målepunkt [Pa] (0-25,4Pa)	Ca. Målepunkt [PA] (0-60Pa)	Reference [Pa] (1 decimal)	Aflæst tryk [Pa] (1 decimal)	Fejl [Pa]
0	0	0,0	0,1	+0,1
4	5	3,8	4,0	+0,2
8	10	8,5	8,5	+0,0
12	15	12,1	12,3	+0,2
16	20	17,0	17,3	+0,3
20	40	20,6	20,7	+0,1
24	55	25,0	25,4	+0,4

Grøn OK

Internt kalibreringscertifikat vedr. kalibrering af flowmeter før røggasanalysatorer		Afdeling: DTI/	Laboratorium:
		Energi	ELAB
		Afdelingsnummer:	Certifikatnummer:
		270	ELAB-36-2018

Placering af Trykmåler	Reference Trykmåler	Dato for kalibreringens udførelse:	Certifikatdato:
Pd Stand C	270-A-2406 TSI	06-09-2018	
Vedr. akkr. Nr.:	Trykmålerens instrumentnummer:		Udført af:
300	148231		KMSA

Flowmåler:

Ref.	Aflæst	Fejl	Korrigeret	Ny Fejl
Pa	Pa	Pa	Pa	Pa
0,0	0,1	0,1	0,1	0,1
5,0	4,9	-0,1	5,0	0,0
10,5	10,3	-0,2	10,6	0,1
15,5	15,2	-0,3	15,7	0,2
20,3	19,8	-0,5	20,4	0,1
41,6	40,6	-1,0	41,8	0,2
56,9	55,0	-1,9	56,7	-0,3

1. grad	1,03
Konstant	0,0

DANISH TECHNOLOGICAL INSTITUTE	**KONTROL AF TRYKMÅLERE**
CP	**Test af kontinuerligt registrerende trykmålere**
Side 1 af 1	**Udstedt af: ELAB**

Logbog/kontrol – Autotran 700/ACI tryktransmittere

Emne nr.: Id nr. 94839 (0-254Pa)

Placering: Stand C, Ps

Dato: 06-09-2018

Certifikat nr.: ELAB-36-2018

Signatur: KMSA

Ref. Udstyr: 270-A-2406 TSI

Ca. målepunkt [Pa] (0-25,4Pa)	Ca. målepunkt [Pa] (0-250 Pa)	Reference [Pa] (1 decimal)	Aflæst tryk [Pa] (1 decimal)	Fejl [Pa]
0	0	0,0	0,0	0,0
4	5	5,2	5,1	-0,1
8	10	10,4	10,3	-0,1
12	20	21,4	21,1	-0,3
16	50	50,5	50,5	0,0
20	100	102,4	102,2	-0,2
24	240	242,9	242,3	-0,6

Grøn

TEKNOLOGISK
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-T-22737

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Termometer, Temperaturkalibrator**

Fabrikat:	Jofra Instruments	Model:	650 SE
Serienr.:	**901326**	Kundemærke:	**270-A-912**
Område:	Maks. 650 °C	Inddeling:	0,1 °C

Periode: Modtaget: 29-08-2018 Kalibreret: **30-08-2018**

Procedure: D1-5.1

Bemærkninger: Aksial inhomogenitet og temperaturinstabilitet for kalibratoren er undersøgt i overensstemmelse med EURAMET cg-13 Version 3.0 (02/2015). Kalibreringen er foretaget med en referenceføler med en diameter på 5,8 mm og et isoleringrør (foret med mineraluld) med en diameter på ca. 25 mm og en højde på ca. 150 mm. Isoleringsrøret er placeret omkring føleren ovenpå blokken.

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Søren Lindholt Andersen, 72 20 17 98, soan@teknologisk.dk

Godkendt og digitalt signeret 27-09-2018 af:

Søren Andersen

Søren Lindholt Andersen
Konsulent, Ph.d.

ilac-MRA DANAK
CAL Reg.nr. 200

TEMPERATURLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Føler mærket: 270-A-912

Reference-værdi °C	Aflæsning °C	Fejl °C	Usikkerhed °C	Note
30,06	30,00	-0,06	0,24	
85,17	85,00	-0,17	0,24	
150,31	150,00	-0,31	0,24	
250,48	250,00	-0,48	0,24	
350,67	350,00	-0,67	0,24	
500,91	500,00	-0,91	0,24	
651,31	650,00	-1,31	0,24	

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

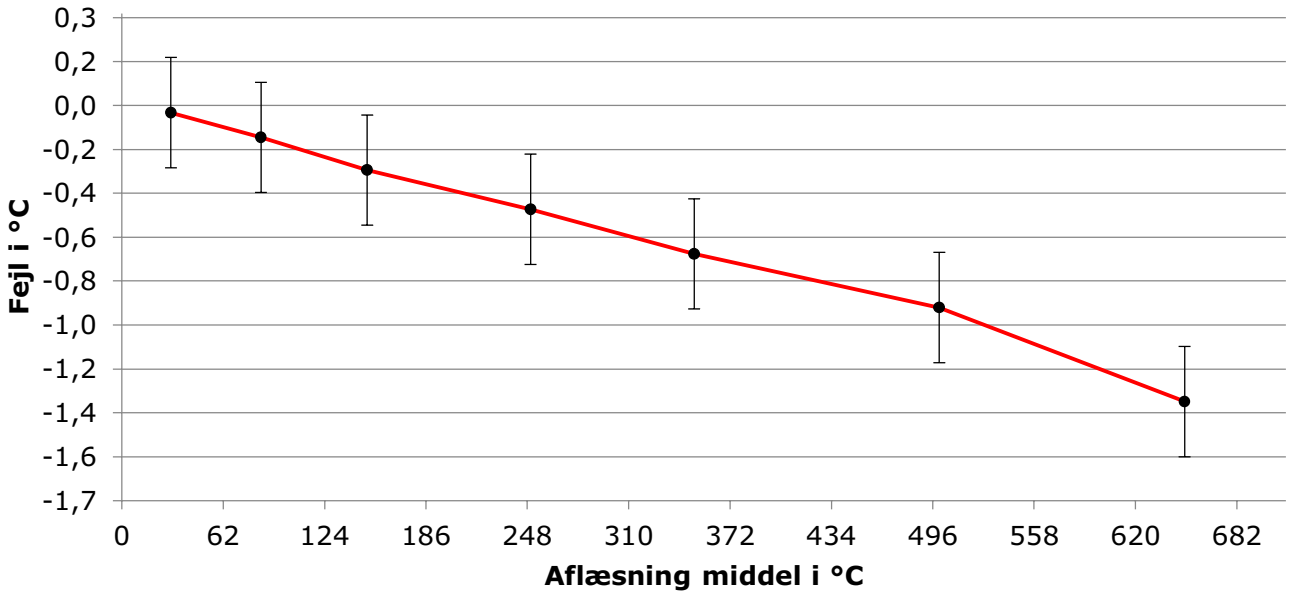
TEMPERATURLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve

Føler mærket: 270-A-912



Kun de markerede punkter er målt.

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren $k = 2$, således at dækningssandsynligheden svarer til ca. 95 %.
Alle temperaturer er i henhold til ITS90

Kalibreringsforhold:

Rumtemperatur:	22,7 °C ± 1,3 °C
Relativ fugtighed:	55,0 %rh ± 4,6 %rh
Barometerstand:	1014,3 mbar ± 2,5 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

Internt kalibreringscertifikat vedr. kalibrering af vægte i DTI's laboratorier

Obligatorisk for vægte, som anvendes til vejninger, der er omfattet af DTI's DANAK akkrediteringer, bortset fra akkreditering nr. 200. Certifikatet må i uddrag kun gengives, såfremt DTI's kvalitetschef har godkendt uddraget.

Afdeling: DTI/ Energi	Laboratorium: ELAB
Afdelingsnummer: 270	Certifikatnummer: ELAB-36-2018

Dato for kalibrering/klassificering af lodder:	Dato for modtagelse af lodder:	Dato for kalibreringens udførelse:	Certifikatdato:	Vedr. akkr. Nr.:	Sidenummer:
12.11.2014/FI og 09.04.2014/M2	03.09.2018	03.09.2018	03.09.2018	300	Side 1 af 1

Identifikation den kalibrerede vægt:	Ansvarlig:	Antal bilag:
270-A-1989		

Vægtens max-kapacitet:	Vægtens deling i 1. range:	Vægtens deling i 2. range:	Vægtens kalibreringsværdi i 1. range:	Vægtens kalibreringsværdi i 2. range:	Vægtens serienummer:
15kg	d = 1g		e =		

Kontrol af nivellering, nulpunkt og taraindretning

Temperatur: 23

Ved kalibreringens start:

Viser vægten nul i ubelastet tilstand? x ja

Er taraindretningen frakoblet? x ja

Står vægten stabilt og vandret? x ja

Vejeprøve

Overholdt xJa Nej

Belastningspunkt B - kg	Visning, opvejning; I	Visning, nedvejning; I	Evt. tillægslast;a opvejning/nedne jnig	Fejlvisning, opvejning; F	Fejlvisning, nedvejning; F
0,000	0,000	0,000		-	-
0,005	0,005	0,005		-	-
0,050	0,050	0,050		-	-
0,200	0,200	0,200		-	-
0,600	0,599	0,599		-0,001g	-0,001g
1,000	0,999	0,999		-0,001g	-0,001g
2,000	1,998	1,998		-0,002g	-0,002g
7,000	6,994	6,993	+5,000738	-0,006g	-0,007g
12,000	11,990	11,990	+10,00164	-0,010g	-0,010g

Undersøgelse af repeterbarhed

Overholdt xJa ☐Nej

Ca. 10 % af Max	1. vejning	2.vejning	3.vejning	4.vejning	5.vejning
1,000kg	0,999	0,999	0,999	0,999	0,999
Ca. 80 % af Max	1. vejning	2.vejning	3.vejning	4.vejning	5.vejning
10,000kg	9,992	9,992	9,992	9,991	9,992

Prøvning af excentricitet

Overholdt xJa ☐Nej

Ca. 33 % af Max	1. vejning	2.vejning	3.vejning	4.vejning	Diff.:
5,000kg	4,995	4,996	4,996	4,996	0,001kg

Metodegrundlag: Institutprocedure nr. 900-6.0-1	Sporbarhed på anvendte lodder (oplys certifikatnummer og dato):	Kalibreringen er udført af:	Godkendt af:
	200-P-22776 (F1) og 200-P-22557 (M2)	REHV	

Grøn

Y:\Labspace\LAB2C_Labspace\Kalibrering Arbejdskopi\2018\EPA-Certifikater\09-Id-5822-270-A-1989-ELAB-36-2018.docx

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR:
200-A-162-890

Rekvirent: **Teknologisk Institut**
Kongsvang Allé 29,
8000 Aarhus
Att.: Max Bjerum

Emne:

Type:	Digital Vægt	Kundemærke:	7084
Fabrikat:	Mettler Toledo	Måleområde:	0-220 g
Model:	XS 204	Serienr.:	B042079566

Modtaget dato: 22-10-2018 Kalibreringsdato: 22-10-2018

Testmetode: Auto D1-10.1

Kalibreringssted: Teknologisk Institut, Kongsvang Allé 29 - 0

Sporbarhed: Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

Bemærkninger: Resultatet af kalibreringen fremgår af de efterfølgende sider

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt dette.

Udført af:

Dato: 22-10-2018

Lars H. Hudecek - Faglig Ansvarlig

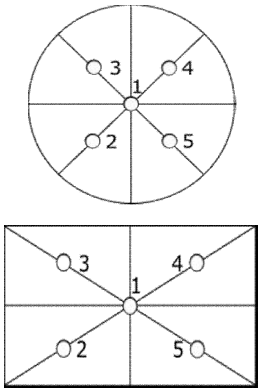
Ivan Sand - Automobilteknik

ilac-MRA DANAK
CAL Reg.nr. 200

Måleresultater:

Ekcentrisk belastning

Position	Deling	1	2	3	4	5
	[g]	[g]	[g]	[g]	[g]	[g]
Visning	0,0001	50,0000	50,0000	50,0002	50,0001	49,9999
Fejl		0,0000	0,0000	0,0002	0,0001	-0,0001
Største Fejl:		0,0002				



Placering af målepunkter

Repeterbarhed

Anvendt masse	Deling	Målt 1	2	3	4	5
[g]	[g]	[g]	[g]	[g]	[g]	[g]
100,0000	0,0001	100,0002	100,0002	100,0002	100,0002	100,0002
200,0000	0,0001	200,0002	200,0002	200,0002	200,0002	200,0003

Linearitet

Reference masse	Deling	Målt I1	I2	Imiddel	Fejl	Udv. måle-usikkerhed	Dæknings faktor
[g]	[g]	[g]	[g]	[g]	[g]	[g]	
0,001000	0,0001	0,0010	0,0010	0,001000	0,000000	0,000064	2,00
0,050000	0,0001	0,0500	0,0500	0,050000	0,000000	0,000079	2,00
0,50000	0,0001	0,5000	0,5000	0,50000	0,00000	0,00012	2,00
5,00000	0,0001	5,0000	5,0000	5,00000	0,00000	0,00022	2,00
20,00000	0,0001	20,0000	20,0000	20,00000	0,00000	0,00036	2,00
49,99999	0,0001	50,0000	50,0000	50,00000	0,00001	0,00053	2,00
99,99999	0,0001	100,0002	100,0002	100,00020	0,00021	0,00095	2,00
150,0000	0,0001	150,0002	150,0002	150,0002	0,0002	0,0015	2,00
220,0000	0,0001	220,0006	220,0006	220,0006	0,0006	0,0022	2,00

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k, som for en t-fordeling, med det relevante antal frihedsgrader, giver en dækningssandsynlighed på ca. 95%

Omgivelser:

Temperatur	**22,4** ± 1 °C
Luftfugtighed	**43** ± 5 %RH
Lufttryk	**1023** ± 5 hPa
Beregnet Luftdensitet	**1,201** ± 0,012 kg/m3

TEKNOLOGISK
INSTITUT

Teknologiparken
Kongsvang Allé 29
Bygning 14
8000 Aarhus C
Tlf. +45 72 20 20 00
info@teknologisk.dk
www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-L-21099

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Lufthastighedsmåler**

Fabrikat:	Disa	Model:	54N50
Serienr.:	**121**	Kundemærke:	**13486**
Område:	0 - 100 cm/s	Inddeling:	0,1 cm/s
Type:	-	Udgangssignal:	cm/s
Tilbehør:	Føler: serienr.: 0166		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 04-09-2018 Kalibreret: **06-09-2018**

Procedure: D1-2

Bemærkninger: Instrumentet er kalibreret med konnektor på føler pegende vinkelret til flowet.
Instrumentet er aflæst i cm/s, men angivet i certifikatet som m/s

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Søren Haack, 72 20 23 38, sorh@teknologisk.dk

Godkendt og digitalt signeret 07-09-2018 af:

John Frederiksen
Ingeniør

ilac-MRA DANAK
CAL Reg.nr. 200

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

ANEMOMETER

Måleområde: 0 - 2 m/s

Luft temperatur °C	Luft massefylde kg/m^3	Reference hastighed m/s	Emnets visning m/s	Fejl m/s	Usikkerhed m/s
24,06	1,182	0,050	0,020	-0,030	0,020
24,06	1,182	0,202	0,149	-0,053	0,020
24,06	1,182	0,403	0,284	-0,119	0,020
24,06	1,182	0,605	0,440	-0,165	0,021
24,06	1,182	0,706	0,508	-0,198	0,021
24,06	1,182	0,706	0,509	-0,197	0,021
24,06	1,182	0,605	0,438	-0,167	0,021
24,06	1,182	0,403	0,285	-0,118	0,020
24,06	1,182	0,202	0,147	-0,055	0,020
24,06	1,182	0,050	0,020	-0,030	0,020

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

LABORATORIEBETINGELSER OG SPORBARHED

Laboratoriebetingelser:

Rumtemperatur (°C) :	24,1 ± 0,6
Relativ luftfugtighed (%) :	58 ± 10
Barometerstand (mbar) :	1014,4 ± 1

Referencer:

Dette kalibreringscertifikat er omfattet af DANAK akkreditering
og EA's og ILAC's multilaterale aftaler for kalibrering,
hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

Usikkerhed:

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k = 2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-04/2.

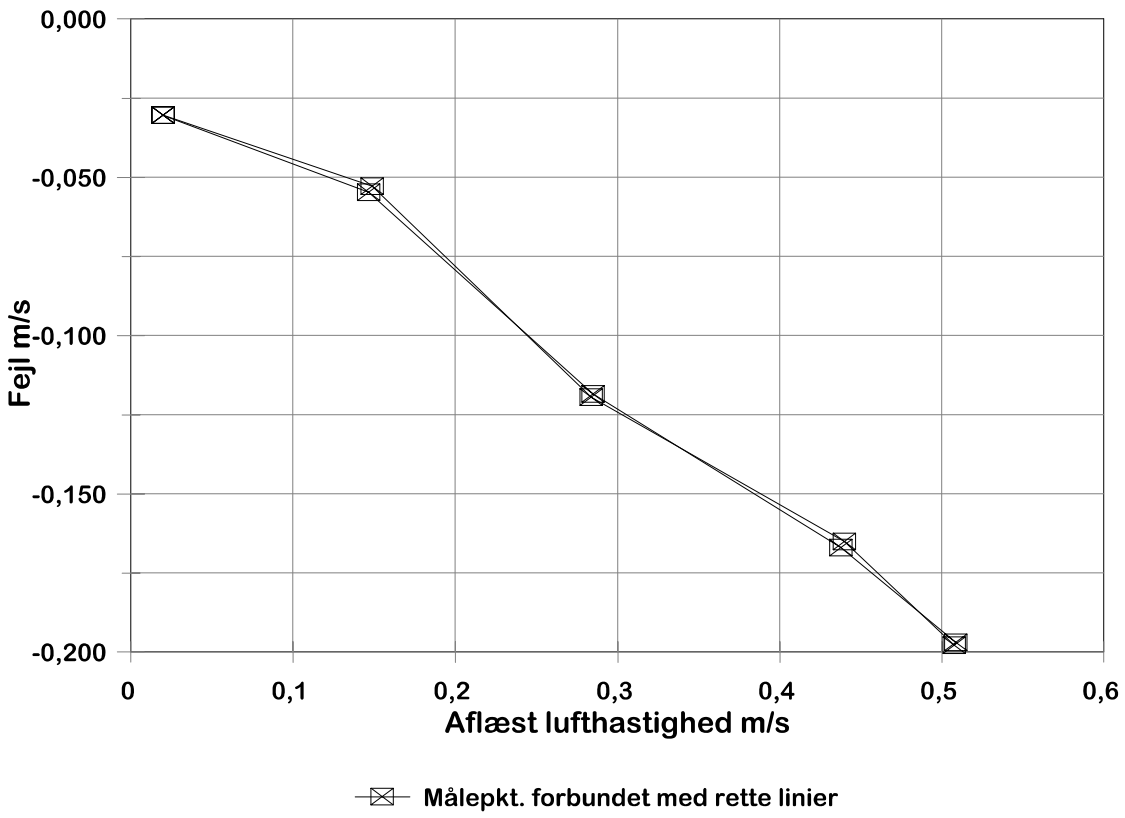
LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato : 2018.09.06 Cert nr 200-L-21099

KALIBRERINGSCERTIFIKAT

FEJLKURVE



Sand hastighed = Aflæst - Fejl (med fortegn)

Usikkerhed: 0,020 m/s til 0,021 m/s

TEKNOLOGISK
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Teknologiparken
Kongsvang Allé 29
Bygning 14
8000 Aarhus C
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24527

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Mikromanometer**

Fabrikat:	TSI	Model:	8705-M-GB
Serienr.:	**56050491**	Kundemærke:	**270-A-2406**
Område:	-1245 - 3735 Pa	Inddeling:	0,1 Pa
Type:	DP-CALC		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **05-09-2018**

Procedure: D1-3.2

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 06-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: -1245 - 3735 Pa

Reference	Aflæsning	Reference	Aflæsning	Reference	Aflæsning	Reference	Aflæsning
Op 1		Ned 1		Op 2		Ned 2	
Pa	Pa	Pa	Pa	Pa	Pa	Pa	Pa
0,01	0,0	0,00	-0,1	0,01	0,0	0,00	-0,1
1,98	2,0	2,01	1,9	1,96	1,9	2,04	1,9
9,97	10,0	9,98	10,0	9,97	10,1	9,97	10,0
19,75	19,9	20,26	20,4	19,78	19,9	20,28	20,4
29,77	30,0	30,28	30,5	29,77	30,0	30,28	30,5
99,72	100,6	100,16	101,1	99,78	100,6	100,17	101,0
199,79	201,6	200,02	201,9	199,71	201,5	200,00	201,8
300,28	303,0	300,42	303,2	300,33	303,1	300,36	303,2

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: -1245 - 3735 Pa

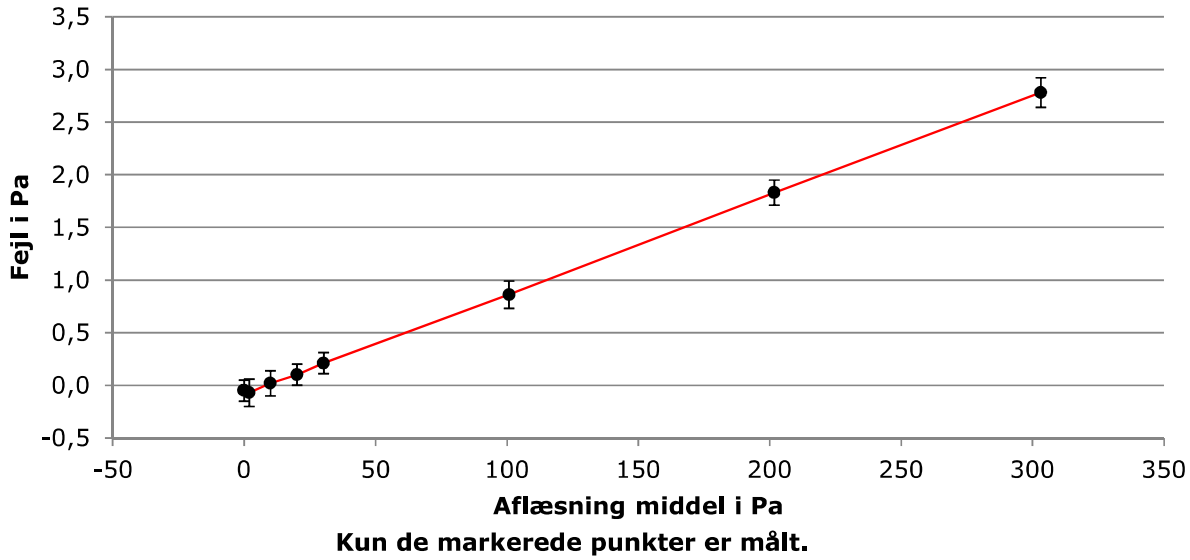
Reference middelværdi Pa	Aflæsning middelværdi Pa	Opløsning Pa	Hysterese Pa	Fejl Pa	Usikkerhed Pa
0,00	-0,04	0,1	0,04	-0,05	0,10
2,00	1,93	0,1	0,09	-0,07	0,13
9,97	10,00	0,1	0,07	0,02	0,12
20,02	20,12	0,1	0,01	0,10	0,10
30,02	30,23	0,1	0,03	0,21	0,10
99,96	100,82	0,1	0,07	0,86	0,13
199,88	201,71	0,1	0,02	1,83	0,12
300,35	303,13	0,1	0,03	2,78	0,14

Maks. hysterese:	0,09 Pa
Maks. fejl:	2,78 Pa
Maks. relativ fejl i forhold til måleområdet:	0,056 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Alle værdier under 'Op' og 'Ned' er afrundede middelværdier af 10 målinger (rådata). Værdierne under 'Fejl' er ligeledes afrundede middelværdier af samme rådata (evt. 2 gange, dvs. 20 eller 40 målinger). Der kan derfor forekomme uoverensstemmelse mellem måleresultater og fejl, da alle tal afrundes til 2 betydende cifre, jf. EA4/02.
Fejl = aflæsningsværdi - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Luft
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	64,5 %rh ± 4,2 %rh
Barometerstand:	1020 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

TEKNOLOGISK
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-U-22989

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Relativ fugtmåler, Luft fugtighed og Rum temperatur i ELAB**

Fabrikat:	Thermoguard	Model:	57713
Serienr.:	**OK + 02457265**	Kundemærke:	**142357**
Område:	0 - 100 %RH / -40 - +80 °C	Inddeling:	0,1 %RH / 0,1 °C
Tilbehør:	Føler S/N: OK+02427057		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **05-09-2018**

Procedure: D1-6.1

Bemærkninger: Aflæsning er foretaget vha. software.
Kalibrering er foretaget i to-trykgenerator.

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Mette Pedersen, 72 20 12 32, mo@teknologisk.dk

Godkendt og digitalt signeret 06-09-2018 af:

Peter Friis Østergaard
Konsulent, PhD

ilac-MRA DANAK
CAL Reg.nr. 200

FUGTLABORATORIET

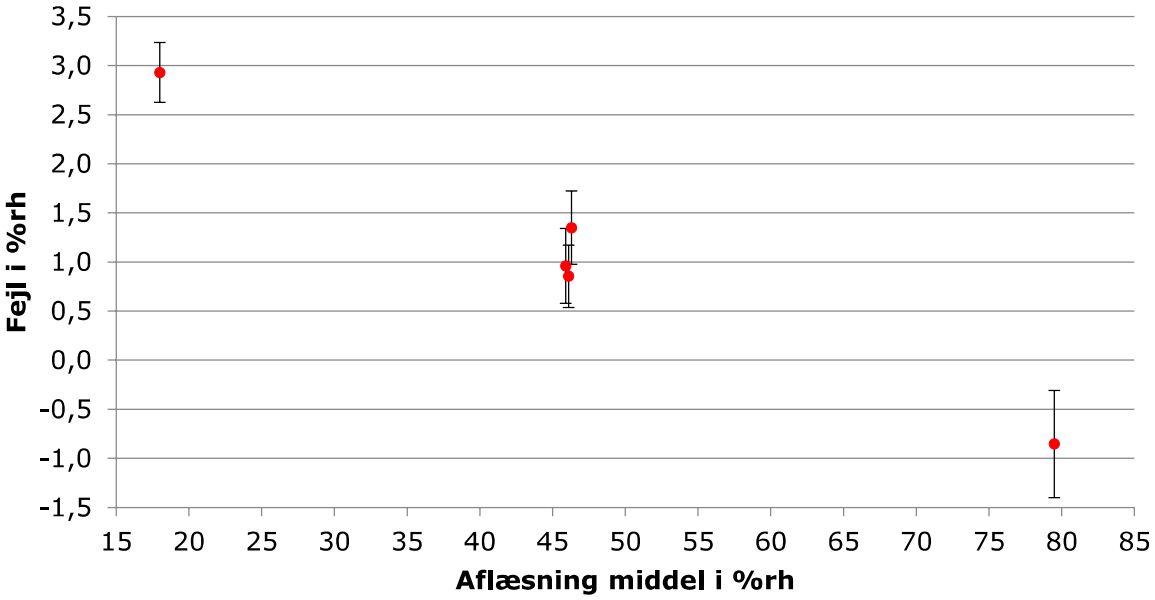
TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Reference-værdi °C	Reference-værdi %rh	Aflæsning %rh	Fejl %rh	Usikkerhed %rh	Note
17,96	44,95	46,30	1,35	0,37	
22,05	15,07	18,00	2,93	0,31	
22,07	44,94	45,90	0,96	0,38	
22,09	80,35	79,50	-0,85	0,55	
28,09	45,25	46,10	0,85	0,32	

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

KALIBRERINGSCERTIFIKAT
Fejlkurve



Kun de markerede punkter er målt.

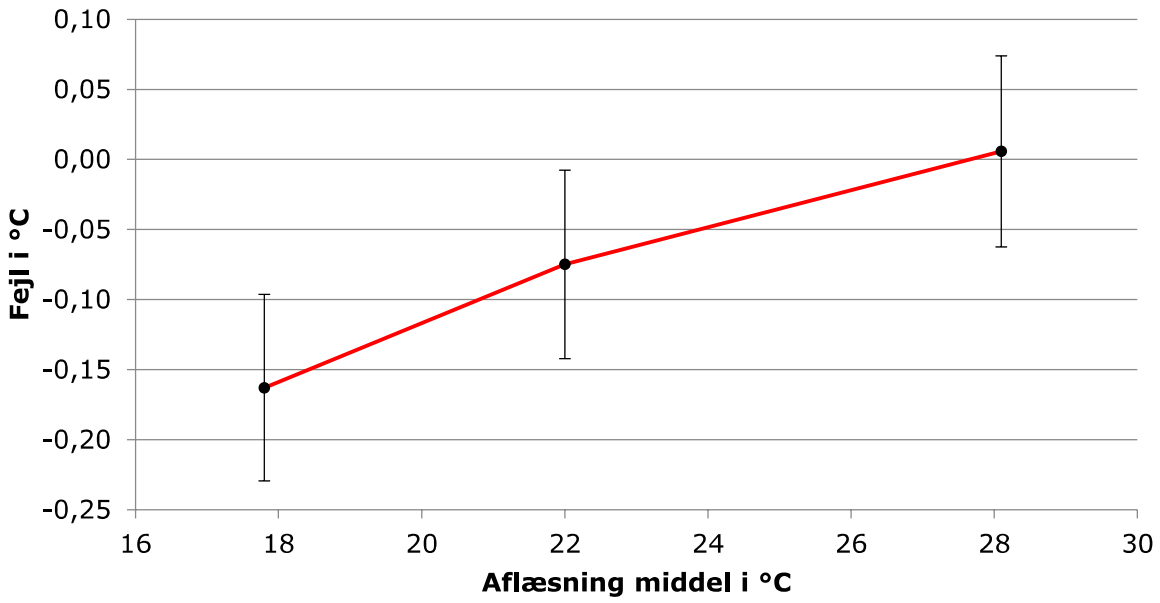
Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

KALIBRERINGSCERTIFIKAT
Resultater

Reference-værdi °C	Aflæsning værdi °C	Fejl °C	Usikkerhed °C	Note
17,963	17,80	-0,163	0,067	
22,075	22,00	-0,075	0,067	
28,094	28,10	0,006	0,068	

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

KALIBRERINGSCERTIFIKAT
Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren $k = 2$, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:
Rumtemperatur: 22 °C ± 3 °C

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

TEKNOLOGISK
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8000 Aarhus C
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info@teknologisk.dk
www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24401

Rekvirent: Teknologisk Institut, Pressometri
Kenn Øholm
Kongsvang Allé 29
8000 Århus C

Emne: **Barometer**

Fabrikat:	Ahlborn	Model:	Almemo FD A612-SA
Serienr.:	**08120625**	Kundemærke:	**270-A-2617**
Område:	700 - 1050 mbar abs	Inddeling:	0,1 mbar abs
Tilbehør:	Displayenhed: Ahlborn, Almemo 2490, Kundemærke: 270-A-2618.		

Periode: Modtaget: 27-03-2018 Kalibreret: **18-04-2018**

Procedure: D1-6.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 24-04-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 700 - 1050 mbar a

Reference Op 1	Aflæsning Op 1	Reference Ned 1	Aflæsning Ned 1	Reference Op 2	Aflæsning Op 2	Reference Ned 2	Aflæsning Ned 2
mbar a	mbar a	mbar a	mbar a	mbar a	mbar a	mbar a	mbar a
950,08	950,1	950,08	950,2	950,08	950,1	950,08	950,2
970,08	970,1	970,08	970,2	970,08	970,2	970,08	970,2
990,08	990,1	990,08	990,2	990,08	990,1	990,08	990,2
1.010,08	1.009,9	1.010,08	1.010,0	1.010,08	1.009,9	1.010,08	1.010,0
1.030,09	1.029,8	1.030,09	1.029,9	1.030,09	1.029,8	1.030,09	1.029,9
1.050,09	1.049,5	1.050,09	1.049,6	1.050,09	1.049,5	1.050,09	1.049,6

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 700 - 1050 mbar a

Reference middelværdi mbar a	Aflæsning middelværdi mbar a	Opløsning mbar a	Hysterese mbar a	Fejl mbar a	Usikkerhed mbar a
950,08	950,15	0,1	0,10	0,07	0,18
970,08	970,18	0,1	0,05	0,10	0,18
990,08	990,15	0,1	0,10	0,07	0,18
1.010,08	1.009,95	0,1	0,10	-0,13	0,18
1.030,09	1.029,85	0,1	0,10	-0,24	0,18
1.050,09	1.049,55	0,1	0,10	-0,54	0,18

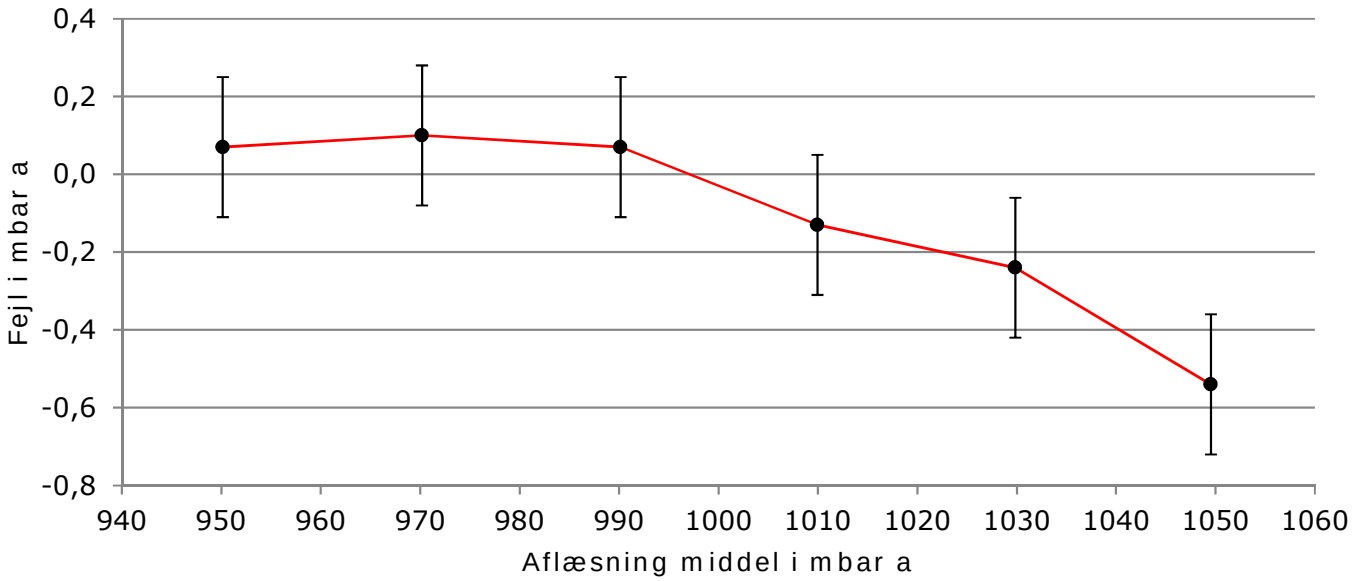
Maks. hysterese:	0,10 mbar a
Maks. fejl:	-0,54 mbar a
Maks. relativ fejl i forhold til måleområdet:	0,15 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,6 °C ± 0,3 °C
Relativ fugtighed:	46,2 %rh ± 4,2 %rh
Barometerstand:	1026 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

ilac-MRA DANAK CAL Reg. nr. 9 CIPM MRA

Id nr. 144236

Kalibreringscertifikat

Task nr.:	118-31693
Certifikat nr.:	9.8-19243
Side:	1 af 3

OBJEKT:

Prøveemne:	Masseflowmåler
Fabrikat:	Red-y
Id nr.	Hel
Serie nr.:	198703
Størrelse:	10 nl/min N2

REKVIRENT: Teknologisk Institut
Teknologiparken, Kongsvang Allé 29
8000 Århus C
Att.: Torben Nørgaard Jensen

SKALA//SKALAINDDELING: 0 - 10 nl/min // 0,1 nl/min

PRØVNINGSBETINGELSER:

Prøvningsmetode/medie:	Gennemstrømning med nitrogen.
Middelbarometerstand:	1016,5 mbar
Omgivelsestemperatur:	20 ± 1 °C

PRØVNINGSOMFANG: Kalibrering ved : 0,5; 2,5; 5,0; 7,5 og 10 nl/min
Resultater opgives i nl/min
(1 nl/min = 1 l/min ved 0 °C, og 1013,25 mbar.)

KALIBRERING iht.: FORCE instruktion nr. 60.2.02.
KALIBRERINGSDATO: 2018-09-05
KALIBRERINGSRESULTAT: Resultater, se side 2.

SPORBARHED: Prøveanlæg: FORCE nr.: C02-006 Se side 3.

BEMÆRKNINGER: Teknisk vurdering: Ingen bemærkninger.

UDSTEDELSESDATO: 2018-09-11

Preben Bendt Toftdahl Jensen
Opgaveansvarlig

Jesper Busk
Underskriftsberettiget

OBJEKT:

Prøveemne:	Masseflowmåler
Fabrikat:	Red-y
Id nr.	Hel
Serie nr.:	198703
Størrelse:	10 nl/min N2

Qmax:	10 nl/min
Qmin:	0 nl/min
Scale division:	0,1 nl/min

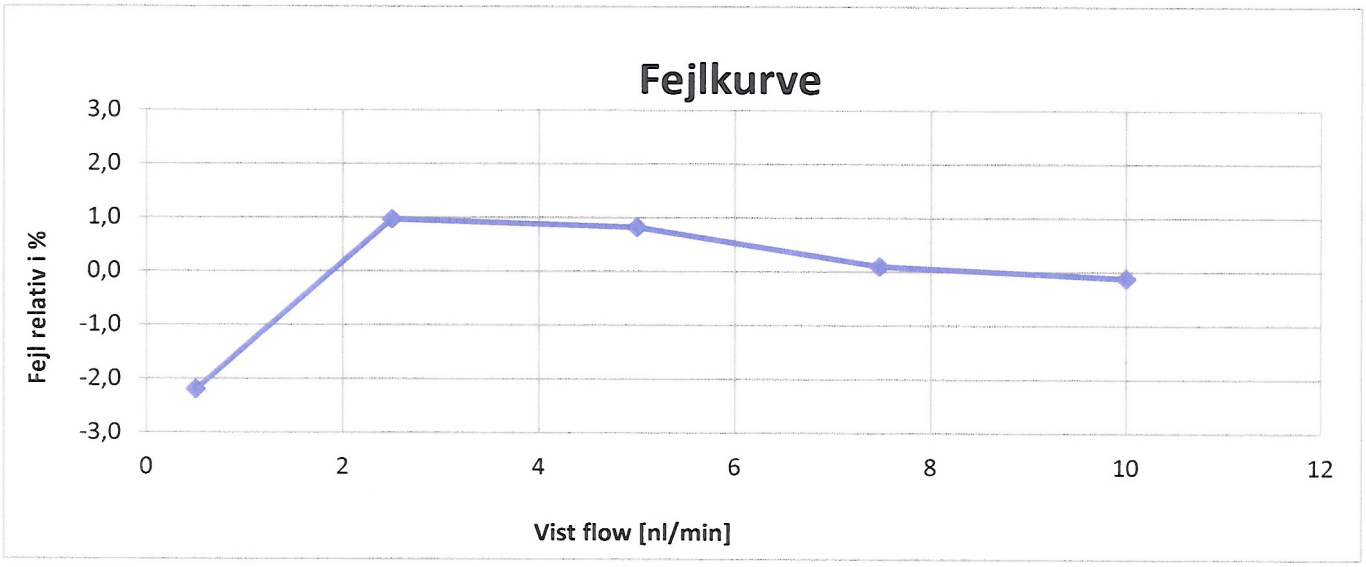
Referenceværdier | **Udstyr under kalibrering**

Virkeligt flow	Ucmc	Vist flow	Standard-usikkerhed	Fejl Relativ	Ekspanderet usikkerhed	Dæknings-faktor (k)	Tryk	Tempera-tur
nl/min	±nl/min	nl/min	nl/min	%	±%		mbara	°C
10,012	0,017	10,00	0,03	-0,12	0,60	2,00	1020,4	20,5
7,467	0,013	7,48	0,03	0,10	0,90	2,00	1020,2	20,5
4,959	0,008	5,00	0,03	0,82	0,97	1,65	1020,0	20,5
2,4760	0,0042	2,50	0,03	0,97	1,93	1,65	1020,5	20,5
0,51123	0,00087	0,50	0,03	-2,20	9,32	1,65	1020,3	20,5

"Ucmc" er 0,17% af "Virkeligt flow".
"Vist flow" er middelværdi af visninger aflæst i målerens display. Antallet af aflæsninger var 5-8.
I "Standardusikkerhed" er et bidrag fra standardafvigelsen knyttet til "Vist flow" samt et bidrag fra aflæsningernes afrundingsfejl.
"Fejl relativ" blev beregnet med formlen: ("Vist flow" - "Virkeligt flow")/"Virkeligt flow"x100
"Ekspanderet usikkerhed" blev beregnet med formlen:

$$\frac{k}{"Virkeligt\ flow"} \times \sqrt{\left(\frac{"Ucmc"}{2}\right)^2 + "Standardusikkerhed"^2} \times 100$$

"Temperatur" og "Tryk" blev målt efter måler.



Målepunkter er forbundet med rette linier

LABORATORIETS KONTROLUDSTYR

De med x mærkede arbejdsnormaler er anvendt til kalibreringen.

	Arbejdsnormaler:	FORCE nr:	Sporbarhed:	Kalibreret:	Certifikat nr:
	Anlæg: FORCE nr. C02-006.				
x	Small tube 1-750 ml/min	A00-070	Trescal	14-09-2016	401-20675
x	Medium tube 1-10000 ml/min	A00-069	Trescal	21-12-2017	401-21145
	Big tube 1-50000 ml/min	A00-068	Trescal	14-09-2016	401-20673
	Øvrigt udstyr:				
x	Temperaturmålere	A70xxx		kalibreres i.h.t. instruktioner	
x	Trykmålere	A80xxx		kalibreres i.h.t. instruktioner	

Laboratoriets måleevne:

I beregningen af måleevnen Ucmc er medtaget alle betydende bidrag bortset fra målerens standardafvigelse og afrundingsfejl, som medtages i beregningen af den rapporterede ekspanderede usikkerhed.

Måleevnen Ucmc er: ±0,17% relativ.

Ekspanderet usikkerhed:

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k, således at dækningssandsynlighed svarer til ca. 95 %.

* VSL, Holland via FORCE Technology´s nationale referencelaboratorium i Vejen.

Kalibreringscertifikat

Id nr. 144239

Task nr.:	118-31693
Certifikat nr.:	9.8-19242
Side:	1 af 3

OBJEKT:

Prøveemne:	Masseflowmåler
Fabrikat:	Red-y
Id nr.	144239 / Delt
Serie nr.:	198691
Størrelse:	10 nl/min N2

REKVIRENT:

Teknologisk Institut
Teknologiparken, Kongsvang Allé 29
8000 Århus C
Att.: Torben Nørgaard Jensen

SKALA//SKALAINDDELING: 0 - 10 nl/min // 0,1 nl/min

PRØVNINGSBETINGELSER:

Prøvningsmetode/medie:	Gennemstrømning med nitrogen.
Middelbarometerstand:	1016,4 mbar
Omgivelsestemperatur:	20 ± 1 °C

PRØVNINGSOMFANG: Kalibrering ved : 0,5; 2,5; 5,0; 7,5 og 10 nl/min
Resultater opgives i nl/min
(1 nl/min = 1 l/min ved 0 °C, og 1013,25 mbar.)

KALIBRERING iht.: FORCE instruktion nr. 60.2.02.
KALIBRERINGSDATO: 2018-09-05
KALIBRERINGSRESULTAT: Resultater, se side 2.

SPORBARHED: Prøveanlæg: FORCE nr.: C02-006 Se side 3.

BEMÆRKNINGER: Teknisk vurdering: Ingen bemærkninger.

UDSTEDELSESDATO: 2018-09-11

Preben Bendt Toftdahl Jensen
Opgaveansvarlig

Jesper Busk
Underskriftsberettiget

OBJEKT:

Prøveemne: Masseflowmåler
Fabrikat: Red-y
Id nr. 144239 / Delt
Serie nr.: 198691
Størrelse: 10 nl/min N2

Qmax: 10 nl/min
Qmin: 0 nl/min
Scale division: 0,1 nl/min

Referenceværdier

Virkeligt flow	Ucmc
nl/min	±nl/min
10,008	0,017
7,456	0,013
4,969	0,008
2,4916	0,0042
0,52187	0,00089

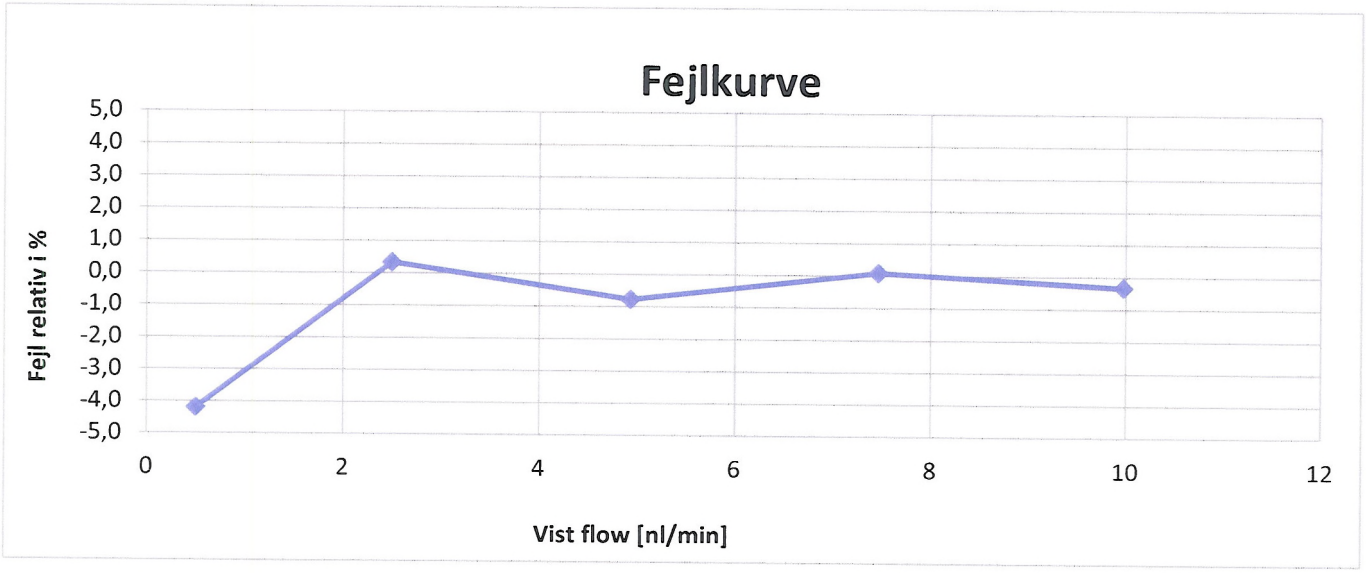
Udstyr under kalibrering

Vist flow	Standard-usikkerhed	Fejl Relativ	Ekspanderet usikkerhed	Dæknings-faktor (k)	Tryk	Tempera-tur
nl/min	nl/min	%	±%		mbara	°C
9,98	0,03	-0,33	0,68	2,00	1020,5	20,4
7,46	0,03	0,09	0,93	2,00	1020,2	20,4
4,93	0,03	-0,78	1,09	1,65	1020,0	20,4
2,50	0,03	0,34	1,92	1,65	1020,4	20,4
0,50	0,03	-4,19	9,13	1,65	1020,3	20,4

"Ucmc" er 0,17% af "Virkeligt flow".
"Vist flow" er middelværdi af visninger aflæst i målerens display. Antallet af aflæsninger var 5-10.
I "Standardusikkerhed" er et bidrag fra standardafvigelsen knyttet til "Vist flow" samt et bidrag fra aflæsningernes afrundingsfejl.
"Fejl relativ" blev beregnet med formlen: ("Vist flow" - "Virkeligt flow")/"Virkeligt flow"x100
"Ekspanderet usikkerhed" blev beregnet med formlen:

$$\frac{k}{"Virkeligt\ flow"} \times \sqrt{\left(\frac{"Ucmc"}{2}\right)^2 + "Standardusikkerhed"^2} \times 100$$

"Temperatur" og "Tryk" blev målt efter måler.



Målepunkter er forbundet med rette linier

LABORATORIETS KONTROLUDSTYR

De med x mærkede arbejdsnormaler er anvendt til kalibreringen.

	Arbejdsnormaler:	FORCE nr:	Sporbarhed:	Kalibreret:	Certifikat nr:
	Anlæg: FORCE nr. C02-006.				
x	Small tube 1-750 ml/min	A00-070	Trescal	14-09-2016	401-20675
x	Medium tube 1-10000 ml/min	A00-069	Trescal	21-12-2017	401-21145
	Big tube 1-50000 ml/min	A00-068	Trescal	14-09-2016	401-20673
	Øvrigt udstyr:				
x	Temperaturmålere	A70xxx		kalibreres i.h.t. instruktioner	
x	Trykmålere	A80xxx		kalibreres i.h.t. instruktioner	

Laboratoriets måleevne:

I beregningen af måleevnen Ucmc er medtaget alle betydende bidrag bortset fra målerens standardafvigelse og afrundingsfejl, som medtages i beregningen af den rapporterede ekspanderede usikkerhed.

Måleevnen Ucmc er: ±0,17% relativ.

Ekspanderet usikkerhed:

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k, således at dækningssandsynlighed svarer til ca. 95 %.

* VSL, Holland via FORCE Technology´s nationale referencelaboratorium i Vejen.

Kontrol af flowmåler for Rumblank.

Dato:	28-09-2018	Int.:	MXB	Ref.: Id nr. 144239 (Delt)	
Id nr.:	144257	Cert nr.:	ELAB-39-2018	T_rum:	**23**

Flowmeter Rumblank l/m	Ref. Delt. nl/m		Ref. d.d. **23** °C l/m
		Faktor	1,0842
6	5,2		5,6
7	6,2		6,7
8	7,2		7,8

TEKNOLOGISK
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-T-22735

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Termometer, Modstandstermometer**

Fabrikat:	Kamstrup A/S	Model:	81 41221101002100085
Serienr.:		Kundemærke:	**270-A-1629 BUND KANAL**
Område:	0 - 100 °C	Type:	Pt-100 med FlexTop transmitter
Udgangssignal:	4 - 20 mA	Diameter:	8 mm.

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **10-09-2018**

Procedure: D1-2.2

Bemærkninger: Kalibreringen er foretaget i væskebade ved sammenligning med referenceføler. Føleren er neddyppet til og med forskruningen. Ved 0 °C er kalibreringen udført med ispunkt som reference.

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Bjørn Kjærsgaard Nielsen, 72203534, bjni@teknologisk.dk

Godkendt og digitalt signeret 18-09-2018 af:

Søren Andersen

Søren Lindholt Andersen
Konsulent, Ph.d.

ilac-MRA DANAK
CAL Reg.nr. 200

TEMPERATURLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Føler mærket: 270-A-1629

4 - 20 mA ~ 0 - 100 °C

Reference-værdi °C	Reference-værdi mA	Aflæsning mA	Fejl mA	Usikkerhed mA	Note
0,0000	4,0000	4,0011	0,0011	0,0036	
30,0037	8,8006	8,8249	0,0243	0,0028	
49,9976	11,9996	12,0307	0,0311	0,0040	
99,9989	19,9998	20,0312	0,0313	0,0051	

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

TEMPERATURLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Føler mærket: 270-A-1629

4 - 20 mA ~ 0 - 100 °C

Reference-værdi °C	Aflæsning mA	Beregnet °C	Fejl °C	Usikkerhed °C	Note
0,000	4,001	0,007	0,007	0,022	
30,004	8,825	30,155	0,152	0,018	
49,998	12,031	50,192	0,194	0,025	
99,999	20,031	100,195	0,196	0,032	

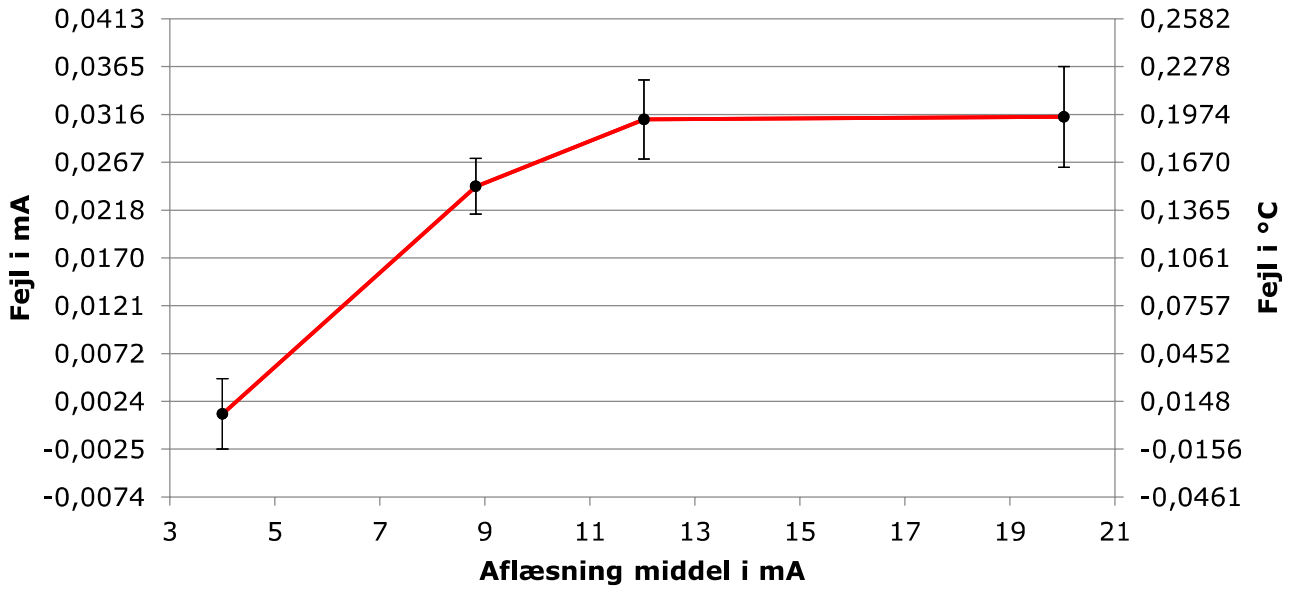
Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Beregnet - referenceværdi.

TEMPERATURLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Fejlkurve

Føler mærket: 270-A-1629



Kun de markerede punkter er målt.

Bemærkninger:
Aflæsning er middelværdien af flere aflæsninger på det kalibrerede måleinstrument.
Fejl = Aflæsning - referenceværdi.

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren $k = 2$, således at dækningssandsynligheden svarer til ca. 95 %.
Alle temperaturer er i henhold til ITS90

Kalibreringsforhold:

Rumtemperatur:	22,9 °C ± 2,1 °C
Relativ fugtighed:	53,5 %rh ± 5,6 %rh
Barometerstand:	1015,8 mbar ± 6,3 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-L-21096

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Flowmåler, Brændeovns lækagetester**

Fabrikat:	Brooks	Serienr.:	**P20438; 0112030/489315001; B2110016701**
Kundemærke:	**Id nr. 83013**	Område:	0 - 21 m3/h
Udgangssignal:	Skala		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 03-09-2018 Kalibreret: **03-09-2018**

Procedure: D2-1

Bemærkninger: Rør nr. 1: 0,09 - 0,9 m³/h Referenceflow er omregnet til normalbetingelserne: 20°C og 1013,25 mBar Måleren er aflæst midt på kugle.

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Søren Haack, 72 20 23 38, sorh@teknologisk.dk

Godkendt og digitalt signeret 04-09-2018 af:
John Frederiksen
Ingeniør

ilac-MRA DANAK
CAL Reg.nr. 200

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

LUFTFLOWMÅLER

Måleområde: 0,09 - 0,9 m³/h

Luft temperatur °C	Kalibrering Tryk mBar abs.	Reference flow m^3/h	Reference flow m^3n/h	Emnets visning m^3n/h	Fejl m^3n/h	Usikkerhed m^3n/h
23,96	1337,80	0,08	0,10	0,12	0,02	0,01
23,96	1311,40	0,19	0,24	0,24	-0,00	0,01
23,96	1291,80	0,31	0,39	0,38	-0,01	0,02
23,96	1271,40	0,49	0,60	0,58	-0,02	0,02
23,96	1253,00	0,65	0,80	0,76	-0,04	0,03
23,96	1239,10	0,80	0,96	0,90	-0,06	0,03
23,96	1239,10	0,79	0,96	0,90	-0,06	0,03
23,96	1257,30	0,66	0,81	0,76	-0,05	0,03
23,96	1278,20	0,48	0,60	0,58	-0,02	0,02
23,96	1307,10	0,28	0,36	0,38	0,02	0,02
23,96	1323,80	0,18	0,23	0,24	0,01	0,01
23,96	1345,20	0,07	0,09	0,12	0,03	0,01

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato: 2018.09.03 Cert. nr: 200-L-21096 Side: 3 af 4

KALIBRERINGSCERTIFIKAT

LABORATORIEBETINGELSER OG SPORBARHED

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Rumtemperatur (°C) :	24,1	± 0,6
Relativ luftfugtighed (%) :	57	± 10
Barometerstand (mbar) :	1023,8	± 1

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Dette kalibreringscertifikat er omfattet af DANAK akkreditering
og EA's og ILAC's multilaterale aftaler for kalibrering,
hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

ÜƨŝŬŬĞƌŚĞĚ͗

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k = 2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

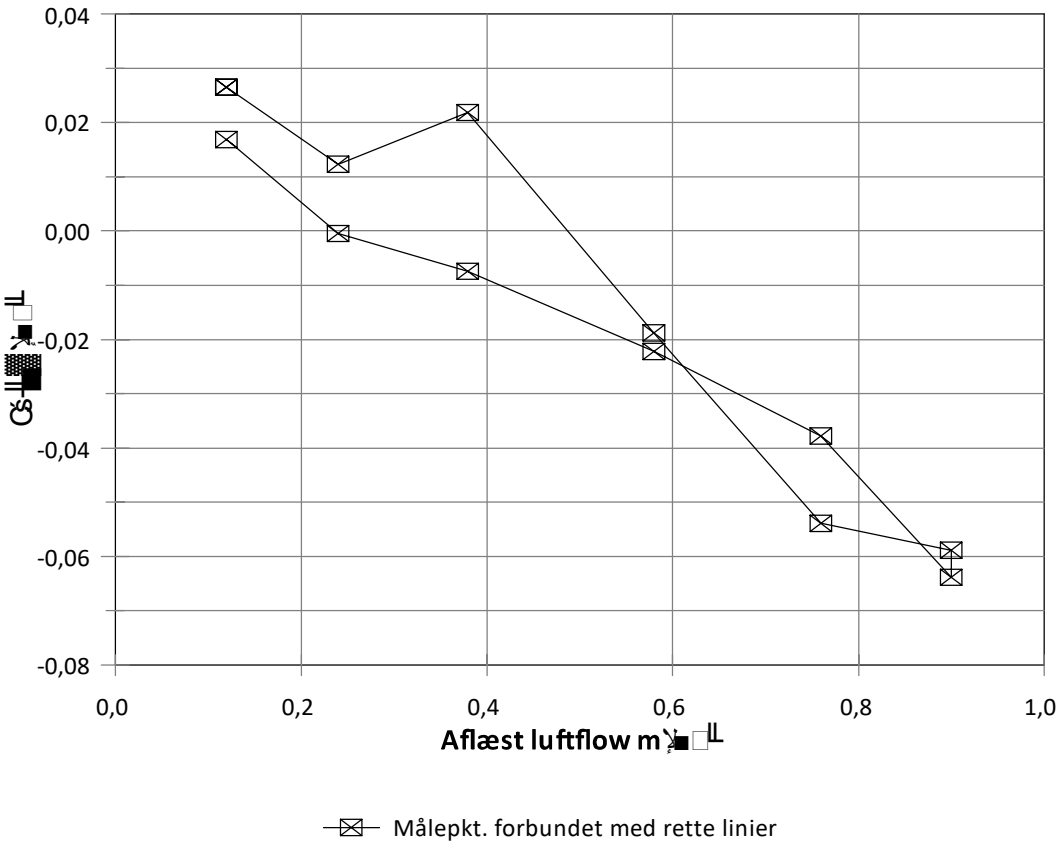
LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato: 2018.09.03 Cert. nr.: 200-L-21096

KALIBRERINGSCERTIFIKAT

FEJLKURVE



Sand Luftflow = Aflæst - Fejl (med fortegn)

Usikkerhed:

0,01 m^3n/h til 0,03 m^3n/h

TEKNOLOGISK
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Teknologiparken
Kongsvang Allé 29
Bygning 14
8000 Aarhus C
Tlf. +45 72 20 20 00
info@teknologisk.dk
www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-L-21097

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Flowmåler, Brændeovns lækagetester**

Fabrikat:	Brooks	Serienr.:	**P20438; 0112030/489315001; B2110016701**
Kundemærke:	**Id nr. 83013**	Område:	0 - 21 m3/h
Udgangssignal:	Skala		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 03-09-2018 Kalibreret: **03-09-2018**

Procedure: D2-1

Bemærkninger: Rør nr. 2: 0,5 - 5 m³/h
Referenceflow er omregnet til normalbetingelserne: 20°C og 1013,25 mBar

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Søren Haack, 72 20 23 38, sorh@teknologisk.dk

Godkendt og digitalt signeret 04-09-2018 af:
John Frederiksen
Ingeniør

ilac-MRA DANAK
CAL Reg.nr. 200

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

LUFTFLOWMÅLER

Måleområde: 0,5 - 5,0 m³/h

Luft temperatur °C	Kalibrering Tryk mBar abs.	Reference flow m^3/h	Reference flow m^3n/h	Emnets visning m^3n/h	Fejl m^3n/h	Usikkerhed m^3n/h
24,26	1245,10	0,72	0,87	0,80	-0,07	0,11
24,26	1218,10	0,87	1,03	1,00	-0,03	0,10
24,26	1163,60	1,40	1,58	1,50	-0,08	0,12
24,56	1756,20	1,64	2,80	2,50	-0,30	0,09
24,56	1677,90	2,40	3,92	3,50	-0,42	0,11
24,56	1621,80	2,99	4,72	4,25	-0,47	0,12
24,56	1563,90	3,62	5,49	5,00	-0,49	0,14
24,56	1569,20	3,59	5,48	5,00	-0,48	0,14
24,56	1635,00	2,89	4,58	4,25	-0,33	0,12
24,56	1686,70	2,33	3,83	3,50	-0,33	0,11
24,56	1762,80	1,59	2,73	2,50	-0,23	0,09
24,26	1164,50	1,39	1,58	1,50	-0,08	0,12
24,26	1223,80	0,85	1,02	1,00	-0,02	0,10
24,26	1236,00	0,72	0,87	0,80	-0,07	0,11

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato:	2018.09.03	Cert. nr:	200-L-21097	Side:	3 af 4

KALIBRERINGSCERTIFIKAT

LABORATORIEBETINGELSER OG SPORBARHED

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Rumtemperatur (°C) :	24,4	± 0,6
Relativ luftfugtighed (%) :	56	± 10
Barometerstand (mbar) :	1023,5	± 1

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Dette kalibreringscertifikat er omfattet af DANAK akkreditering
og EA's og ILAC's multilaterale aftaler for kalibrering,
hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

Üℓ╫╫ś'n╨śŕ

Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k = 2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

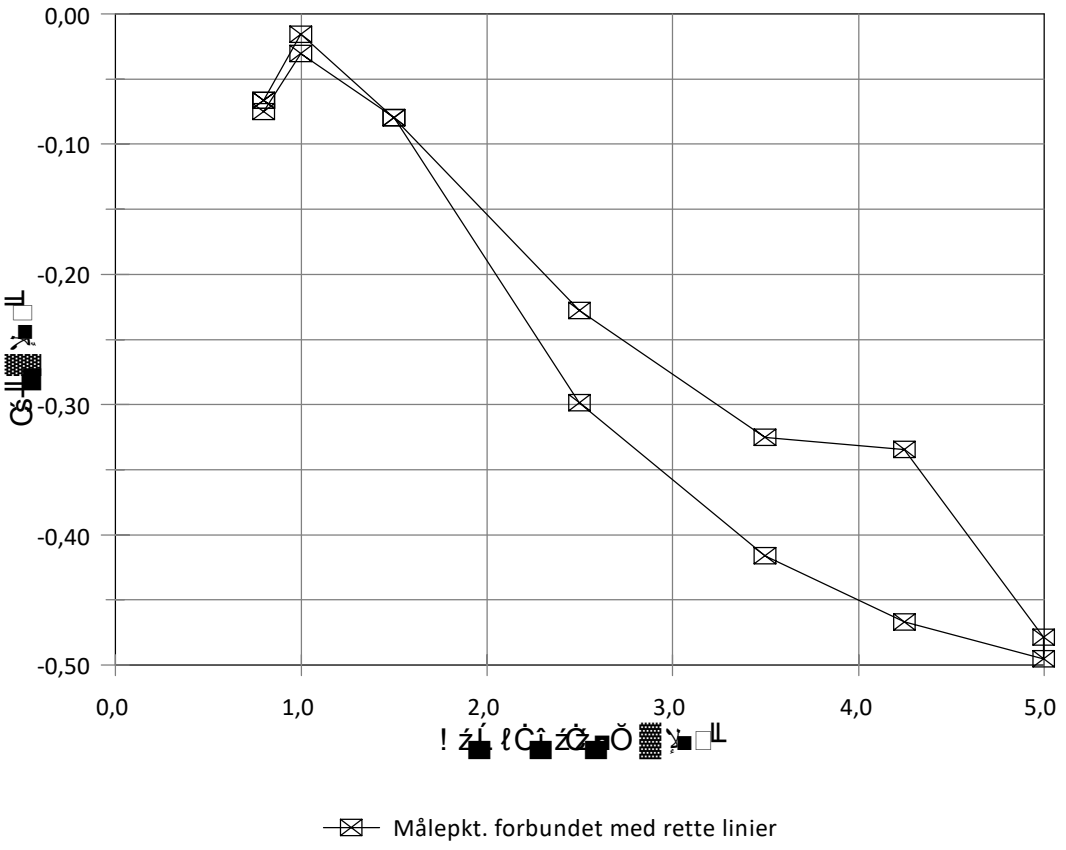
LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato: 2018.09.03 Cert. nr.: 200-L-21097

KALIBRERINGSCERTIFIKAT

FEJLKURVE



Sand Luftflow = Aflæst - Fejl (med fortegn)

Usikkerhed:

0,09 m^3n/h til 0,14 m^3n/h

TEKNOLOGISK
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8000 Aarhus C
Tlf. +45 72 20 20 00
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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-L-21098

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Flowmåler, Brændeovns lækagetester**

Fabrikat:	Brooks	Serienr.:	**P20438; 0112030/489315001; B2110016701**
Kundemærke:	**Id nr. 83013**	Område:	0 - 21 m3/h
Udgangssignal:	Skala		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 03-09-2018 Kalibreret: **03-09-2018**

Procedure: D2-1

Bemærkninger: Rør nr. 3: 2,7 - 21 m³/h Referenceflow er omregnet til normalbetingelserne: 20°C og 1013,25 mBar

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Søren Haack, 72 20 23 38, sorh@teknologisk.dk

Godkendt og digitalt signeret 04-09-2018 af:
John Frederiksen
Ingeniør

ilac-MRA DANAK
CAL Reg.nr. 200

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

LUFTFLOWMÅLER

Måleområde: 2,7 - 21 m³/h

Luft temperatur °C	Kalibrering Tryk mBar abs.	Reference flow m^3/h	Reference flow m^3n/h	Emnets visning m^3n/h	Fejl m^3n/h	Usikkerhed m^3n/h
24,66	4178,80	0,72	2,94	3,50	0,56	0,04
24,66	4033,40	1,81	7,09	7,00	-0,09	0,06
24,66	3805,20	3,16	11,68	11,00	-0,68	0,10
24,66	3604,80	4,44	15,56	14,50	-1,06	0,14
24,66	3422,60	5,91	19,66	17,50	-2,16	0,18
24,66	3420,60	5,84	19,41	17,50	-1,91	0,18
24,66	3666,00	4,33	15,44	14,50	-0,94	0,14
24,66	3872,20	3,17	11,94	11,00	-0,94	0,10
24,66	4060,40	1,82	7,16	7,00	-0,16	0,07
24,66	4176,00	0,75	3,06	3,50	0,44	0,04

LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato: 2018.09.03 Cert. nr: 200-L-21098 Side: 3 af 4

KALIBRERINGSCERTIFIKAT

LABORATORIEBETINGELSER OG SPORBARHED

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Rumtemperatur (°C) :	24,6	± 0,6
Relativ luftfugtighed (%) :	56	± 10
Barometerstand (mbar) :	1023,6	± 1

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Dette kalibreringscertifikat er omfattet af DANAK akkreditering
og EA's og ILAC's multilaterale aftaler for kalibrering,
hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden multipliceret med dækningsfaktoren k = 2, som for en normalfordeling svarer til en dækningssandsynlighed på ca. 95%. Standardusikkerheden er fastlagt i overensstemmelse med EA-4/02.

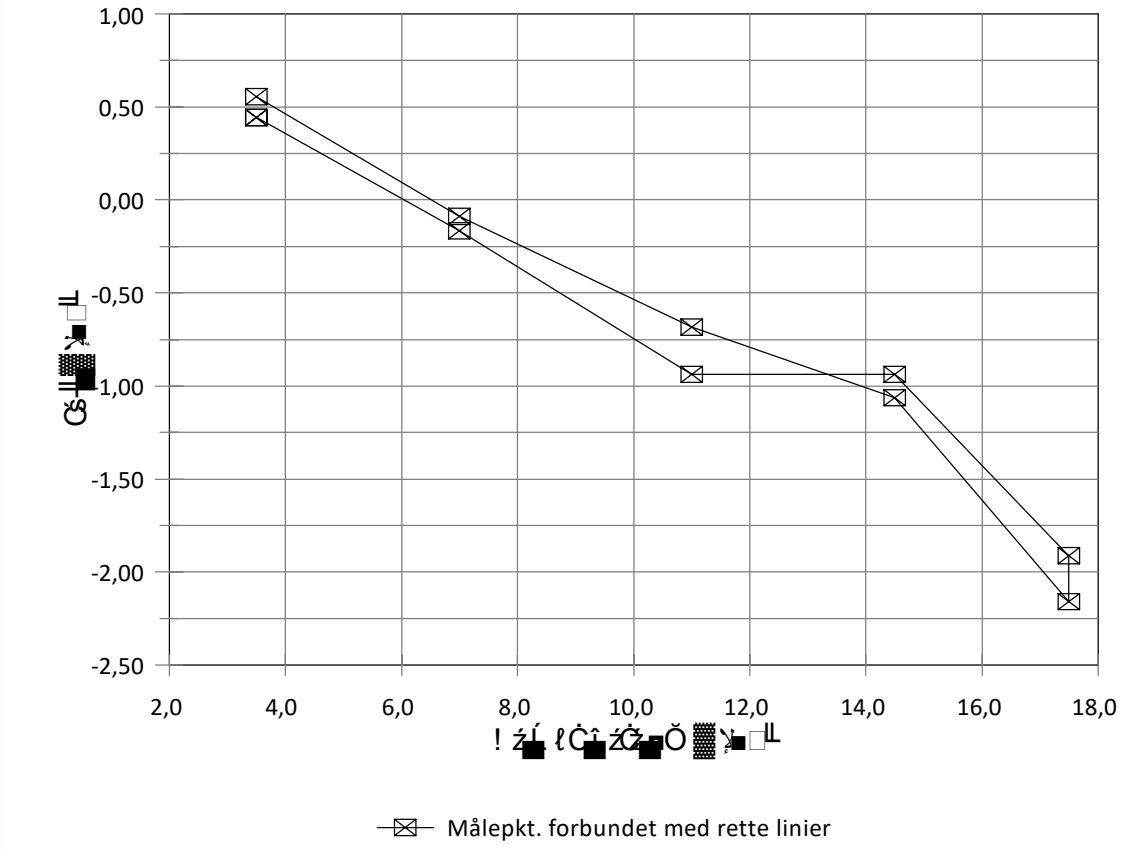
LUFTLABORATORIET

TEKNOLOGISK INSTITUT

Dato: 2018.09.03 Cert. nr.: 200-L-21098

KALIBRERINGSCERTIFIKAT

FEJLKURVE



Sand Luftflow = Aflæst - Fejl (med fortegn)

Usikkerhed:

0,04 m^3n/h til 0,18 m^3n/h

Kalibrering Humimeter, Fugtmåler

Måleskema til kontrol af Fugtmåler(EPA)

Dato:	06-09-2018	Udført af:	REHV
		Emne Id nr.:	145070
Certifikat nr.:	ELAB-36-2018		
Kalibrator ref.:	148135 (test block)		

Fremgangsmetode: Fugtmåler kontrolleres op imod test block fra samme producent. Er visningen indenfor range er grundkalibrering OK.
https://www.youtube.com/watch?v=wmGqFWhd_Yk

1- Sørg for der ikke er fugt på nålene.

2- Tænd og aflæs rumtemperatur: 24 (range 20-26°C)

3- Find "Test Block"

4- Test side 1 "22,0" ved at sætte de to flanger fra "test block'en" på de to møtrikker nålene er monteret med

5- Noter hvad apparatet måler: 22,3% (range 21,5-22,5%)

6- Test side 2 "41,0" ved at sætte de to flanger fra "test block'en" på de to møtrikker nålene er monteret med

7- Noter hvad apparatet måler: 41,5% (range 39,5-42,0%)

8- Er visningerne uden for det anbefalede range kan punkter sidst i denne video følges, alternativt sendes apparat til kalibrering.

9- Apparat bruges normalt kun som rettesnor for fugtniveau, ikke til endelig fugtangivelse. Til endeligt fugtangivelse benyttes ovn i mellemgang.

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24528

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Vacuummeter, EPA (-H)**

Fabrikat:	Wika	Serienr.:	**N/A**
Kundemærke:	**145074**	Område:	0 - -1 bar
Klasse:	1,6	Inddeling:	0,05 bar
Diameter:	60 mm		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **04-09-2018**

Procedure: D1-2.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 05-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 0 - -1 bar

Reference	Aflæsning	Reference	Aflæsning
Ned 1		Op 1	
bar	bar	bar	bar
-0,0500	-0,06	-0,0500	-0,06
-0,2001	-0,21	-0,2001	-0,21
-0,4001	-0,41	-0,4001	-0,41
-0,6002	-0,61	-0,6002	-0,61
-0,8003	-0,81	-0,8003	-0,81
-0,9504	-0,95	-0,9504	-0,95

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 0 - -1 bar

Reference middelværdi bar	Aflæsning middelværdi bar	Opløsning bar	Hysterese bar	Fejl bar	Usikkerhed bar
-0,0500	-0,0600	0,01	0,0000	-0,0100	0,0082
-0,2001	-0,2100	0,01	0,0000	-0,0099	0,0082
-0,4001	-0,4100	0,01	0,0000	-0,0099	0,0082
-0,6002	-0,6100	0,01	0,0000	-0,0098	0,0082
-0,8003	-0,8100	0,01	0,0000	-0,0097	0,0082
-0,9504	-0,9500	0,01	0,0000	0,0004	0,0082

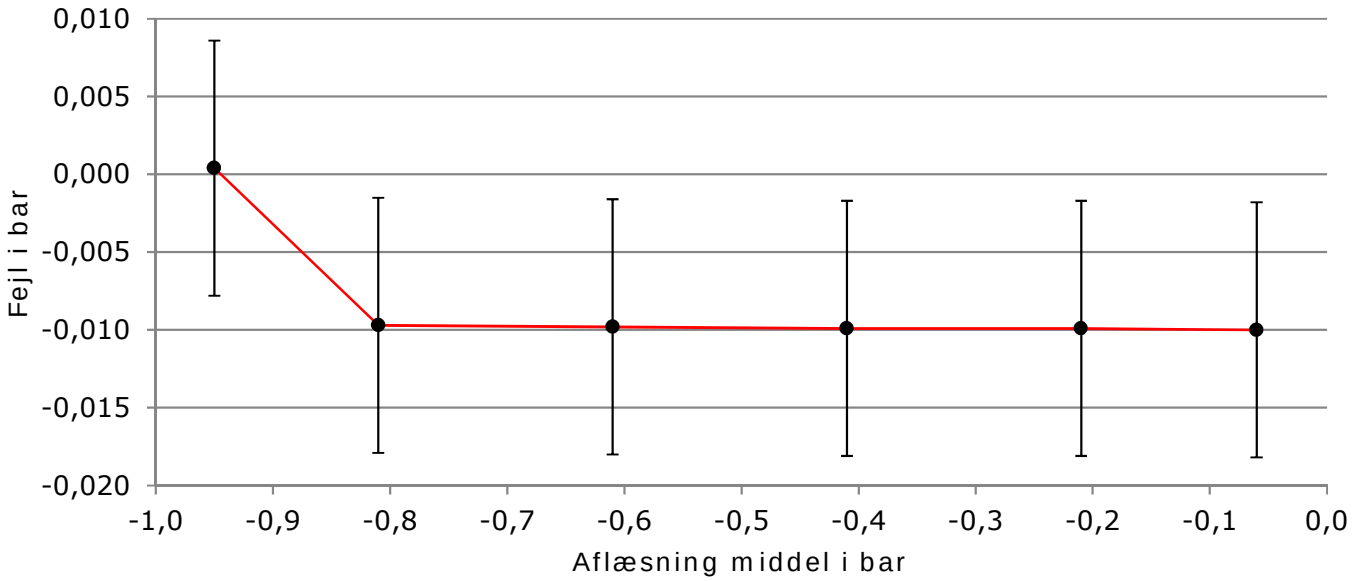
Maks. hysterese:	0,0000 bar
Maks. fejl:	-0,0100 bar
Maks. relativ fejl i forhold til måleområdet:	1,0 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	62,9 %rh ± 4,2 %rh
Barometerstand:	1019,5 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24529

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Vacuummeter, EPA (-D)**

Fabrikat:	Wika	Serienr.:	**N/A**
Kundemærke:	**145076**	Område:	0 - -1 bar
Klasse:	1,6	Inddeling:	0,05 bar
Diameter:	60 mm		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **04-09-2018**

Procedure: D1-2.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 05-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 0 - -1 bar

Reference	Aflæsning	Reference	Aflæsning
Ned 1		Op 1	
bar	bar	bar	bar
-0,0500	-0,04	-0,0500	-0,04
-0,2001	-0,19	-0,2001	-0,19
-0,4001	-0,39	-0,4001	-0,39
-0,6002	-0,60	-0,6002	-0,60
-0,8003	-0,80	-0,8003	-0,80
-0,9504	-0,95	-0,9504	-0,95

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 0 - -1 bar

Reference middelværdi bar	Aflæsning middelværdi bar	Opløsning bar	Hysterese bar	Fejl bar	Usikkerhed bar
-0,0500	-0,0400	0,01	0,0000	0,0100	0,0082
-0,2001	-0,1900	0,01	0,0000	0,0101	0,0082
-0,4001	-0,3900	0,01	0,0000	0,0101	0,0082
-0,6002	-0,6000	0,01	0,0000	0,0002	0,0082
-0,8003	-0,8000	0,01	0,0000	0,0003	0,0082
-0,9504	-0,9500	0,01	0,0000	0,0004	0,0082

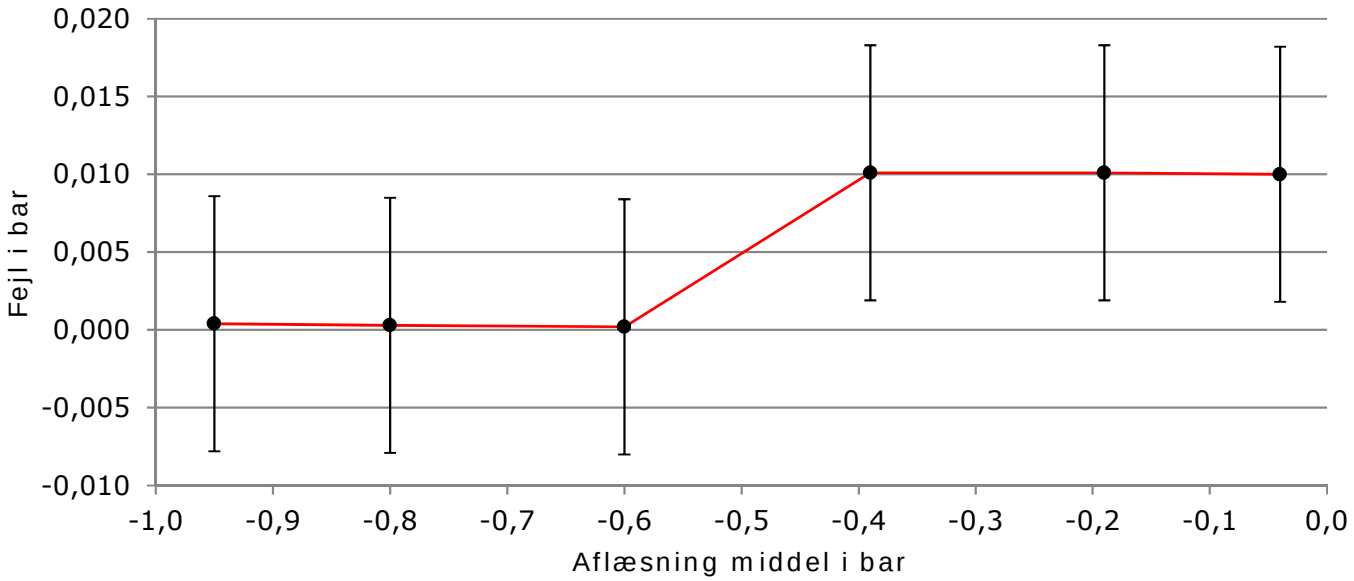
Maks. hysterese:	0,0000 bar
Maks. fejl:	0,0101 bar
Maks. relativ fejl i forhold til måleområdet:	1,0 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	62,9 %rh ± 4,2 %rh
Barometerstand:	1019,5 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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8000 Aarhus C
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info@teknologisk.dk
www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24530

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Vacuummeter, EPA (-R)**

Fabrikat:	Wika	Serienr.:	**N/A**
Kundemærke:	**145077**	Område:	0 - -1 bar
Klasse:	1,6	Inddeling:	0,05 bar
Diameter:	60 mm		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **04-09-2018**

Procedure: D1-2.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 05-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 0 - -1 bar

Reference	Aflæsning	Reference	Aflæsning
Ned 1		Op 1	
bar	bar	bar	bar
-0,0500	-0,04	-0,0500	-0,04
-0,2001	-0,19	-0,2001	-0,19
-0,4001	-0,39	-0,4001	-0,39
-0,6002	-0,60	-0,6002	-0,60
-0,8003	-0,79	-0,8003	-0,79
-0,9504	-0,94	-0,9504	-0,94

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 0 - -1 bar

Reference middelværdi bar	Aflæsning middelværdi bar	Opløsning bar	Hysterese bar	Fejl bar	Usikkerhed bar
-0,0500	-0,0400	0,01	0,0000	0,0100	0,0082
-0,2001	-0,1900	0,01	0,0000	0,0101	0,0082
-0,4001	-0,3900	0,01	0,0000	0,0101	0,0082
-0,6002	-0,6000	0,01	0,0000	0,0002	0,0082
-0,8003	-0,7900	0,01	0,0000	0,0103	0,0082
-0,9504	-0,9400	0,01	0,0000	0,0104	0,0082

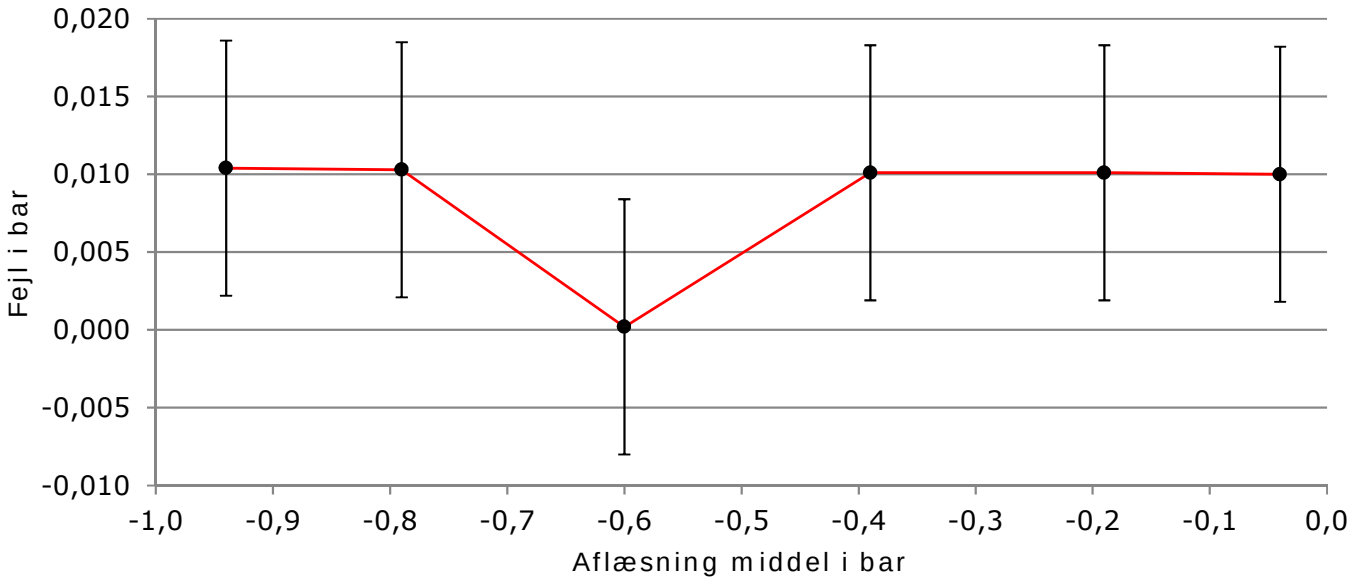
Maks. hysterese:	0,0000 bar
Maks. fejl:	0,0104 bar
Maks. relativ fejl i forhold til måleområdet:	1,0 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	62,8 %rh ± 4,2 %rh
Barometerstand:	1019,4 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24531

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Manometer, EPA (-H)**

Fabrikat:	WIKA	Serienr.:	**N/A**
Kundemærke:	**145078**	Område:	0 - 10 mbar
Klasse:	1,6	Inddeling:	0,2 mbar
Diameter:	100 mm.		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **04-09-2018**

Procedure: D1-2.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 05-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 0 - 10 mbar

Reference	Aflæsning	Reference	Aflæsning
Op 1		Ned 1	
mbar	mbar	mbar	mbar
0,00	0,00	0,00	0,00
2,00	2,20	2,00	2,20
4,00	4,40	4,00	4,40
6,00	6,60	6,00	6,60
8,00	8,76	8,00	8,76
9,15	10,00	9,15	10,00

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 0 - 10 mbar

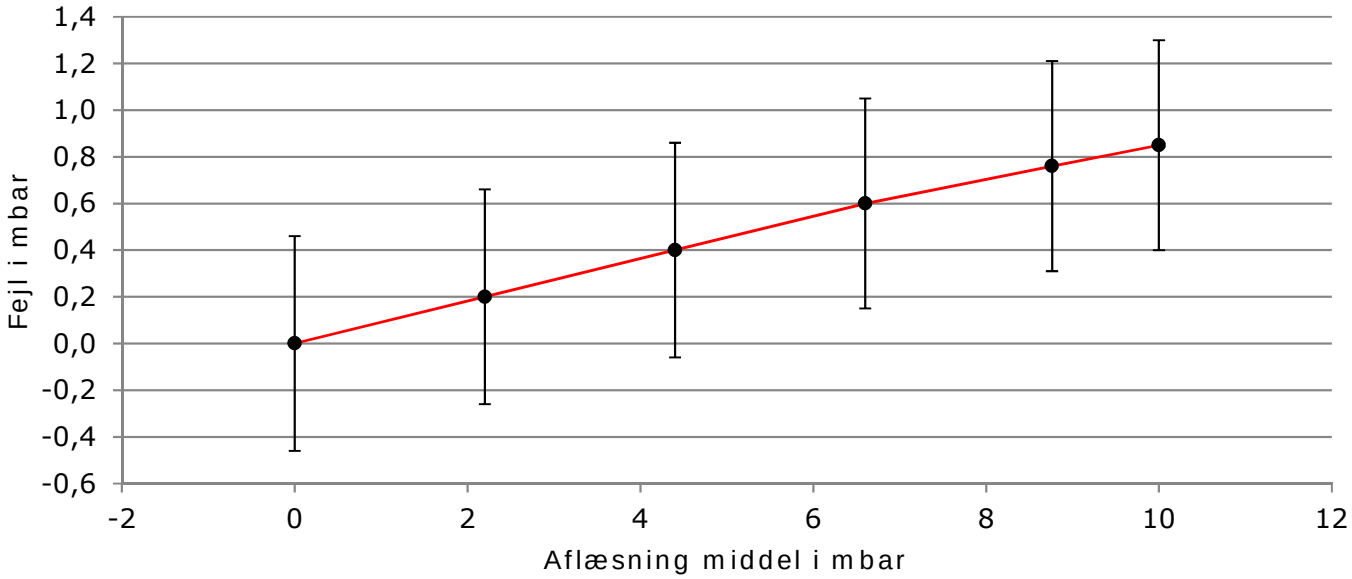
Reference middelværdi mbar	Aflæsning middelværdi mbar	Opløsning mbar	Hysterese mbar	Fejl mbar	Usikkerhed mbar
0,00	0,00	0,04	0,00	0,00	0,46
2,00	2,20	0,04	0,00	0,20	0,46
4,00	4,40	0,04	0,00	0,40	0,46
6,00	6,60	0,04	0,00	0,60	0,45
8,00	8,76	0,04	0,00	0,76	0,45
9,15	10,00	0,04	0,00	0,85	0,45

Maks. hysterese:	0,00 mbar
Maks. fejl:	0,85 mbar
Maks. relativ fejl i forhold til måleområdet:	8,5 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	62,1 %rh ± 4,2 %rh
Barometerstand:	1019,1 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

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www.teknologisk.dk

KALIBRERINGSCERTIFIKAT

CERTIFIKATNR.:
200-P-24532

Rekvirent: Teknologisk Institut, Biomasse og bioraffinering
Max Bjerrum
Kongsvang Allé 29
8000 Århus C

Emne: **Manometer, EPA (-D)**

Fabrikat:	WIKA	Serienr.:	**N/A**
Kundemærke:	**145079**	Område:	0 - 10 mbar
Klasse:	1,6	Inddeling:	0,2 mbar
Diameter:	100 mm.		

Rekvisitionsnr.: TNJ

Periode: Modtaget: 29-08-2018 Kalibreret: **04-09-2018**

Procedure: D1-2.1

Bemærkninger:

Vilkår: Kalibreringen er udført i henhold til gældende vilkår fastlagt af DANAK, jf. www.danak.dk, og i henhold til Teknologisk Instituts almindelige vilkår, som er gældende på tidspunktet for aftaleindgåelsen. Kalibreringsresultater gælder udelukkende for det kalibrerede emne. Kalibreringscertifikatet må kun gengives i uddrag, hvis laboratoriet skriftligt har godkendt uddraget.

Kalibreret af: Kenn Øholm, 72 20 34 98, koh@teknologisk.dk

Godkendt og digitalt signeret 05-09-2018 af:

Mette Pedersen
Kvalitets & måletekniker

ilac-MRA DANAK
CAL Reg.nr. 200

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Målinger

Måleområde: 0 - 10 mbar

Reference	Aflæsning	Reference	Aflæsning
Op 1		Ned 1	
mbar	mbar	mbar	mbar
0,00	0,00	0,00	0,00
2,00	2,16	2,00	2,16
4,00	4,24	4,00	4,24
6,00	6,36	6,00	6,36
8,00	8,40	8,00	8,40
9,55	10,00	9,55	10,00

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT
Resultater

Måleområde: 0 - 10 mbar

Reference middelværdi mbar	Aflæsning middelværdi mbar	Opløsning mbar	Hysterese mbar	Fejl mbar	Usikkerhed mbar
0,00	0,00	0,04	0,00	0,00	0,46
2,00	2,16	0,04	0,00	0,16	0,46
4,00	4,24	0,04	0,00	0,24	0,46
6,00	6,36	0,04	0,00	0,36	0,45
8,00	8,40	0,04	0,00	0,40	0,45
9,55	10,00	0,04	0,00	0,45	0,45

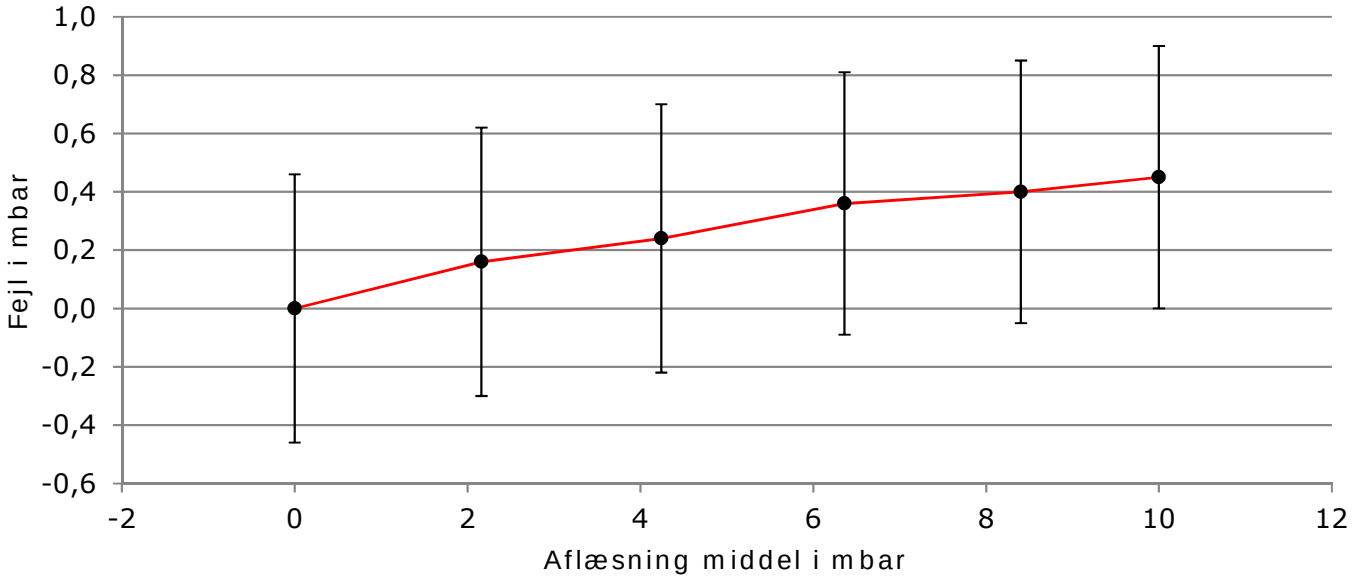
Maks. hysterese:	0,00 mbar
Maks. fejl:	0,45 mbar
Maks. relativ fejl i forhold til måleområdet:	4,5 %

TRYKLABORATORIET

TEKNOLOGISK INSTITUT

KALIBRERINGSCERTIFIKAT

Fejlkurve



Kun de markerede punkter er målt.

Bemærkninger:
Fejl = aflæsning middel - referenceværdi.
Den beregnede standardusikkerhed inkluderer relevante korttidsbidrag samt den halve hysterese fra det kalibrerede emne.
Den rapporterede ekspanderede usikkerhed er angivet som standardusikkerheden af målingen multipliceret med dækningsfaktoren k=2, således at dækningssandsynligheden svarer til ca. 95 %.

Kalibreringsforhold:

Prøvemedium:	Nitrogen
Rumtemperatur:	20,3 °C ± 0,3 °C
Relativ fugtighed:	62,1 %rh ± 4,2 %rh
Barometerstand:	1019,1 mbar ± 2,0 mbar

Sporbarhed:
Dette kalibreringscertifikat er omfattet af DANAK akkreditering og EA's og ILAC's multilaterale aftaler for kalibrering, hvilket sikrer, at målingerne er sporbare til SI enhedssystemet.

Kalibrering af løse termofølere i EPA stand E

Måleskema til kontrol af temofølere i stand E (EPA)

Dato:	10-09-2018	Udført af:	REHV
Brændeovnsprøvestand:	D	Emne Id nr.:	145081
Certifikat nr.:	ELAB-37-2018		
Kalibrator ref.:	270-A-0912 (Jofra)		

Display	Sand temp.	Vist temp.	Fejl
Temp. Brænderum	25	25,5	0,5

28.09.2018
Y:\Labspace\LAB2C_Labspace\Kalibrering Arbejdskopi\2018\EPA-Certifikater\29-Id-169522-ELAB-39-2018.docx
MXB

Kontrol af lækage efter pumper i forbindelse med EPA målinger på stand E.

Dato: 28.09.2018 Int.: MXB Ref.: 270-A-2406 (TSI)

Id nr.: 169522 Cert nr.: ELAB-39-2018

Kontrol af lækage efter pumpen på "Hel" serie

Startværdi: 1530 Pa

Slutværdi efter 1 minut: 1460 Pa

Kontrol af lækage efter pumpen på "Delt" serien

Startværdi: 1750 Pa

Slutværdi efter 1 minut: 1520 Pa

Kontrol af lækage efter pumpen på "Rum" serien

Startværdi: 1600 Pa

Slutværdi efter 1 minut: 1540 Pa

(Krav er startværdi < 1800Pa og slutværdi >1300Pa ved 1 minuts måletid)

Manufacturer:	Morsø
Type:	7110B
ELAB no.:	2380
Order number:	847607
Testdate:	43479,4
File Name:	3.42 Ny gld HF emi calc 140119
Testrun:	HF kørt ved spj 100% åb.
Fil dato og tid (Start):	43479,4

Weight of test fuel spacers, dry basis, kg

E2780

Equation (1) $M_{Sdb} = (M\_Swb) * (\frac{100}{100 + FM_S})$

M_swb	0	kg (wet basis)
FM_s	0	% (dry basis)

M_sdb = (0) x (100 / (100 + 0)) kg (dry basis)

M_sbd = 0 kg (dry basis)

Weight of test fuel crip, excluding nails and spacers, dry basis, kg

E2780

Equation (2) $M_{Cdb} = \Sigma(M_{CPnwb}) * \left(\frac{100}{100 + FM_{CPn}}\right)$

M_CPnwb	3,582	kg (wet basis)
FM_CPn	0	% (dry basis)

M_Cdb = Σ[(3,6) x (100 / (100 + 0))] kg (dry basis)

M_Cdb = 3,582 kg (dry basis)

Density of fuel crip, excluding spacers and nails, dry basis, kg/m3

E2780

Equation (3) $D_{Cdb} = \frac{M_{Cdb}}{V_C}$

M_Cdb	3,582	kg (dry basis)
V_C	0,04	m3

D_Cdb = 3,582 / 0,04 kg (dry) / m3

D_Cdb = 89,55 kg (dry) / m3

Total weight of fuel crip excluding nails, dry basis, kg

E2780

$$Equation\,(4) \qquad M_{FTAdb} = M_{Sdb} + M_{Cdb}$$

M_Sdb	0	kg (dry basis)
M_Cdb	3,582	kg (dry basis)

M_FTAdb = 0 + 3,582 kg (dry basis)

M_FTAdb = 3,582 kg (dry basis)

Burn rate, kg (dry/h)

E2780

$$Equation\,(5) \qquad BR = \frac{60 * M\_FTAdb}{\theta}$$

M_FTAdb	3,582	kg (dry basis)
θ	77,83	min

$$BR = \frac{60 \text{ x } 3,582}{78}$$

BR = 2,76128

Air velocity in tunnel at traverse measurements:

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	1,00	(Direckt)					
K_p	34,97	-					
C_p	0,99	-					
ΔP_avg	3,46	mmVS	P_Dynamisk	33,97	Pa		
T_s	293,30	K	T_Kanal	20,30	°C		
P_s	748,29	mmHg	P_s	99772	Pa	Ps_Tryk	-158 Pa
M_s	29,00	g/g mole					

$$V_s = 1{,}00 \times 34{,}97 \times 0{,}99 \times \left(3{,}46\right)^{0{,}5} \times \left(\frac{293{,}30}{748{,}29 \times 29{,}00}\right)^{0{,}5}$$

V_s = 7,49 m/s (V_scent)

Pitot tube factor for center:

E2515

$$Equation\,(1) \qquad Fp = \frac{Vstrav}{Vscent}$$

V_strav	7,39	m/s	(Average)
V_scent	7,49	m/s	(Average)

$$F_p = \frac{7{,}39}{7{,}49}$$

F_p = 0,9859 -

Air velocity in dilution tunnel during test charge

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	0,9859	-			
K_p	34,97	-			
C_p	0,99	-			
Delta P_avg	3,19	mmVS	P_Dynamisk	31,30	Pa
T_s	314,13	K			
P_s	748,40	mmHg			
M_s	29,00	g/g mole			

$$V_s = 0{,}9859 \times 34{,}97 \times 0{,}99 \times (3{,}19)^{0{,}5} \times \left(\frac{314{,}13}{748{,}40 \times 29{,}00}\right)^{0{,}5}$$

V_s = 7,34 m/s (V_scent)

Average gas flow rate in dilution tunnel:

E2515

$$Equation\,(3) \qquad Qstd = 60 * (1 - Bws) * Vs * A * \left(\frac{Tstd * Ps}{Ts * Pstd}\right)$$

B_ws	0,02	-					
V_s	7,336625	m/s					
A	0,017671	m2					
T_std	293	K					
P_s	748,3952	mmHg	P_s	####	Pa	Ps_Tryk	### Pa
T_s	314,1253	K	T_Kanal	41,1	°C		
P_std	760	mmHg					

$$Q_{std} = 60 \times (1 - 0{,}02) \times 7{,}3 \times 0 \times \left(\frac{293 \times 748}{314{,}13 \times 760}\right)$$

Q_std = 7,0021 dscm/min

Measurements sample train 1 entire charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13{,}6}}{Tm}\right)$$

V_m	0,52914	dcm			
K_1	0,3855	K/mmHg			
Y	0,999	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	77,83333	min			

V_mc = 0,52914 - (0 - 0) x 78

V_mc = 0,52914 dscm

$$V\_mc(std) = 0{,}3855 \times 0{,}52914 \times 0{,}999 \times \left(\frac{760 + \frac{0}{13{,}6}}{273}\right)$$

V_mc(std) = 0,5673 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0,3	mg
m_f	3,3	mg
m_g	0,2	mg

m_n = 0,3 + 3,3 + 0,2

m_n = 3,8 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	3,8	mg
V_m(std)	0,567297	dscm

$$C\_s = 0{,}001 \times \frac{3{,}8}{0{,}5673}$$

C_s = 0,0067 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,006698	g/dscm
c_r	-2,04E-16	g/dscm
Q_std	7,002099	dscm/min
θ	77,83333	min

E_T = (0 - -0) x 7 x 78

E_T = 3,65062 g

Measurements sample train 2 first hour of charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13{,}6}}{Tm}\right)$$

V_m	0,41225	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	60	min			

V_mc = 0,41225 - (0 - 0) x 60

V_mc = 0,41225 dcm

$$V_{mc(std)} = 0{,}3855 \times 0{,}41225 \times 0{,}9991 \times \left(\frac{760 + \frac{0}{13{,}6}}{273}\right)$$

V_mc(std) = 0,44202 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0,2 mg
m_f	3,2 mg
m_g	0,2 mg

m_n = 0,2 + 3,2 + 0,2

m_n = 3,6 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001 g/mg
m_n	3,6 mg
V_m(std)	0,442022 dscm

$$C_s = 0{,}001 \times \frac{3{,}6}{0{,}44202}$$

C_s = 0,00814 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,008144 g/dscm
c_r	-2,04E-16 g/dscm
Q_std	7,002099 dscm/min
θ	60 min

E_T = (0 - -0) x 7 x 60

E_T = 3,42167 g

Measurements sample train 2 from 1 hour and rest of charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

V_m	0,11583	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	17,83333	min			

V_mc = 0,11583 - (0 - 0) x 18

V_mc = 0,11583 dcm

$$V\_mc(std) = 0,3855 \times 0,11583 \times 0,9991 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 0,1242 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0	mg
m_f	0,2	mg
m_g	0,1	mg

m_n = 0 + 0,2 + 0,1

m_n = 0,3 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	0,3	mg
V_m(std)	0,124195	dscm

$$C\_s = 0,001 \times \frac{0,3}{0,1242}$$

C_s = 0,00242 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,002416	g/dscm
c_r	-2,04E-16	g/dscm
Q_std	7,002099	dscm/min
θ	17,83333	min

E_T = (0 - -0) x 7 x 18

E_T = 0,30163 g

Room blanc

E2515

$$Equation\,(8) \qquad Vmr(std) = K1 * Vmr * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

K_1	0,3855	K/mmHg			
V_mr	0,497275	dcm			
Y	1	Gasmåler Faktor			
P_bar	749,535	mmHg	P_bar	999,3	mBar
Delta_H	0	mmVS			
T_m	295,3481	K	T_Gasmåler	22,3481	°C

$$V_{mr(std)} = 0,3855 \times 0,49727 \times 1 \times \left(\frac{749,5 + \frac{0}{13,6}}{295}\right)$$

V_mr(std) = 0,4865 dscm

$$Equation\,(14) \qquad C_r = K_2 * \frac{m_r}{Vm_{r(std)}}$$

K_2	0,001	g/mg
m_r	-9,95E-14	mg
V_m_r(std)	0,486495	dscm

$$C_r = 0,001 \times \frac{-1E-13}{0,4865}$$

C_r = -2E-16 g/dscm

Proportional Rate first 10 minutes

E2515

$$Equation\,(16) \qquad PR = \frac{\theta * (V_{mi} * V_s * T_m * T_{si})}{10 * (V_m * V_{si} * T_s * T_{mi})} * 100$$

θ	77,83	min
V_mi	69,06155	l
V_s	7,34	m/s
T_m	299,0854	K
T_si	305,2737	K
V_m	529,14	l
V_si	7,35	m/s
T_s	314,1253	K
T_mi	298,0915	K

$$PR = \frac{77{,}83 \times (69{,}1 \times 7{,}34 \times 299{,}1 \times 305)}{10 \times (529 \times 7{,}35 \times 314{,}1 \times 298)} \times 100$$

PR = 98,8384 -

Notation and units

E2780

Equation (1)	M_Swb	weight of all test fuel spacers, wet basis, kg
	FM_S	average fuel moisture of all test fuel spacers, % dry basis
	M_Sdb	weight of all test fuel spacers, dry basis, kg
Equation (2)	M_CPnwb	weight of each test fuel piece n in fuel crip, excluding nails and spacers, wet basis, kg
	FM_CPn	avarage fuel moisture of test fuel piece n in fuel crip, % dry basis,
	n	individual test fuel pieces that comprise the test fuel crip, as applicable
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
Equation (3)	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	V_C	Volume of fuel crib, m3
	D_Cdb	density of fuel, crib, excluding spacers and nails, dry basis, kg/m3
Equation (4)	M_Sdb	weight of all test fuel spacers, dry basis, kg
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
Equation (5)	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
	θ	total length of test rin, min.
	BR	dry burn rate, kg/h

Equation (9)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	K_p	-	Pitot Tube Constant 34,97 m/sec
	C_p	-	Pitot tube coefficient, dimentionless (assigned a value of 0.99)
	ΔP_avg	mmVC	Average velocity pressure in dilution tunnel, mm water
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	M_s	g/g mole	The dilution tunnel dry gas molecular weight (may be assumed to be 29 g/g mole)
	V_s	m/s	Average gas velocity in the dilution tunnel
Equation (1)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	V_strav	m/s	Average gas velocity calculated after the multipoint Pitot traverse
	V_scent	m/s	Average gas velocity at the center of the dilution tunnel calculated after the Pitot tube traverse
Equation (3)	B_ws	-	Water vapor in the gas steam, proportion by volume (assumed to be 0.02 (2.0%))
	V_s	m/s	Average gas velocity in the dilution tunnel
	A	m2	Cross-sectional area of tunnel
	T_std	K	Standard absolute temperature, 293K
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_std	mmHg	Standard absolute pressure, 760 mm Hg
	Q_std	dscm/min	Average gas flow rate in dilution tunnel
Equation (7)	V_m	dcm	Volume of gas sample as measured by dry gas meter
	L_p	m3/min	Leakage rate observed during the post-test leakcheck
	L_a	m3/min	Maximum acceptable leakage rate for either a oretest og post-test leak-check, equal to 0.0003 m3/min
	θ	Min	Total sampling time
	V_mc	-	V_m - (L_p - L_a) * θ
	K_1	K/mm Hg	0.3855 K/mm Hg
	Y	-	Dry gas meter calibration factor
	P_Bar	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	V_mc(std)	dscm	Volume of air sample measured by the dry gas meter, corrected to standard conditions
Equation (12)	m_p	mg	mass of particulate from probe
	m_f	mg	mass of particulate from filters
	m_g	mg	mass of particulate from gaskets
	m_n	mg	Total amount of particulate matter collected
Equation (13)	K_2	g/mg	0.001
	m_n	mg	Total amount of particulate matter collected
	V_m(std)	dscm	Volume of gas sample measured by the dry gas meter, corrected to standard conditions
	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
Equation (15)	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
	c_r	g/dscm	Consentration of particulate matter room air, dry basis, corrected to standard conditions
	Q_std	dscm/min	Average gas flow rate in dilution tunnel
	θ	Min	Total sampling time
	E_T	g	Total particulate emissions
Equation (8)	K_1	K/mm Hg	0.3855 K/mm Hg
	V_mr	dcm	Volume of room air sampled as measured by dry gas meter
	Y	-	Dry gas meter calibration factor
	P_bar	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	V_mr(std)	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (14)	K_2	g/mg	0.001
	m_r	mg	mass of particulate from the filter, filter gasket, and probe assembly from the room air blank filter holder assembly
	V_mr(std)	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (16)	θ	Min	Total sampling time
	V_mi	dcm	Volume of gas sample as measured by dry gas neter during each 10-min interval, i, of the test run
	V_s	m/s	Average gas velocity in the dilution tunnel
	T_m	K	Absolute average dry gas meter temperature
	T_si	K	Absolute average gas temperature in the dilution tunnel during each 10-min interval, i, of the test run
	V_m	dcm	Volume of gas sample as measured by dry gas meter
	V_si	dcm	Volume of gas sampled as measured by dry gas meter during each 10-min interval, i, of the test run
	T_s	K	Absolute average gas temperature in the dilution tunnel
	T_mi	K	Absolute avarage dry gas meter temperature during each 10-min interval, i, of the test run
	PR	-	Proportional Rate Variation - Calculated PR for each 10-min interval, i, of the test run

Manufacturer:	Morsø
Type:	7110B
ELAB no.:	2380
Order number:	847607
Testdate:	14-01-2019
File Name:	3.42 Ny gld MF 140119
Testrun:	Medium Fire, kørt ved spj 21% åb efter nedregulering
Fil dato og tid (Start):	08:27:56

Weight of test fuel spacers, dry basis, kg

E2780

Equation (1) $M_{Sdb} = (M\_Swb) * (\frac{100}{100 + FM_S})$

M_swb	0	kg (wet basis)
FM_s	0	% (dry basis)

M_sdb = (0) x (100 / (100 + 0)) kg (dry basis)

M_sbd = 0 kg (dry basis)

Weight of test fuel crip, excluding nails and spacers, dry basis, kg

E2780

Equation (2) $M_{Cdb} = \Sigma(M_{CPnwb}) * \left(\frac{100}{100 + FM_{CPn}}\right)$

M_CPnwb	4,343	kg (wet basis)
FM_CPn	19,90408	% (dry basis)

M_Cdb = Σ[(4,3) x (100 / (100 + 20))] kg (dry basis)

M_Cdb = 3,62206 kg (dry basis)

Density of fuel crip, excluding spacers and nails, dry basis, kg/m3

E2780

Equation (3) $D_{Cdb} = \frac{M_{Cdb}}{V_C}$

M_Cdb	3,622062	kg (dry basis)
V_C	0,04	m3

D_Cdb = 3,62206 / 0,04 kg (dry) / m3

D_Cdb = 90,5516 kg (dry) / m3

Total weight of fuel crip excluding nails, dry basis, kg
E2780

$$Equation\,(4) \qquad M_{FTAdb} = M_{Sdb} + M_{Cdb}$$

M_Sdb	0	kg (dry basis)
M_Cdb	3,622062	kg (dry basis)

M_FTAdb = 0 + 3,62206 kg (dry basis)

M_FTAdb = 3,62206 kg (dry basis)

Burn rate, kg (dry/h)
E2780

$$Equation\,(5) \qquad BR = \frac{60 * M\_FTAdb}{\theta}$$

M_FTAdb	3,622062	kg (dry basis)
θ	150,83	min

$$BR = \frac{60 \text{ x } 3,62206}{151}$$

BR = 1,44082

Air velocity in tunnel at traverse measurements:

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	1,00	(Direckt)					
K_p	34,97	-					
C_p	0,99	-					
ΔP_avg	3,46	mmVS	P_Dynamisk	33,97	Pa		
T_s	295,60	K	T_Kanal	22,60	°C		
P_s	749,15	mmHg	P_s	99887	Pa	Ps_Tryk	-158 Pa
M_s	29,00	g/g mole					

$$V_s = 1{,}00 \times 34{,}97 \times 0{,}99 \times \left(3{,}46\right)^{0{,}5} \times \left(\frac{295{,}60}{749{,}15 \times 29{,}00}\right)^{0{,}5}$$

$$V_s = 7{,}52 \text{ m/s (V_scent)}$$

Pitot tube factor for center:

E2515

$$Equation\,(1) \qquad Fp = \frac{Vstrav}{Vscent}$$

V_strav	7,41	m/s	(Average)
V_scent	7,52	m/s	(Average)

$$F_p = \frac{7{,}41}{7{,}52}$$

$$F_p = 0{,}9859 \text{ -}$$

Air velocity in dilution tunnel during test charge

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	0,9859	-			
K_p	34,97	-			
C_p	0,99	-			
Delta P_avg	3,12	mmVS	P_Dynamisk	30,59	Pa
T_s	306,53	K			
P_s	749,28	mmHg			
M_s	29,00	g/g mole			

$$V_s = 0{,}9859 \times 34{,}97 \times 0{,}99 \times \left(3{,}12\right)^{0{,}5} \times \left(\frac{306{,}53}{749{,}28 \times 29{,}00}\right)^{0{,}5}$$

$$V_s = 7{,}16 \text{ m/s (V\_scent)}$$

Average gas flow rate in dilution tunnel:

E2515

$$Equation\,(3) \qquad Qstd = 60 * (1 - Bws) * Vs * A * \left(\frac{Tstd * Ps}{Ts * Pstd}\right)$$

B_ws	0,02	-					
V_s	7,159566	m/s					
A	0,017671	m2					
T_std	293	K					
P_s	749,2785	mmHg	P_s	####	Pa	Ps_Tryk	### Pa
T_s	306,5324	K	T_Kanal	33,5	°C		
P_std	760	mmHg					

$$Q_{std} = 60 \times \left(1 - 0{,}02\right) \times 7{,}2 \times 0 \times \left(\frac{293 \times 749}{306{,}53 \times 760}\right)$$

$$Q_{std} = 7{,}01063 \text{ dscm/min}$$

Measurements sample train 1 entire charge

E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13{,}6}}{Tm}\right)$$

V_m	1,06849	dcm			
K_1	0,3855	K/mmHg			
Y	0,999	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	150,8333	min			

V_mc = 1,06849 - (0 - 0) x 151

V_mc = 1,06849 dscm

$$V\_mc(std) = 0{,}3855 \times 1{,}06849 \times 0{,}999 \times \left(\frac{760 + \frac{0}{13{,}6}}{273}\right)$$

V_mc(std) = 1,14554 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0	mg
m_f	2,4	mg
m_g	0,8	mg

m_n = 0 + 2,4 + 0,8

m_n = 3,2 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	3,2	mg
V_m(std)	1,14554	dscm

$$C\_s = 0{,}001 \times \frac{3{,}2}{1{,}14554}$$

C_s = 0,00279 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,002793	g/dscm
c_r	0,000108	g/dscm
Q_std	7,010635	dscm/min
θ	150,8333	min

E_T = (0 - 0) x 7 x 151

E_T = 2,83978 g

Measurements sample train 2 first hour of charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13{,}6}}{Tm}\right)$$

V_m	0,43351	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	60	min			

V_mc = 0,43351 - (0 - 0) x 60

V_mc = 0,43351 dcm

$$V_{mc(std)} = 0{,}3855 \times 0{,}43351 \times 0{,}9991 \times \left(\frac{760 + \frac{0}{13{,}6}}{273}\right)$$

V_mc(std) = 0,46482 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0 mg
m_f	2,4 mg
m_g	0,2 mg

m_n = 0 + 2,4 + 0,2

m_n = 2,6 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001 g/mg
m_n	2,6 mg
V_m(std)	0,464817 dscm

$$C_s = 0{,}001 \times \frac{2{,}6}{0{,}46482}$$

C_s = 0,00559 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,005594 g/dscm
c_r	0,000108 g/dscm
Q_std	7,010635 dscm/min
θ	60 min

E_T = (0 - 0) x 7 x 60

E_T = 2,30749 g

Measurements sample train 2 from 1 hour and rest of charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

V_m	0,62587	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	90,83333	min			

V_mc = 0,62587 - (0 - 0) x 91

V_mc = 0,62587 dcm

$$V\_mc(std) = 0,3855 \times 0,62587 \times 0,9991 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 0,67107 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0	mg
m_f	0,2	mg
m_g	0,1	mg

m_n = 0 + 0,2 + 0,1

m_n = 0,3 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	0,3	mg
V_m(std)	0,671069	dscm

$$C\_s = 0,001 \times \frac{0,3}{0,67107}$$

C_s = 0,00045 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,000447	g/dscm
c_r	0,000108	g/dscm
Q_std	7,010635	dscm/min
θ	90,83333	min

E_T = (0 - 0) x 7 x 91

E_T = 0,21596 g

Room blanc

E2515

$$Equation\,(8) \qquad Vmr(std) = K1 * Vmr * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

K_1	0,3855	K/mmHg			
V_mr	0,955301	dcm			
Y	1	Gasmåler Faktor			
P_bar	750,3975	mmHg	P_bar	1000,45	mBar
Delta_H	0	mmVS			
T_m	298,2051	K	T_Gasmåler	25,2051	°C

$$V\_mr(std) = 0,3855 \times 0,9553 \times 1 \times \left(\frac{750,4 + \frac{0}{13,6}}{298}\right)$$

V_mr(std) = 0,9267 dscm

$$Equation\,(14) \qquad C_r = K_2 * \frac{m_r}{Vm_{r(std)}}$$

K_2	0,001	g/mg
m_r	0,1	mg
V_m_r(std)	0,926704	dscm

$$C\_r = 0,001 \times \frac{0,1}{0,9267}$$

C_r = 0,00011 g/dscm

Proportional Rate first 10 minutes

E2515

$$Equation\,(16) \qquad PR = \frac{\theta * (V_{mi} * V_s * T_m * T_{si})}{10 * (V_m * V_{si} * T_s * T_{mi})} * 100$$

θ	150,83	min
V_mi	70,24946	l
V_s	7,16	m/s
T_m	301,7475	K
T_si	321,652	K
V_m	1068,49	l
V_si	7,46	m/s
T_s	306,5324	K
T_mi	300,9701	K

$$PR = \frac{150,83 \times (70,2 \times 7,16 \times 301,7 \times 322)}{10 \times (1068 \times 7,46 \times 306,5 \times 301)} \times 100$$

$$PR = 100,077 \; -$$

Notation and units

E2780

Equation (1)	M_Swb	weight of all test fuel spacers, wet basis, kg
	FM_S	average fuel moisture of all test fuel spacers, % dry basis
	M_Sdb	weight of all test fuel spacers, dry basis, kg
Equation (2)	M_CPnwb	weight of each test fuel piece n in fuel crip, excluding nails and spacers, wet basis, kg
	FM_CPn	avarage fuel moisture of test fuel piece n in fuel crip, % dry basis,
	n	individual test fuel pieces that comprise the test fuel crip, as applicable
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
Equation (3)	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	V_C	Volume of fuel crib, m3
	D_Cdb	density of fuel, crib, excluding spacers and nails, dry basis, kg/m3
Equation (4)	M_Sdb	weight of all test fuel spacers, dry basis, kg
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
Equation (5)	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
	θ	total length of test rin, min.
	BR	dry burn rate, kg/h

Equation (9)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	K_p	-	Pitot Tube Constant 34,97 m/sec
	C_p	-	Pitot tube coefficient, dimentionless (assigned a value of 0.99)
	ΔP_{avg}	mmVC	Average velocity pressure in dilution tunnel, mm water
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	M_s	g/g mole	The dilution tunnel dry gas molecular weight (may be assumed to be 29 g/g mole)
	V_s	m/s	Average gas velocity in the dilution tunnel
Equation (1)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	V_{strav}	m/s	Average gas velocity calculated after the multipoint Pitot traverse
	V_{scent}	m/s	Average gas velocity at the center of the dilution tunnel calculated after the Pitot tube traverse
Equation (3)	B_{ws}	-	Water vapor in the gas steam, proportion by volume (assumed to be 0.02 (2.0%))
	V_s	m/s	Average gas velocity in the dilution tunnel
	A	m2	Cross-sectional area of tunnel
	T_{std}	K	Standard absolute temperature, 293K
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_{std}	mmHg	Standard absolute pressure, 760 mm Hg
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
Equation (7)	V_m	dcm	Volume of gas sample as measured by dry gas meter
	L_p	m3/min	Leakage rate observed during the post-test leakcheck
	L_a	m3/min	Maximum acceptable leakage rate for either a oretest og post-test leak-check, equal to 0.0003 m3/min
	θ	Min	Total sampling time
	V_{mc}	-	$V_m - (L_p - L_a) * \theta$
	K_1	K/mm Hg	0.3855 K/mm Hg
	Y	-	Dry gas meter calibration factor
	P_{Bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mc(std)}$	dscm	Volume of air sample measured by the dry gas meter, corrected to standard conditions
Equation (12)	m_p	mg	mass of particulate from probe
	m_f	mg	mass of particulate from filters
	m_g	mg	mass of particulate from gaskets
	m_n	mg	Total amount of particulate matter collected
Equation (13)	K_2	g/mg	0.001
	m_n	mg	Total amount of particulate matter collected
	$V_{m(std)}$	dscm	Volume of gas sample measured by the dry gas meter, corrected to standard conditions
	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
Equation (15)	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
	c_r	g/dscm	Consentration of particulate matter room air, dry basis, corrected to standard conditions
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
	θ	Min	Total sampling time
	E_T	g	Total particulate emissions
Equation (8)	K_1	K/mm Hg	0.3855 K/mm Hg
	V_{mr}	dcm	Volume of room air sampled as measured by dry gas meter
	Y	-	Dry gas meter calibration factor
	P_{bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (14)	K_2	g/mg	0.001
	m_r	mg	mass of particulate from the filter, filter gasket, and probe assembly from the room air blank filter holder assembly
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (16)	θ	Min	Total sampling time
	V_{mi}	dcm	Volume of gas sample as measured by dry gas neter during each 10-min interval, i, of the test run
	V_s	m/s	Average gas velocity in the dilution tunnel
	T_m	K	Absolute average dry gas meter temperature
	T_{si}	K	Absolute average gas temperature in the dilution tunnel during each 10-min interval, i, of the test run
	V_m	dcm	Volume of gas sample as measured by dry gas meter
	V_{si}	dcm	Volume of gas sampled as measured by dry gas meter during each 10-min interval, i, of the test run
	T_s	K	Absolute average gas temperature in the dilution tunnel
	T_{mi}	K	Absolute avarage dry gas meter temperature during each 10-min interval, i, of the test run
	PR	-	Proportional Rate Variation - Calculated PR for each 10-min interval, i, of the test run

Manufacturer:	Morsø
Type:	7110B
ELAB no.:	2380
Order number:	847607
Testdate:	15-01-2019
File Name:	3.43 Ny dummy HF 150119
Testrun:	LF, kørt ved spj 10 mm åb (14%)
Fil dato og tid (Start):	08:47:34

Weight of test fuel spacers, dry basis, kg

E2780

$$Equation\ (1) \qquad M_{Sdb} = (M\_Swb) * (\frac{100}{100 + FM_S})$$

M_swb	0	kg (wet basis)
FM_s	0	% (dry basis)

M_sdb = (0) x (100 / (100 + 0)) kg (dry basis)

M_sbd = 0 kg (dry basis)

Weight of test fuel crip, excluding nails and spacers, dry basis, kg

E2780

$$Equation\ (2) \qquad M_{Cdb} = \Sigma(M_{CPnwb}) * \left(\frac{100}{100 + FM_{CPn}}\right)$$

M_CPnwb	2,727	kg (wet basis)
FM_CPn	0	% (dry basis)

M_Cdb = Σ[(2,7) x (100 / (100 + 0))] kg (dry basis)

M_Cdb = 2,727 kg (dry basis)

Density of fuel crip, excluding spacers and nails, dry basis, kg/m3

E2780

$$Equation\ (3) \qquad D_{Cdb} = \frac{M_{Cdb}}{V_C}$$

M_Cdb	2,727	kg (dry basis)
V_C	0,04	m3

D_Cdb = 2,727 / 0,04 kg (dry) / m3

D_Cdb = 68,175 kg (dry) / m3

Total weight of fuel crip excluding nails, dry basis, kg

E2780

$$Equation\,(4) \qquad M_{FTAdb} = M_{Sdb} + M_{Cdb}$$

M_Sdb	0	kg (dry basis)
M_Cdb	2,727	kg (dry basis)

M_FTAdb = 0 + 2,727 kg (dry basis)

M_FTAdb = 2,727 kg (dry basis)

Burn rate, kg (dry/h)

E2780

$$Equation\,(5) \qquad BR = \frac{60 * M\_FTAdb}{\theta}$$

M_FTAdb	2,727	kg (dry basis)
θ	66,38	min

$$BR = \frac{60 \times 2,727}{66}$$

BR = 2,46478

Air velocity in tunnel at traverse measurements:

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	1,00	(Direckt)					
K_p	34,97	-					
C_p	0,99	-					
ΔP_avg	3,10	mmVS	P_Dynamisk	30,40	Pa		
T_s	295,60	K	T_Kanal	22,60	°C		
P_s	-1,04	mmHg	P_s	-138,6	Pa	Ps_Tryk	-139 Pa
M_s	29,00	g/g mole					

$$V_s = 1{,}00 \times 34{,}97 \times 0{,}99 \times \left(3{,}10\right)^{0{,}5} \times \left(\frac{295{,}60}{-1{,}04 \times 29{,}00}\right)^{0{,}5}$$

V_s = #NUM! m/s (V_scent)

Pitot tube factor for center:

E2515

$$Equation\,(1) \qquad Fp = \frac{Vstrav}{Vscent}$$

V_strav	179,00	m/s	(Average)
V_scent	#NUM!	m/s	(Average)

$$F_p = \frac{179{,}00}{\#NUM!}$$

F_p = #NUM! -

Air velocity in dilution tunnel during test charge

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	#NUM!	-			
K_p	34,97	-			
C_p	0,99	-			
Delta P_avg	3,06	mmVS	P_Dynamisk	30,00	Pa
T_s	313,65	K			
P_s	-1,04	mmHg			
M_s	29,00	g/g mole			

$$V_s = \#NUM! \times 34{,}97 \times 0{,}99 \times \left(3{,}06\right)^{0{,}5} \times \left(\frac{313{,}65}{-1{,}04 \times 29{,}00}\right)^{0{,}5}$$

V_s = #NUM! m/s (V_scent)

Average gas flow rate in dilution tunnel:

E2515

$$Equation\,(3) \qquad Qstd = 60 * (1 - Bws) * Vs * A * \left(\frac{Tstd * Ps}{Ts * Pstd}\right)$$

B_ws	0,02	-						
V_s	#NUM!	m/s						
A	0,017671	m2						
T_std	293	K						
P_s	-1,039376	mmHg	P_s	-139	Pa	Ps_Tryk	###	Pa
T_s	313,6525	K	T_Kanal	40,7	°C			
P_std	760	mmHg						

$$Q_{std} = 60 \times (1 - 0{,}02) \times \#\#\# \times 0 \times \left(\frac{293 \times -1}{313{,}65 \times 760}\right)$$

Q_std = #NUM! dscm/min

Measurements sample train 1 entire charge

E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13{,}6}}{Tm}\right)$$

V_m	0	dcm			
K_1	0,3855	K/mmHg			
Y	0,999	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	66,38333	min			

V_mc = 0 - (0 - 0) x 66

V_mc = 0 dscm

$$V_{mc(std)} = 0{,}3855 \times 0 \times 0{,}999 \times \left(\frac{760 + \frac{0}{13{,}6}}{273}\right)$$

V_mc(std) = 0 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0	mg
m_f	0	mg
m_g	0	mg

m_n = 0 + 0 + 0

m_n = 0 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	0	mg
V_m(std)	0	dscm

$$C_s = 0{,}001 \times \frac{0}{0}$$

C_s = #DIV/0! g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	#DIV/0!	g/dscm
c_r	#DIV/0!	g/dscm
Q_std	#NUM!	dscm/min
θ	66,38333	min

E_T = (### - ####) x ### x 66

E_T = #DIV/0! g

Measurements sample train 2 first hour of charge
E2515

$Equation\,(7_1)$ $Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$

$Equation\,(7)$ $Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$

V_m	0	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	60	min			

V_mc = 0 - (0 - 0) x 60

V_mc = 0 dcm

V_mc(std) = 0,3855 x 0 x 0,9991 x $\left(\frac{760 + \frac{0}{13,6}}{273}\right)$

V_mc(std) = 0 dscm

$Equation\,(12)$ $m_n = m_p + m_f + m_g$

m_p	0	mg
m_f	0	mg
m_g	0	mg

m_n = 0 + 0 + 0

m_n = 0 mg

$Equation\,(13)$ $C_s = K_2 * \frac{m_n}{V_{m(std)}}$

K_2	0,001	g/mg
m_n	0	mg
V_m(std)	0	dscm

C_s = 0,001 x $\frac{0}{0}$

C_s = #DIV/0! g/dscm

$Equation\,(15)$ $E_T = (C_s - C_r) * Q_{std} * \theta$

c_s	#DIV/0!	g/dscm
c_r	#DIV/0!	g/dscm
Q_std	#NUM!	dscm/min
θ	60	min

E_T = (### - ####) x ### x 60

E_T = #DIV/0! g

Measurements sample train 2 from 1 hour and rest of charge
E2515

Equation (7_1) $Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$

Equation (7) $Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$

V_m	0	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	6,383333	min			

V_mc = 0 - (0 - 0) x 6,4

V_mc = 0 dcm

$$V\_mc(std) = 0,3855 \times 0 \times 0,9991 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 0 dscm

Equation (12) $m_n = m_p + m_f + m_g$

m_p	0	mg
m_f	0	mg
m_g	0	mg

m_n = 0 + 0 + 0

m_n = 0 mg

Equation (13) $C_s = K_2 * \frac{m_n}{V_{m(std)}}$

K_2	0,001	g/mg
m_n	0	mg
V_m(std)	0	dscm

$$C\_s = 0,001 \times \frac{0}{0}$$

C_s = #DIV/0! g/dscm

Equation (15) $E_T = (C_s - C_r) * Q_{std} * \theta$

c_s	#DIV/0!	g/dscm
c_r	#DIV/0!	g/dscm
Q_std	#NUM!	dscm/min
θ	6,383333	min

E_T = (### - ####) x ### x 6,4

E_T = #DIV/0! g

Room blanc

E2515

$$Equation\,(8) \qquad Vmr(std) = K1 * Vmr * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

K_1	0,3855	K/mmHg			
V_mr	0	dcm			
Y	1	Gasmåler Faktor			
P_bar	0	mmHg	P_bar	0	mBar
Delta_H	0	mmVS			
T_m	295,4116	K	T_Gasmåler	22,4116	°C

$$V\_mr(std) = 0,3855 \times 0 \times 1 \times \left(\frac{0 + \frac{0}{13,6}}{295}\right)$$

V_mr(std) = 0 dscm

$$Equation\,(14) \qquad C_r = K_2 * \frac{m_r}{Vm_{r(std)}}$$

K_2	0,001	g/mg
m_r	0	mg
V_m_r(std)	0	dscm

$$C\_r = 0,001 \times \frac{0}{0}$$

C_r = #DIV/0! g/dscm

Proportional Rate first 10 minutes

E2515

$$Equation\,(16) \qquad PR = \frac{\theta * (V_{mi} * V_s * T_m * T_{si})}{10 * (V_m * V_{si} * T_s * T_{mi})} * 100$$

θ	66,38	min
V_mi	0,011436	l
V_s	#NUM!	m/s
T_m	298,3584	K
T_si	304,5982	K
V_m	0,00	l
V_si	#NUM!	m/s
T_s	313,6525	K
T_mi	297,7561	K

$$PR = \frac{66{,}38 \times (0{,}01 \times \#\#\#\# \times 298{,}4 \times 305)}{10 \times (0 \times \#\#\#\# \times 313{,}7 \times 298)} \times 100$$

PR = #NUM! -

Notation and units

E2780

Equation (1)	M_Swb	weight of all test fuel spacers, wet basis, kg
	FM_S	average fuel moisture of all test fuel spacers, % dry basis
	M_Sdb	weight of all test fuel spacers, dry basis, kg
Equation (2)	M_CPnwb	weight of each test fuel piece n in fuel crip, excluding nails and spacers, wet basis, kg
	FM_CPn	avarage fuel moisture of test fuel piece n in fuel crip, % dry basis,
	n	individual test fuel pieces that comprise the test fuel crip, as applicable
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
Equation (3)	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	V_C	Volume of fuel crib, m3
	D_Cdb	density of fuel, crib, excluding spacers and nails, dry basis, kg/m3
Equation (4)	M_Sdb	weight of all test fuel spacers, dry basis, kg
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
Equation (5)	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
	θ	total length of test rin, min.
	BR	dry burn rate, kg/h

Equation (9)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	K_p	-	Pitot Tube Constant 34,97 m/sec
	C_p	-	Pitot tube coefficient, dimentionless (assigned a value of 0.99)
	ΔP_{avg}	mmVC	Average velocity pressure in dilution tunnel, mm water
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	M_s	g/g mole	The dilution tunnel dry gas molecular weight (may be assumed to be 29 g/g mole)
	V_s	m/s	Average gas velocity in the dilution tunnel
Equation (1)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	V_{strav}	m/s	Average gas velocity calculated after the multipoint Pitot traverse
	V_{scent}	m/s	Average gas velocity at the center of the dilution tunnel calculated after the Pitot tube traverse
Equation (3)	B_{ws}	-	Water vapor in the gas steam, proportion by volume (assumed to be 0.02 (2.0%))
	V_s	m/s	Average gas velocity in the dilution tunnel
	A	m2	Cross-sectional area of tunnel
	T_{std}	K	Standard absolute temperature, 293K
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_{std}	mmHg	Standard absolute pressure, 760 mm Hg
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
Equation (7)	V_m	dcm	Volume of gas sample as measured by dry gas meter
	L_p	m3/min	Leakage rate observed during the post-test leakcheck
	L_a	m3/min	Maximum acceptable leakage rate for either a oretest og post-test leak-check, equal to 0.0003 m3/min
	θ	Min	Total sampling time
	V_{mc}	-	$V_m - (L_p - L_a) * \theta$
	K_1	K/mm Hg	0.3855 K/mm Hg
	Y	-	Dry gas meter calibration factor
	P_{Bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mc(std)}$	dscm	Volume of air sample measured by the dry gas meter, corrected to standard conditions
Equation (12)	m_p	mg	mass of particulate from probe
	m_f	mg	mass of particulate from filters
	m_g	mg	mass of particulate from gaskets
	m_n	mg	Total amount of particulate matter collected
Equation (13)	K_2	g/mg	0.001
	m_n	mg	Total amount of particulate matter collected
	$V_{m(std)}$	dscm	Volume of gas sample measured by the dry gas meter, corrected to standard conditions
	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
Equation (15)	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
	c_r	g/dscm	Consentration of particulate matter room air, dry basis, corrected to standard conditions
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
	θ	Min	Total sampling time
	E_T	g	Total particulate emissions
Equation (8)	K_1	K/mm Hg	0.3855 K/mm Hg
	V_{mr}	dcm	Volume of room air sampled as measured by dry gas meter
	Y	-	Dry gas meter calibration factor
	P_{bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (14)	K_2	g/mg	0.001
	m_r	mg	mass of particulate from the filter, filter gasket, and probe assembly from the room air blank filter holder assembly
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (16)	θ	Min	Total sampling time
	V_{mi}	dcm	Volume of gas sample as measured by dry gas neter during each 10-min interval, i, of the test run
	V_s	m/s	Average gas velocity in the dilution tunnel
	T_m	K	Absolute average dry gas meter temperature
	T_{si}	K	Absolute average gas temperature in the dilution tunnel during each 10-min interval, i, of the test run
	V_m	dcm	Volume of gas sample as measured by dry gas meter
	V_{si}	dcm	Volume of gas sampled as measured by dry gas meter during each 10-min interval, i, of the test run
	T_s	K	Absolute average gas temperature in the dilution tunnel
	T_{mi}	K	Absolute avarage dry gas meter temperature during each 10-min interval, i, of the test run
	PR	-	Proportional Rate Variation - Calculated PR for each 10-min interval, i, of the test run

Manufacturer:	Morsø
Type:	7110B
ELAB no.:	2380
Order number:	0
Testdate:	43480,3664
File Name:	3.46 Ny Gld LF 150119
Testrun:	Run at valve 10 mm open (14%) after 100% open for 3½ min
Fil dato og tid (Start):	01-15-19 08:47:34

Weight of test fuel spacers, dry basis, kg

E2780

$$Equation\,(1) \qquad M_{Sdb} = (M\_Swb) * (\frac{100}{100 + FM_S})$$

M_swb	0	kg (wet basis)
FM_s	0	% (dry basis)

M_sdb = (0) x (100 / (100 + 0)) kg (dry basis)

M_sbd = 0 kg (dry basis)

Weight of test fuel crip, excluding nails and spacers, dry basis, kg

E2780

$$Equation\,(2) \qquad M_{Cdb} = \Sigma(M_{CPnwb}) * \left(\frac{100}{100 + FM_{CPn}}\right)$$

M_CPnwb	4,518	kg (wet basis)
FM_CPn	20,91898	% (dry basis)

M_Cdb = Σ[(4,5) x (100 / (100 + 21))] kg (dry basis)

M_Cdb = 3,736386 kg (dry basis)

Density of fuel crip, excluding spacers and nails, dry basis, kg/m3

E2780

$$Equation\,(3) \qquad D_{Cdb} = \frac{M_{Cdb}}{V_C}$$

M_Cdb	3,736386	kg (dry basis)
V_C	0,04	m3

D_Cdb = 3,736386 / 0,04 kg (dry) / m3

D_Cdb = 93,40965 kg (dry) / m3

Total weight of fuel crip excluding nails, dry basis, kg
E2780

$$Equation\,(4) \qquad M_{FTAdb} = M_{Sdb} + M_{Cdb}$$

M_Sdb	0	kg (dry basis)
M_Cdb	3,736386	kg (dry basis)

M_FTAdb = 0 + 3,73639 kg (dry basis)

M_FTAdb = 3,736386 kg (dry basis)

Burn rate, kg (dry/h)
E2780

$$Equation\,(5) \qquad BR = \frac{60 * M\_FTAdb}{\theta}$$

M_FTAdb	3,736386	kg (dry basis)
θ	200,92	min

$$BR = \frac{60 \text{ x } 3,73639}{201}$$

BR = 1,11580171

Air velocity in tunnel at traverse measurements:

E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	1,00	(Direckt)					
K_p	34,97	-					
C_p	0,99	-					
ΔP_avg	3,10	mmVS	P_Dynamisk	30,40	Pa		
T_s	295,60	K	T_Kanal	22,60	°C		
P_s	747,46	mmHg	P_s	99661,4	Pa	Ps_Tryk	-139 Pa
M_s	29,00	g/g mole					

$$V_s = 1{,}00 \times 34{,}97 \times 0{,}99 \times \left(3{,}10\right)^{0{,}5} \times \left(\frac{295{,}60}{747{,}46 \times 29{,}00}\right)$$

V_s = 7,12 m/s (V_scent)

Pitot tube factor for center:

E2515

$$Equation\,(1) \qquad Fp = \frac{Vstrav}{Vscent}$$

V_strav	6,79	m/s	(Average)
V_scent	7,12	m/s	(Average)

$$F_p = \frac{6{,}79}{7{,}12}$$

F_p = 0,9543 -

Air velocity in dilution tunnel during test charge
E2515

$$Equation\,(9) \qquad Vs = Fp * Kp * Cp * \sqrt{\Delta Pavg} * \sqrt{\frac{Ts}{Ps * Ms}}$$

F_p	0,9543	-			
K_p	34,97	-			
C_p	0,99	-			
Delta P_avg	3,09	mmVS	P_Dynamisk	30,33	Pa
T_s	304,14	K			
P_s	747,45	mmHg			
M_s	29,00	g/g mole			

$$V_s = 0{,}9543 \times 34{,}97 \times 0{,}99 \times (3{,}09)^{0{,}5} \times \left(\frac{304{,}14}{747{,}45 \times 29{,}00}\right)$$

V_s = 6,88 m/s (V_scent)

Average gas flow rate in dilution tunnel:
E2515

$$Equation\,(3) \qquad Qstd = 60 * (1 - Bws) * Vs * A * \left(\frac{Tstd * Ps}{Ts * Pstd}\right)$$

B_ws	0,02	-					
V_s	6,882574	m/s					
A	0,017671	m2					
T_std	293	K					
P_s	747,4535	mmHg	P_s	####	Pa	Ps_Tryk	### Pa
T_s	304,1406	K	T_Kanal	31,1	°C		
P_std	760	mmHg					

$$Q_{std} = 60 \times (1 - 0{,}02) \times 6{,}9 \times 0 \times \left(\frac{293 \times 747}{304{,}14 \quad 760}\right)$$

Q_std = 6,77586063 dscm/min

Measurements sample train 1 entire charge
E2515

Equation (7_1) $Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$

Equation (7) $Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$

V_m	1,45416	dcm			
K_1	0,3855	K/mmHg			
Y	0,999	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	200,9167	min			

V_mc = 1,45416 - (0 - 0) x 201

V_mc = 1,45416 dscm

$$V_{mc(std)} = 0,3855 \times 1,45416 \times 0,999 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 1,55902125 dscm

Equation (12) $m_n = m_p + m_f + m_g$

m_p	0,1	mg
m_f	1,2	mg
m_g	0,4	mg

m_n = 0,1 + 1,2 + 0,4

m_n = 1,7 mg

Equation (13) $C_s = K_2 * \frac{m_n}{V_{m(std)}}$

K_2	0,001	g/mg
m_n	1,7	mg
V_m(std)	1,559021	dscm

$$C_s = 0,001 \times \frac{1,7}{1,55902}$$

C_s = 0,00109043 g/dscm

Equation (15) $E_T = (C_s - C_r) * Q_{std} * \theta$

c_s	0,00109	g/dscm
c_r	0,000243	g/dscm
Q_std	6,775861	dscm/min
θ	200,9167	min

E_T = (0 - 0) x 6,8 x 201

E_T = 1,15358555 g

Measurements sample train 2 first hour of charge
E2515

$Equation\,(7_1)$ $Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$

$Equation\,(7)$ $Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$

V_m	0,43757	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	60	min			

V_mc = 0,43757 - (0 - 0) x 60

V_mc = 0,43757 dcm

$$V\_mc(std) = 0,3855 \times 0,43757 \times 0,9991 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 0,46917067 dscm

$Equation\,(12)$ $m_n = m_p + m_f + m_g$

m_p	0,2	mg
m_f	1	mg
m_g	0,2	mg

m_n = 0,2 + 1 + 0,2

m_n = 1,4 mg

$Equation\,(13)$ $C_s = K_2 * \frac{m_n}{V_{m(std)}}$

K_2	0,001	g/mg
m_n	1,4	mg
V_m(std)	0,469171	dscm

$$C\_s = 0,001 \times \frac{1,4}{0,46917}$$

C_s = 0,00298399 g/dscm

$Equation\,(15)$ $E_T = (C_s - C_r) * Q_{std} * \theta$

c_s	0,002984	g/dscm
c_r	0,000243	g/dscm
Q_std	6,775861	dscm/min
θ	60	min

E_T = (0 - 0) x 6,8 x 60

E_T = 1,11432707 g

Measurements sample train 2 from 1 hour and rest of charge
E2515

$$Equation\,(7_1) \qquad Vmc = \mathrm{Vm} - (\mathrm{Lp} - \mathrm{La}) * \theta$$

$$Equation\,(7) \qquad Vmc(std) = K1 * Vmc * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

V_m	1,0202	dcm			
K_1	0,3855	K/mmHg			
Y	0,9991	Gasmåler Faktor			
P_bar	759,9983	mmHg	P_bar	1013,25	mBar
Delta_H	0	mmVS			
T_m	273	K	T_Gasmåler	0	°C
L_p	0	m3/min			
L_a	0	m3/min			
θ	140,9167	min			

V_mc = 1,0202 - (0 - 0) x 141

V_mc = 1,0202 dcm

$$V\_mc(std) = 0,3855 \times 1,0202 \times 0,9991 \times \left(\frac{760 + \frac{0}{13,6}}{273}\right)$$

V_mc(std) = 1,09387735 dscm

$$Equation\,(12) \qquad m_n = m_p + m_f + m_g$$

m_p	0,2	mg
m_f	0,2	mg
m_g	0,2	mg

m_n = 0,2 + 0,2 + 0,2

m_n = 0,6 mg

$$Equation\,(13) \qquad C_s = K_2 * \frac{m_n}{V_{m(std)}}$$

K_2	0,001	g/mg
m_n	0,6	mg
V_m(std)	1,093877	dscm

$$C\_s = 0,001 \times \frac{0,6}{1,09388}$$

C_s = 0,00054851 g/dscm

$$Equation\,(15) \qquad E_T = (C_s - C_r) * Q_{std} * \theta$$

c_s	0,000549	g/dscm
c_r	0,000243	g/dscm
Q_std	6,775861	dscm/min
θ	140,9167	min

E_T = (0 - 0) x 6,8 x 141

E_T = 0,29164628 g

Room blanc

E2515

$$Equation\,(8) \qquad Vmr(std) = K1 * Vmr * Y * \left(\frac{Pbar + \frac{\Delta H}{13,6}}{Tm}\right)$$

K_1	0,3855	K/mmHg			
V_mr	1,274332	dcm			
Y	1	Gasmåler Faktor			
P_bar	748,5599	mmHg	P_bar	998	mBar
Delta_H	0	mmVS			
T_m	297,9441	K	T_Gasmåler	24,9441	°C

$$V_{mr(std)} = 0,3855 \times 1,27433 \times 1 \times \left(\frac{748,6 + \frac{0}{13,6}}{298}\right)$$

V_mr(std) = 1,23423798 dscm

$$Equation\,(14) \qquad C_r = K_2 * \frac{m_r}{Vm_{r(std)}}$$

K_2	0,001	g/mg
m_r	0,3	mg
V_m_r(std)	1,234238	dscm

$$C_r = 0,001 \times \frac{0,3}{1,23424}$$

C_r = 0,00024306 g/dscm

Proportional Rate first 10 minutes

E2515

$$Equation\,(16) \qquad PR = \frac{\theta * (V_{mi} * V_s * T_m * T_{si})}{10 * (V_m * V_{si} * T_s * T_{mi})} * 100$$

θ	200,92	min
V_mi	68,80022	l
V_s	6,88	m/s
T_m	301,2349	K
T_si	319,0769	K
V_m	1454,16	l
V_si	7,32	m/s
T_s	304,1406	K
T_mi	300,1381	K

$$PR = \frac{200,92 \times (68,8 \times 6,88 \times 301,2 \times 319)}{10 \times (1454 \times 7,32 \times 304,1 \times 300)} \times 100$$

PR = 94,0921446 -

Notation and units

E2780

Equation (1)	M_Swb	weight of all test fuel spacers, wet basis, kg
	FM_S	average fuel moisture of all test fuel spacers, % dry basis
	M_Sdb	weight of all test fuel spacers, dry basis, kg
Equation (2)	M_CPnwb	weight of each test fuel piece n in fuel crip, excluding nails and spacers, wet basis, kg
	FM_CPn	avarage fuel moisture of test fuel piece n in fuel crip, % dry basis,
	n	individual test fuel pieces that comprise the test fuel crip, as applicable
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
Equation (3)	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	V_C	Volume of fuel crib, m3
	D_Cdb	density of fuel, crib, excluding spacers and nails, dry basis, kg/m3
Equation (4)	M_Sdb	weight of all test fuel spacers, dry basis, kg
	M_Cdb	weight of fuel crib, excluding nails and spacers, dry basis, kg
	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
Equation (5)	M_FTAdb	total weight of fuel crip excluding nails, dry basis, kg
	θ	total length of test rin, min.
	BR	dry burn rate, kg/h

E2515

Equation (9)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	K_p	-	Pitot Tube Constant 34,97 m/sec
	C_p	-	Pitot tube coefficient, dimentionless (assigned a value of 0.99)
	ΔP_{avg}	mmVC	Average velocity pressure in dilution tunnel, mm water
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	M_s	g/g mole	The dilution tunnel dry gas molecular weight (may be assumed to be 29 g/g mole)
	V_s	m/s	Average gas velocity in the dilution tunnel
Equation (1)	F_p	-	Adjustment factor for center of tunnel pitot tube placement
	V_{strav}	m/s	Average gas velocity calculated after the multipoint Pitot traverse
	V_{scent}	m/s	Average gas velocity at the center of the dilution tunnel calculated after the Pitot tube traverse
Equation (3)	B_{ws}	-	Water vapor in the gas steam, proportion by volume (assumed to be 0.02 (2.0%))
	V_s	m/s	Average gas velocity in the dilution tunnel
	A	m2	Cross-sectional area of tunnel
	T_{std}	K	Standard absolute temperature, 293K
	P_s	mm Hg	Absolute average gas static pressure in dilution tunnel
	T_s	K	Absolute average gas temperature in the dilution tunnel
	P_{std}	mmHg	Standard absolute pressure, 760 mm Hg
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
Equation (7)	V_m	dcm	Volume of gas sample as measured by dry gas meter
	L_p	m3/min	Leakage rate observed during the post-test leakcheck
	L_a	m3/min	Maximum acceptable leakage rate for either a oretest og post-test leak-check, equal to 0.0003 m3/min
	θ	Min	Total sampling time
	V_{mc}	-	$V_m - (L_p - L_a) * \theta$
	K_1	K/mm Hg	0.3855 K/mm Hg
	Y	-	Dry gas meter calibration factor
	P_{Bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mc(std)}$	dscm	Volume of air sample measured by the dry gas meter, corrected to standard conditions
Equation (12)	m_p	mg	mass of particulate from probe
	m_f	mg	mass of particulate from filters
	m_g	mg	mass of particulate from gaskets
	m_n	mg	Total amount of particulate matter collected
Equation (13)	K_2	g/mg	0.001
	m_n	mg	Total amount of particulate matter collected
	$V_{m(std)}$	dscm	Volume of gas sample measured by the dry gas meter, corrected to standard conditions
	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
Equation (15)	c_s	g/dscm	Consentration of particulate matter in tunnel gas, dry basis, corrected to standard conditions
	c_r	g/dscm	Consentration of particulate matter room air, dry basis, corrected to standard conditions
	Q_{std}	dscm/min	Average gas flow rate in dilution tunnel
	θ	Min	Total sampling time
	E_T	g	Total particulate emissions
Equation (8)	K_1	K/mm Hg	0.3855 K/mm Hg
	V_{mr}	dcm	Volume of room air sampled as measured by dry gas meter
	Y	-	Dry gas meter calibration factor
	P_{bar}	mm Hg	Barometric pressure at the sampling site.
	ΔH	mmVC	Average pressure at the outlet of the dry gas meter or the avarage differential pressure across the orifice meter
	T_m	K	Absolute average dry gas meter temperature
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (14)	K_2	g/mg	0.001
	m_r	mg	mass of particulate from the filter, filter gasket, and probe assembly from the room air blank filter holder assembly
	$V_{mr(std)}$	dscm	Volume of room air sample measured by the dry gas meter, corrected to standard conditions
Equation (16)	θ	Min	Total sampling time
	V_{mi}	dcm	Volume of gas sample as measured by dry gas neter during each 10-min interval, i, of the test run
	V_s	m/s	Average gas velocity in the dilution tunnel
	T_m	K	Absolute average dry gas meter temperature
	T_{si}	K	Absolute average gas temperature in the dilution tunnel during each 10-min interval, i, of the test run
	V_m	dcm	Volume of gas sample as measured by dry gas meter
	V_{si}	dcm	Volume of gas sampled as measured by dry gas meter during each 10-min interval, i, of the test run
	T_s	K	Absolute average gas temperature in the dilution tunnel
	T_{mi}	K	Absolute avarage dry gas meter temperature during each 10-min interval, i, of the test run
	PR	-	Proportional Rate Variation - Calculated PR for each 10-min interval, i, of the test run

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Datotid	Scantid	Rum - [°C]	Filter-1-H - [°C]	Filter-2-D1 - [°C]
		1	2	3
Datotid	Scantime	Ambient temperature	Main train filter temp	Split train 1H filter temp
14-01-2019 11:49:29	3,066	21,591848	27,053456	26,988533
14-01-2019 11:49:59	3,067	21,602459	27,127742	27,173923
14-01-2019 11:50:29	3,067	21,671306	27,484818	27,578494
14-01-2019 11:50:59	3,067	21,650138	27,847916	27,888739
14-01-2019 11:51:29	3,066	21,578706	28,183001	28,381964
14-01-2019 11:51:59	3,068	21,729387	28,452105	28,648354
14-01-2019 11:52:29	3,067	21,901489	28,353649	28,526138
14-01-2019 11:52:59	3,067	21,787635	28,325371	28,424099
14-01-2019 11:53:29	3,067	21,769203	28,330674	28,449153
14-01-2019 11:53:59	3,066	21,827501	28,353463	28,528508
14-01-2019 11:54:29	3,067	21,927875	28,474778	28,658965
14-01-2019 11:54:59	3,067	21,996595	28,555835	28,770247
14-01-2019 11:55:29	3,067	22,046878	28,590868	28,810493
14-01-2019 11:55:59	3,067	22,094514	28,599822	28,845714
14-01-2019 11:56:29	3,066	22,099821	28,636416	28,876983
14-01-2019 11:56:59	3,067	21,988826	28,63098	28,845204
14-01-2019 11:57:29	3,066	21,980548	28,789488	28,985253
14-01-2019 11:58:00	3,068	22,089042	28,832025	29,067173
14-01-2019 11:58:30	3,067	22,12079	28,869289	29,096496
14-01-2019 11:59:00	3,066	22,141962	28,854729	29,152822
14-01-2019 11:59:30	3,067	22,033477	28,861186	29,153981
14-01-2019 12:00:00	3,066	22,152372	28,947601	29,212741
14-01-2019 12:00:30	3,067	22,091537	28,928585	29,218626
14-01-2019 12:01:00	3,066	21,980398	28,957862	29,213737
14-01-2019 12:01:30	3,066	21,911571	28,978762	29,195224
14-01-2019 12:02:00	3,066	21,914215	28,960778	29,203459
14-01-2019 12:02:30	3,067	22,078106	29,005603	29,279752
14-01-2019 12:03:00	3,066	22,094003	28,988094	29,239911
14-01-2019 12:03:30	3,068	22,101972	28,983724	29,213172
14-01-2019 12:04:00	3,066	22,019941	28,945204	29,221848
14-01-2019 12:04:30	3,067	22,13636	28,953915	29,222655
14-01-2019 12:05:00	3,067	22,207637	29,013956	29,249889
14-01-2019 12:05:30	3,065	22,239364	29,013094	29,201803
14-01-2019 12:06:00	3,066	22,048891	28,943615	29,204359
14-01-2019 12:06:30	3,066	21,943029	28,910818	29,145332
14-01-2019 12:07:00	3,066	22,093818	28,896146	29,189631
14-01-2019 12:07:30	3,067	22,302604	28,973129	29,23904
14-01-2019 12:08:00	3,065	22,419094	28,944677	29,129322
14-01-2019 12:08:30	3,066	22,300104	28,892533	29,19245
14-01-2019 12:09:00	3,066	22,109447	28,901214	29,201
14-01-2019 12:09:30	3,067	22,241644	28,910328	29,21
14-01-2019 12:10:00	3,066	22,27347	29,602891	29,589
14-01-2019 12:10:30	3,066	22,358141	29,691745	29,623449

14-01-2019 12:11:00	3,066	22,246832	29,789168	30,193319
14-01-2019 12:11:30	3,066	22,38171	30,542184	30,780887
14-01-2019 12:12:00	3,066	22,297088	30,981558	31,310627
14-01-2019 12:12:30	3,066	22,114677	31,248464	31,76469
14-01-2019 12:13:00	3,068	22,67769	31,421251	31,982
14-01-2019 12:13:30	3,067	22,632778	31,771634	31,998
14-01-2019 12:14:00	3,067	22,495304	31,915951	32,005
14-01-2019 12:14:30	3,067	22,421386	31,685483	31,754
14-01-2019 12:15:00	3,066	22,61152	31,358499	31,584
14-01-2019 12:15:30	3,066	22,701391	30,969074	31,227234
14-01-2019 12:16:00	3,066	22,54281	30,550743	30,931387
14-01-2019 12:16:30	3,067	22,368326	30,237409	30,537729
14-01-2019 12:17:00	3,066	22,447628	30,001913	30,254257
14-01-2019 12:17:30	3,066	22,595575	29,853483	30,029138
14-01-2019 12:18:00	3,066	22,614084	29,720703	29,823511
14-01-2019 12:18:30	3,067	22,545349	29,574874	29,685522
14-01-2019 12:19:00	3,067	22,637943	29,457697	29,483692
14-01-2019 12:19:30	3,067	22,534822	29,354747	29,445898
14-01-2019 12:20:00	3,065	22,529413	29,376806	29,411939
14-01-2019 12:20:30	3,067	22,711782	29,314247	29,383279
14-01-2019 12:21:00	3,066	22,743507	29,299921	29,315521
14-01-2019 12:21:30	3,066	22,545349	29,259571	29,213918
14-01-2019 12:22:00	3,066	22,777921	29,178764	29,185247
14-01-2019 12:22:30	3,064	22,756679	29,230825	29,18777
14-01-2019 12:23:00	3,067	22,754013	29,228162	29,221626
14-01-2019 12:23:30	3,066	22,690603	29,216442	29,238588
14-01-2019 12:24:00	3,067	22,365488	29,196949	29,177353
14-01-2019 12:24:30	3,067	22,41045	29,168275	29,224279
14-01-2019 12:25:00	3,066	22,323055	29,327165	29,297172
14-01-2019 12:25:30	3,066	22,312461	29,329767	29,278921
14-01-2019 12:26:00	3,066	22,167013	29,303728	29,301078
14-01-2019 12:26:30	3,066	22,233188	29,275093	29,325861
14-01-2019 12:27:00	3,066	22,381231	29,350595	29,379242
14-01-2019 12:27:30	3,067	22,516027	29,402677	29,435217
14-01-2019 12:28:00	3,066	22,621761	29,452182	29,445655
14-01-2019 12:28:30	3,067	22,537199	29,446998	29,444376
14-01-2019 12:29:00	3,067	22,645593	29,465242	29,492572
14-01-2019 12:29:30	3,066	22,632288	29,600647	29,643589
14-01-2019 12:30:00	3,066	22,566198	29,650108	29,677436
14-01-2019 12:30:30	3,066	22,74856	29,617555	29,690467
14-01-2019 12:31:00	3,066	22,856935	29,572013	29,682676
14-01-2019 12:31:30	3,067	22,738004	29,624105	29,696989
14-01-2019 12:32:00	3,066	22,484237	29,747762	29,793319
14-01-2019 12:32:30	3,067	22,534431	29,840164	29,844047
14-01-2019 12:33:00	3,067	22,317669	29,816745	29,846677
14-01-2019 12:33:30	3,067	22,582067	29,855812	29,92217
14-01-2019 12:34:00	3,066	22,788118	30,013235	29,982004
14-01-2019 12:34:30	3,067	22,605791	30,074386	30,000211

14-01-2019 12:35:00	3,067	22,407545	30,017171	30,031456
14-01-2019 12:35:30	3,066	22,605791	30,142021	30,053564
14-01-2019 12:36:00	3,066	22,658615	30,201866	30,164125
14-01-2019 12:36:30	3,067	22,581972	30,196649	30,148525
14-01-2019 12:37:00	3,066	22,864719	30,217456	30,147216
14-01-2019 12:37:30	3,066	22,780174	30,248672	30,234352
14-01-2019 12:38:00	3,066	22,634824	30,251272	30,200544
14-01-2019 12:38:30	3,067	22,671821	30,334507	30,278593
14-01-2019 12:39:00	3,067	22,682382	30,321491	30,32019
14-01-2019 12:39:30	3,069	22,875276	30,331907	30,286388
14-01-2019 12:40:00	3,067	22,560808	30,365726	30,361812
14-01-2019 12:40:30	3,066	22,518526	30,40212	30,325412
14-01-2019 12:41:00	3,067	22,764293	30,343608	30,338419
14-01-2019 12:41:30	3,067	22,576675	30,454155	30,416446
14-01-2019 12:42:00	3,067	22,671833	30,412544	30,416446
14-01-2019 12:42:30	3,066	22,856836	30,508808	30,495792
14-01-2019 12:43:00	3,065	22,740556	30,500969	30,434669
14-01-2019 12:43:30	3,067	22,695652	30,498373	30,486671
14-01-2019 12:44:00	3,066	22,629633	30,664777	30,547836
14-01-2019 12:44:30	3,067	22,682466	30,620569	30,569896
14-01-2019 12:45:00	3,067	22,87799	30,668674	30,631008
14-01-2019 12:45:30	3,067	23,157962	30,723281	30,657037
14-01-2019 12:46:00	3,066	22,925573	30,742769	30,627132
14-01-2019 12:46:30	3,067	23,070907	30,815605	30,768854
14-01-2019 12:47:00	3,066	22,862218	30,781536	30,684366
14-01-2019 12:47:30	3,065	22,870138	30,791981	30,694416
14-01-2019 12:48:00	3,066	22,949468	30,881925	30,752023
14-01-2019 12:48:30	3,066	22,986406	30,805219	30,723405
14-01-2019 12:49:00	3,066	23,179178	30,826013	30,751774
14-01-2019 12:49:30	3,067	22,864973	30,819601	30,769934
14-01-2019 12:50:00	3,067	22,590141	30,828685	30,799114
14-01-2019 12:50:30	3,066	22,978584	30,809236	
14-01-2019 12:51:00	3,066	23,174005	30,836555	
14-01-2019 12:51:30	3,067	23,100101	30,813171	
14-01-2019 12:52:00	3,066	23,287647	30,796402	
14-01-2019 12:52:30	3,066	22,812278	30,821048	
14-01-2019 12:53:00	3,067	22,799089	30,800266	
14-01-2019 12:53:30	3,066	22,854629	30,810743	
14-01-2019 12:54:00	3,066	22,955009	30,743177	
14-01-2019 12:54:30	3,066	23,356464	30,822578	
14-01-2019 12:55:00	3,067	23,102979	30,800443	
14-01-2019 12:55:30	3,066	22,984163	30,722496	
14-01-2019 12:56:00	3,067	23,184936	30,803156	
14-01-2019 12:56:30	3,067	23,216608	30,790153	
14-01-2019 12:57:00	3,066	23,163871	30,794092	
14-01-2019 12:57:30	3,066	23,256313	30,792875	
14-01-2019 12:58:00	3,067	23,15336	30,738311	
14-01-2019 12:58:30	3,067	23,298679	30,80727	

14-01-2019 12:59:00	3,067	23,116535	30,769598
14-01-2019 12:59:30	3,066	22,93696	30,725441
14-01-2019 13:00:00	3,066	23,156194	30,685239
14-01-2019 13:00:30	3,066	23,248642	30,696973
14-01-2019 13:01:00	3,066	23,19848	30,599496
14-01-2019 13:01:30	3,066	22,805141	30,676332
14-01-2019 13:02:00	3,066	22,900226	30,603551
14-01-2019 13:02:30	3,066	23,145855	30,587989
14-01-2019 13:03:00	3,066	23,407264	30,645282
14-01-2019 13:03:30	3,068	23,35449	30,546508
14-01-2019 13:04:00	3,066	23,372968	30,530923
14-01-2019 13:04:30	3,066	23,362558	30,559654
14-01-2019 13:05:00	3,067	23,388946	30,533054
14-01-2019 13:05:30	3,066	22,858244	30,508291
14-01-2019 13:06:00	3,066	22,905965	30,479098
14-01-2019 13:06:30	3,066	23,111959	30,432432
14-01-2019 13:07:00	3,068	23,24653	30,401558

Filter-3-D2 - [°C] 4	Filter-4-R - [°C] 5	Køler-1-H - [°C] 6	Køler-2-D - [°C] 7	Gasm-H - [°C] 8
Split train rem. filter temp	Room blank filter temp	Main train dryer outlet temperature	Split train dryer outlet temperature	Main train dry gas meter temperature
	22,465488	17,670263	19,507761	24,847178
	22,510448	17,266633	19,116225	25,055062
	22,518375	17,143624	18,772366	25,076113
	22,462846	17,13828	18,438914	25,107705
	22,511743	17,0232	18,297402	25,093167
	22,565797	17,065877	18,142455	25,125965
	22,55523	17,031104	17,97688	25,123339
	22,499706	17,025758	17,800541	25,118056
	22,518239	16,972245	17,676276	25,112799
	22,543346	16,945476	17,605389	25,118031
	22,598752	16,95606	17,521111	25,124537
	22,592094	16,958717	17,444886	25,133725
	22,576221	16,958717	17,369997	25,110045
	22,576221	16,926612	17,297768	25,096877
	22,601352	16,889131	17,264325	25,077137
	22,549834	16,915893	17,181349	25,088953
	22,642167	16,963937	17,182587	25,138836
	22,647474	16,955892	17,13979	25,120438
	22,615733	16,971955	17,072874	25,102015
	22,66596	16,92646	17,062176	25,059908
	22,668601	16,923785	17,008646	25,052025
	22,71343	16,990573	17,024573	25,111123
	22,737205	16,958442	17,003157	25,093993
	22,718698	16,982526	16,917498	25,099274
	22,681678	16,969161	16,861275	25,088736
	22,710775	16,918315	16,8452	25,078221
	22,755593	16,899484	16,870572	25,088684
	22,766132	16,891418	16,842417	25,117571
	22,747651	16,880723	16,772782	25,09389
	22,776717	16,83789	16,783484	25,078095
	22,766132	16,816472	16,737975	25,078095
	22,793824	16,853908	16,728529	25,101736
	22,787172	16,885966	16,737845	25,143757
	22,826799	16,867225	16,708386	25,125361
	22,805654	16,829736	16,70036	25,125361
	22,861133	16,813651	16,684262	25,126645
	22,894052	16,861755	16,689536	25,146338
	22,871598	16,888517	16,652048	25,183117
	22,908603	16,818944	16,700243	25,148928
	22,919074	16,899156	16,670733	25,18702
	22,944137	16,872363	16,654637	25,196215
	22,929628	16,821508	16,684077	25,186985
	22,890008	16,885755	16,603711	25,206713

22,975747	16,917762	16,646508	25,251372
22,999524	16,856216	16,649184	25,230328
22,988969	16,853542	16,611664	25,214539
22,913676	16,893699	16,560763	25,275011
23,020559	16,925712	16,633028	25,290745
23,03378	16,888257	16,643734	25,303879
23,004726	16,901624	16,651789	25,314415
23,011354	16,901624	16,649096	25,324915
23,036353	16,957755	16,702603	25,395871
23,052184	16,971149	16,643677	25,40375
23,075957	16,914956	16,619564	25,401123
23,064079	16,906911	16,587422	25,418202
23,11292	16,928294	16,583359	25,453652
23,147184	16,933616	16,587346	25,47992
23,09967	16,946983	16,539112	25,519362
23,163037	16,906854	16,571286	25,487824
23,082498	16,949655	16,539122	25,553519
23,161721	16,888084	16,579293	25,541684
23,199945	16,968351	16,541747	25,600796
23,218435	16,938918	16,592654	25,606049
23,209199	16,949613	16,573895	25,615242
23,159028	16,976369	16,525669	25,661206
23,201286	16,898765	16,565873	25,655955
23,18012	16,995061	16,56181	25,718993
23,273805	16,941529	16,568505	25,732129
23,248744	16,906747	16,549742	25,749222
23,246108	16,901401	16,520281	25,795172
23,25666	16,837152	16,528311	25,7794
23,294898	16,944173	16,528277	25,847685
23,27905	16,941499	16,509514	25,873951
23,297532	16,906718	16,465294	25,871329
23,31997	16,853193	16,453251	25,884449
23,305434	16,882592	16,422394	25,892311
23,339729	16,893304	16,418364	25,936961
23,305421	16,909347	16,399622	25,973742
23,304097	16,885257	16,370126	25,978968
23,293546	16,887931	16,348677	26,005228
23,389863	16,917354	16,404944	26,05773
23,355535	16,912008	16,391554	26,068245
23,383243	16,871852	16,46122	26,069554
23,37799	16,855807	16,477324	26,089236
23,399087	16,850436	16,490712	26,115504
23,396436	16,898616	16,471945	26,161419
23,403041	16,903957	16,394204	26,220484
23,406985	16,895934	16,415667	26,204735
23,409621	16,879867	16,380831	26,22836
23,45449	16,930705	16,396884	26,303152
23,463729	16,909309	16,386178	26,299225

	23,462398	16,845088	16,407616	26,291346
	23,476909	16,906638	16,395566	26,338589
	23,540237	16,901273	16,442448	26,375317
	23,517797	16,882533	16,376805	26,383189
	23,561347	16,890588	16,419684	26,406819
	23,56134	16,914663	16,412997	26,422575
	23,51123	16,936076	16,354033	26,45405
	23,56927	16,965537	16,402293	26,517033
	23,582473	16,890605	16,394259	26,493426
	23,534978	16,906673	16,391581	26,530163
	23,606229	16,938792	16,450552	26,545927
	23,571941	16,949512	16,388919	26,595763
	23,589086	16,887944	16,399654	26,583958
	23,635284	16,877292	16,41577	26,637755
	23,603633	16,815715	16,399679	26,632519
	23,673591	16,879996	16,437235	26,671864
	23,632673	16,869302	16,429215	26,713835
	23,666982	16,842536	16,410447	26,684996
	23,707906	16,917516	16,43462	26,766327
	23,722423	16,890754	16,434636	26,768956
	23,758043	16,896136	16,457442	26,783396
	23,789739	16,971103	16,470875	26,843735
	23,748838	16,952365	16,4481	26,845059
	23,882076	16,960464	16,496382	26,876547
	23,846465	16,971156	16,448153	26,897538
	23,828025	16,9444	16,448153	26,905394
	23,890062	17,02476	16,437521	26,982766
	23,907178	16,998004	16,45092	26,968369
	23,854463	17,051526	16,801886	26,999827
	23,927036	17,006118	17,164681	27,022171
	23,843976	16,933864	16,729641	27,062811
27,047473	23,92179	16,85093	16,642626	27,045792
27,640199	23,904708	16,909883	16,571698	27,115288
27,997316	23,880979	16,885793	16,520787	27,120526
28,271655	23,997087	16,891252	16,577147	27,148137
28,506349	23,936444	16,926034	16,478016	27,180886
28,693814	23,896907	16,928727	16,453902	27,191367
28,907447	23,954995	16,985019	16,467406	27,254347
28,991292	24,020906	16,904742	16,480795	27,196732
29,176076	24,052646	16,993169	16,49967	27,255751
29,287294	24,015739	17,017253	16,438038	27,31209
29,360566	24,023662	16,961042	16,454131	27,285904
29,551713	24,055391	17,041444	16,481043	27,356728
29,638061	24,03696	17,033426	16,481043	27,356728
29,740113	24,043575	17,049506	16,49313	27,363306
29,795093	24,137223	17,076362	16,58034	27,396136
29,878783	24,095048	17,068343	16,537463	27,398753
30,006969	24,143913	17,12996	16,563008	27,452515

30,082792	24,113652	17,130014	16,548327	27,482682
30,124612	24,124183	17,1193	16,526886	27,487908
30,173042	24,199376	17,143481	16,596672	27,526001
30,268447	24,1902	17,172958	16,5994	27,540427
30,243623	24,194158	17,140866	16,596724	27,528651
30,412255	24,1851	17,264047	16,612957	27,587691
30,386138	24,248321	17,191835	16,631691	27,590304
30,439693	24,224633	17,167785	16,629052	27,582486
30,561238	24,237941	17,258859	16,626524	27,650669
30,545587	23,24648	17,240131	16,639904	27,632344
30,569089	23,143323	17,205373	16,631874	27,658511
30,577844	23,26497	17,291127	16,680262	27,695324
30,589327	23,24648	17,339259	16,653475	27,737196
30,601557	23,282094	17,312524	16,704371	27,699263
30,607461	23,317928	17,360826	16,701895	27,763554
30,614191	23,394473	17,293996	16,672434	27,789717
30,626058	23,390502	17,205732	16,689848	27,771424

Gasm-D - [°C]	Gasm-R - [°C]	Flow-H - [ln/min]	Flow-D - [ln/min]	NS-Røgtemp - [°C]
9	10	12	13	24
Split train dry gas meter temperature	Room blank dry gas meter temperature	Main train flow rate Flow-H - [ln/min]	Split train flow rate Flow-D - [ln/min]	EPA Flue gas temperature
24,507435	20,712558	7,033173	6,883154	41,117535
24,652279	20,686017	7,002935	6,878595	73,207359
24,678612	20,659469	6,942726	6,816308	98,64904
24,67598	20,696622	6,878629	6,774537	93,711075
24,718027	20,681943	6,830355	6,715737	134,673798
24,754839	20,704446	6,806687	6,700517	157,908051
24,773251	20,699142	6,851944	6,896698	173,08725
24,752209	20,720382	6,987782	7,040112	189,239365
24,764031	20,734954	6,965254	7,011617	208,82251
24,75346	20,730926	6,916444	6,947051	227,633331
24,795521	20,762719	6,889759	6,933976	231,763702
24,794192	20,775968	6,870784	6,911448	227,978638
24,786276	20,775968	6,855564	6,919024	229,627548
24,794192	20,773317	6,974373	6,984127	228,381851
24,808653	20,766687	6,935485	6,985334	231,777496
24,815207	20,797157	6,913024	6,926802	231,99231
24,838807	20,842183	6,883724	6,954224	228,76265
24,841437	20,839534	6,863074	6,918891	224,321869
24,823004	20,879348	6,862068	6,918891	221,352127
24,812485	20,823625	6,859319	6,917751	217,963715
24,799334	20,839534	6,969545	6,915806	214,810608
24,855828	20,921712	6,943129	6,899916	210,025131
24,862395	20,90575	6,947956	6,896229	207,943176
24,859738	20,932283	6,942458	6,915136	206,323273
24,84396	20,988015	6,953923	6,929149	202,330002
24,836047	20,956163	6,951174	6,912923	201,331879
24,861014	20,985322	6,961634	6,930154	201,171295
24,884657	21,01044	6,927439	6,915069	204,480865
24,864897	21,051566	6,94628	6,939004	206,550552
24,891219	21,017066	6,919259	6,926332	206,500885
24,893849	21,017066	6,929116	6,924992	207,501419
24,903038	21,076724	6,916041	6,920767	209,392136
24,950346	21,127044	6,915974	6,922578	207,89975
24,927964	21,123071	6,908532	6,937664	208,260529
24,951653	21,112449	6,919863	6,914666	208,599915
24,968735	21,128362	6,917315	6,919561	210,507446
24,985808	21,20255	6,900889	6,931629	208,530426
24,985772	21,255546	6,919863	6,937597	212,682159
24,996287	21,20519	6,904844	6,91118	212,648407
25,017306	21,296607	6,874539	6,895424	207,66246
25,0357	21,282012	6,878227	6,843462	181,26889
25,063328	21,289956	6,850603	6,860761	183,502716
25,040953	21,356212	6,985636	7,129889	150,428253

25,11719	21,380008	7,066898	7,069345	162,480988
25,101397	21,356149	7,002398	7,012622	163,46283
25,101397	21,409158	6,957477	6,952615	168,449982
25,135582	21,472753	6,892239	6,900855	171,951019
25,172367	21,53366	6,821303	6,816911	172,438339
25,193415	21,512456	6,647247	6,617981	217,509201
25,2013	21,546895	7,040414	6,551001	227,493088
25,214413	21,586625	6,96512	6,941486	236,692459
25,266987	21,647523	6,925562	6,909571	223,78775
25,272242	21,681955	7,014199	6,991034	201,75058
25,288029	21,695184	6,988587	6,990497	195,983917
25,330098	21,670022	6,961231	6,945106	194,382141
25,360304	21,762685	6,94628	6,892876	194,178543
25,398421	21,771949	6,898073	6,86713	196,12796
25,390515	21,840812	6,983826	7,015036	199,030518
25,411551	21,801078	6,987648	6,987077	200,516174
25,439146	21,892421	6,965053	6,94524	203,606766
25,483838	21,864602	6,908599	6,91118	205,192825
25,521922	21,951947	6,890429	6,847217	207,456848
25,548205	21,938726	6,889624	6,804709	207,159988
25,575806	21,930787	6,982217	6,912789	209,057449
25,590252	22,036658	7,074474	7,095761	211,130295
25,624409	21,978404	7,045644	7,076586	213,903915
25,657244	22,071046	7,025396	7,046682	219,143463
25,679577	22,102802	6,965053	6,994721	222,904297
25,679564	22,114707	6,940715	6,933775	226,125793
25,708468	22,147783	6,904308	6,922578	225,40274
25,75314	22,139827	6,979937	6,975277	228,405411
25,789875	22,24566	6,940312	6,937396	228,631149
25,795149	22,243016	6,885803	6,884562	231,083755
25,822714	22,27342	7,059053	6,841652	238,054428
25,871319	22,26682	6,997302	6,990296	239,783661
25,898882	22,318393	6,961298	6,937396	243,545502
25,931694	22,335584	6,919796	6,877254	247,420044
25,947461	22,404338	6,844032	6,802966	250,169754
25,975018	22,424169	6,757608	6,733839	251,309219
25,986855	22,462537	6,723548	6,659819	254,884171
26,06036	22,510116	6,61949	6,574199	256,840179
26,057734	22,549791	7,047924	7,167569	256,470032
26,098425	22,523349	6,983893	6,918555	257,921265
26,131247	22,544477	6,918924	6,831863	263,68576
26,140433	22,564321	6,712553	6,657406	275,128601
26,170613	22,619827	6,587509	6,538731	277,74704
26,196867	22,663442	6,934144	6,978831	278,092896
26,25985	22,681949	6,956471	6,903537	278,475311
26,23098	22,716327	7,291775	6,829114	277,447601
26,282174	22,777116	7,191539	7,084632	279,091736
26,314967	22,774455	7,198512	7,045275	276,674652

26,320214	22,787685	7,182018	7,050504	276,951599
26,360897	22,820705	7,128716	7,035419	279,4552
26,427805	22,811465	7,126972	7,001493	277,21283
26,402872	22,872249	7,115776	7,025294	280,011597
26,481585	22,855077	7,131062	6,993984	277,57196
26,509152	22,906598	7,119463	7,001359	277,696198
26,485545	22,970018	7,125028	6,982787	277,324097
26,572132	22,991168	7,134817	6,997671	277,25647
26,579991	22,975333	7,073401	7,014433	277,295502
26,566864	23,033439	7,050338	6,978965	275,233154
26,648205	23,04404	7,059053	6,963812	274,875977
26,648205	23,107413	7,064082	6,978965	274,774445
26,649523	23,0995	7,047789	6,982653	276,199036
26,692818	23,165559	7,081849	6,966092	274,158112
26,734776	23,139152	7,059053	6,957442	275,725677
26,775454	23,166921	7,079302	6,971389	276,492615
26,802988	23,234256	7,055299	6,984798	273,968811
26,79513	23,215793	7,072932	6,990095	273,771851
26,846281	23,246169	7,059121	6,978629	274,387543
26,858103	23,2924	7,06663	6,986407	273,565491
26,897438	23,248857	6,987648	6,975143	271,840881
26,91058	23,341293	7,012589	7,004913	272,004456
26,955134	23,326789	7,006556	6,990229	271,800995
27,008921	23,3308	7,00917	6,988754	271,048462
26,999745	23,392848	7,034179	6,982653	269,666748
27,023333	23,345334	7,03257	7,006186	268,989807
27,049624	23,435121	7,028212	7,028379	269,908783
27,081063	23,406131	7,021507	7,008801	269,231354
26,921252	23,478721	7,02915	0,000463	267,814667
26,982897	23,474837	7,04028	10,433989	265,540009
27,123066	23,509153	7,026938	6,994051	267,523926
27,188588	23,481452	7,040348	7,054125	264,338257
27,206995	23,575212	7,047856	7,046682	264,266022
27,214844	23,559373	7,053086	7,053924	262,839294
27,28303	23,579229	7,06663	7,059891	262,08255
27,275193	23,641269	7,051611	7,057813	257,088623
27,296175	23,634671	7,079167	7,058416	254,296478
27,325077	23,694127	7,062875	7,069144	255,042603
27,35388	23,630832	7,083592	7,061634	253,004684
27,380158	23,669172	7,085738	7,054259	253,220291
27,414225	23,728543	7,096935	7,054192	252,671463
27,388045	23,696899	7,09955	7,054929	252,016663
27,474575	23,784066	7,106858	7,030659	249,554962
27,474575	23,776162	7,089359	7,035151	248,819656
27,494225	23,788055	7,112892	7,042861	246,409683
27,547995	23,784219	7,11953	7,027373	246,662796
27,532305	23,807954	7,096935	7,025362	245,407745
27,58605	23,852864	7,115641	7,004979	244,560211

27,600497	23,85556	7,115105	7,019394	242,461609
27,592629	23,871389	7,127039	7,008064	242,736389
27,684372	23,883365	7,142058	6,993648	240,454941
27,676531	23,897897	7,130995	7,013561	241,98558
27,68834	23,871534	7,119598	7,0086	240,351334
27,723811	23,969236	7,133878	7,001292	238,594345
27,742108	23,927074	7,153389	6,99747	238,971878
27,757849	23,896751	7,030692	6,99747	238,199493
27,799839	24,016872	7,054025	6,978831	235,099655
27,81032	23,985248	7,039878	6,963678	237,091995
27,820771	23,950959	7,040414	6,968371	235,880234
27,873278	24,003873	7,044169	6,963142	235,999527
27,852347	24,059221	7,127174	6,961599	233,824585
27,898119	24,003873	7,150841	6,918421	234,102142
27,930985	24,106839	7,180879	7,069009	232,049026
27,941462	24,062055	7,202803	6,948659	232,318237
27,953267	24,059438	7,191472	6,628642	240,801468

Ovf-Top - [°C]	Ovf-Bag - [°C]	Ovf-Side-1 - [°C]	Ovf-Side-2 - [°C]	Ovf-Bund - [°C]	Kanal-EPA - [°C]
27	28	29	30	31	36
Surface temperature Top	Surface temperature Rear	Surface temperature Right side	Surface temperature Left side	Surface temperature Bottom	EPA Duct temperature
22,075484	20,052494	19,575119	21,326438	22,084654	22,69085
22,219115	20,294674	19,623035	21,373789	22,116264	23,816575
22,547503	20,865271	19,676191	21,643328	22,230742	26,763975
23,669089	21,733317	19,773283	22,215115	22,326842	29,415044
25,297574	23,033472	19,984808	23,002011	22,469014	32,376525
28,964911	29,413287	20,254728	23,395744	22,506984	34,171388
31,640662	35,576769	20,479549	23,796139	22,521522	33,170369
34,427922	43,442545	20,73081	24,230394	22,535952	32,526044
37,749509	53,118067	21,036579	24,744481	22,557025	32,449606
41,8242	65,098318	21,390081	25,386775	22,620242	32,839825
46,223332	76,492743	21,8099	26,128213	22,728207	33,295075
50,553166	86,604895	22,287977	27,05493	22,84405	33,647744
54,511952	95,799727	22,820221	28,086649	22,9796	33,918619
57,9591	103,314253	23,455511	29,283077	23,182221	34,121769
61,358014	110,713255	24,135557	30,590261	23,403212	34,371856
65,034848	118,036086	24,912006	31,987129	23,642659	34,527406
68,028073	123,929495	25,706411	33,478371	23,903101	34,908238
71,202199	129,289786	26,619253	35,042812	24,218705	35,274988
74,195073	134,122076	27,58416	36,687933	24,547373	35,5244
76,883969	138,465094	28,628662	38,355119	24,911379	35,663187
79,75697	142,232657	29,714159	40,099754	25,377364	35,80935
82,342458	145,378729	30,863106	41,899845	25,793538	35,897188
84,839993	148,200766	32,044933	43,777003	26,298778	35,970938
87,434537	150,834708	33,259884	45,782711	26,755346	35,945456
89,785878	153,061041	34,518093	47,826444	27,277318	35,9354
92,058942	154,987936	35,82465	49,833781	27,825212	35,797956
94,160748	156,836111	37,10347	51,853722	28,451406	35,777169
96,419392	158,664053	38,378216	53,932539	29,027487	35,714819
98,511983	160,850882	39,714275	55,998597	29,634643	35,826788
100,866765	162,898642	41,029121	58,072592	30,334245	35,924006
103,155179	165,165167	42,443954	60,17109	31,068385	36,001106
105,443967	167,227164	43,762329	62,292189	31,83078	36,080225
107,658818	169,353018	45,082096	64,410618	32,617598	36,1466
110,026044	171,398093	46,460323	66,452692	33,418244	36,135875
111,778745	173,028708	47,793049	68,534552	34,296394	36,109725
113,809682	174,713278	49,184208	70,564772	35,152991	36,126488
115,725446	176,253546	50,491154	72,56151	36,024509	36,111737
117,754391	178,336523	51,861691	74,536342	36,938144	36,174762
120,001553	180,292395	53,241405	76,486877	37,927543	36,296788
121,930585	181,934958	54,652309	78,320566	38,93547	36,50195
122,508488	180,996832	56,028603	80,228268	40,411146	43,941544
122,504498	179,24024	57,493252	82,117624	41,714471	48,9701
122,735234	177,340536	58,913105	83,983422	43,020248	51,079412

122,685391	175,130469	60,355358	85,79651	44,443339	53,291306
122,719342	172,939536	61,825039	87,601415	45,720281	55,538075
122,944547	170,920508	63,291336	89,361309	46,948268	57,530725
122,934048	169,060248	64,685173	91,139014	48,094141	59,404031
122,98911	166,994666	66,0811	92,86422	49,164453	61,153306
123,520154	165,91918	67,551025	94,636269	50,085754	61,574369
124,610471	165,873724	68,941063	96,292347	50,635665	59,583044
125,480626	166,190359	70,320312	97,896952	51,168578	57,974581
126,175214	167,087637	71,655739	99,459319	51,769355	56,64905
127,447339	168,527075	72,870277	100,996078	52,393094	52,425056
128,144261	169,635001	74,105347	102,469915	53,037083	48,556419
128,920392	170,519583	75,249069	103,969203	53,646184	45,619737
129,55322	171,592856	76,3759	105,369276	54,180407	43,472213
130,312466	172,933981	77,412682	106,81154	54,801725	41,784631
131,189618	174,448431	78,554054	108,087972	55,284651	40,613313
131,764127	176,02883	79,568184	109,376967	55,768771	39,8503
132,747556	177,646979	80,453796	110,751868	56,306548	39,226087
133,441266	179,538672	81,378098	112,029928	56,785279	38,870069
134,464703	181,436758	82,287895	113,332919	57,244201	38,455712
135,246045	183,391684	83,054016	114,626952	57,769905	38,245181
136,120343	185,267767	83,677383	115,866539	58,20224	38,149306
136,754514	187,224188	84,501839	117,10964	58,529629	38,052088
137,811978	189,051886	85,238815	118,358812	59,046175	38,00985
138,467892	191,120581	86,009438	119,595956	59,416904	37,94615
139,772122	193,350699	86,629066	120,932089	59,83189	38,017225
140,695828	195,48403	87,339142	122,220149	60,25978	38,262619
141,583173	197,52471	87,939995	123,392667	60,650759	38,343744
142,765149	199,337286	88,445549	124,547789	60,99566	38,471806
143,711743	201,285864	89,157562	125,711492	61,317547	38,581094
144,725095	203,220374	89,619446	126,959201	61,792629	38,710494
145,977612	206,113806	90,362427	128,154116	62,191879	38,94315
147,339688	209,137686	90,913284	129,29917	62,605385	39,19055
148,859631	212,56539	91,425758	130,454299	63,055923	39,449356
150,620053	216,452567	92,133377	131,556823	63,280568	39,723581
152,064984	219,983679	92,748184	132,727773	63,665976	40,0206
153,566663	223,688986	93,438065	133,889041	64,087072	40,327675
155,429883	227,221701	94,249184	135,115884	64,516561	40,653537
157,129224	230,601553	94,807465	136,393522	65,122395	41,057163
158,614972	234,0064	95,435875	137,598889	65,484626	41,309931
160,178815	237,269034	96,273994	138,702981	65,969249	41,525156
162,125363	240,548499	97,143509	139,912405	66,461492	41,696794
164,246701	245,090018	98,194618	141,127816	66,854177	42,109137
166,652112	250,159277	99,222481	142,38805	67,315271	42,449069
168,732831	254,984106	100,209679	143,625737	67,921884	42,804419
170,876157	259,245856	101,267532	144,819672	68,546442	43,190613
172,771329	262,437109	102,40377	146,184965	69,196416	43,469531
174,787595	265,456641	103,709465	147,503777	69,744379	43,761856
176,860623	268,315619	104,984879	148,760226	70,30247	43,889244

178,992719	271,143439	106,459648	149,966889	70,820537	44,022669
180,704633	273,574683	107,600143	151,211288	71,537689	44,064913
182,583127	276,020667	109,143875	152,459079	72,088023	44,237219
184,046368	278,232825	110,662872	153,599443	72,689287	44,232531
185,984097	280,557379	112,128372	154,79564	73,379663	44,172856
187,634381	282,528693	113,738152	156,031261	74,077094	44,19565
189,55325	284,301947	115,28727	157,244289	74,634974	44,182913
190,828839	285,871741	116,793335	158,444573	75,345683	44,219788
192,573285	287,217688	118,423767	159,618916	76,140443	44,248619
193,71716	288,757117	120,07	160,773653	76,660066	44,184256
195,273373	290,116949	121,778015	161,931286	77,434115	44,168163
196,585843	291,460791	123,302818	163,093474	78,193141	44,138663
197,874097	292,586737	125,105042	164,227066	78,870783	44,030719
198,884885	293,837622	126,724899	165,293394	79,526807	44,083681
200,11485	294,953314	128,40921	166,304311	80,284663	44,139331
200,990125	295,940802	130,037186	167,393517	81,071681	44,090388
202,162503	296,703314	131,524475	168,45146	81,810752	44,079662
203,426846	297,577948	133,334961	169,452573	82,538417	44,184925
204,246564	298,487006	134,856277	170,51599	83,285155	44,197663
205,146619	298,928534	136,32872	171,460472	84,121086	44,3036
205,896863	299,5315	137,74942	172,4172	84,894856	44,359919
206,466046	300,095221	139,337692	173,371123	85,655952	44,471219
207,401929	300,663184	140,863968	174,268535	86,342106	44,455125
208,280103	301,152258	142,451035	175,038882	87,150779	44,397463
209,166104	301,508307	143,789612	175,876721	87,894298	44,332431
209,710812	301,955603	145,427628	176,751555	88,594735	44,251975
210,589886	302,216223	146,854553	177,490442	89,28144	44,0924
210,882413	302,178748	147,948563	178,173617	90,098452	44,017975
211,588834	301,951575	148,936493	178,95606	90,952488	43,772581
211,903577	301,998907	150,138916	179,595362	91,686823	43,689444
212,354932	301,939551	151,467407	180,212509	92,38189	43,504394
212,37753	301,630988	152,608551	180,851916	93,387464	43,464162
212,327924	301,519873	153,936768	181,341818	93,952414	43,405831
212,816296	301,244788	155,0616	181,819744	94,677413	43,232181
213,102002	300,751807	156,208405	182,283328	95,432134	43,083337
213,15257	300,040381	157,387451	182,785054	96,106097	42,896944
213,192181	299,349249	158,444	183,289344	96,836814	42,82185
213,149442	298,608038	159,458527	183,723805	97,517945	42,717925
213,037305	297,676764	160,257019	184,114499	98,356831	42,714575
212,977078	296,849615	161,2892	184,55923	99,066308	42,624731
212,764386	296,142432	162,214691	185,021216	99,785129	42,534888
212,75369	295,291876	163,072586	185,365578	100,492855	42,427612
212,260861	294,372351	163,787476	185,692476	101,209486	42,272731
212,616986	293,567542	164,513016	185,91733	101,935474	42,182887
212,040067	292,632117	165,344574	186,122593	102,593856	42,115169
211,358945	291,583838	166,09877	185,868299	103,233218	42,05215
211,337445	291,015387	166,628189	185,726335	103,878819	41,862406
210,979016	290,187628	167,331436	185,873005	104,50689	41,760494

210,265698	289,343115	167,92543	185,920709	105,033756	41,62975
209,891446	288,351813	168,567413	186,056852	105,70312	41,489619
209,203214	287,126807	169,043732	186,068661	106,391086	41,3743
208,755215	286,351202	169,284302	186,163812	107,054739	41,252275
208,457104	285,474402	169,902527	186,191502	107,597664	41,044425
208,185681	284,538885	170,234314	186,220519	108,214027	40,929775
207,639844	283,675452	170,710434	186,277152	108,817792	40,901612
207,498181	283,021216	170,65155	186,24269	109,515963	40,832556
206,957913	282,282172	171,047546	186,172258	110,050367	40,72595
206,448376	281,594977	171,352707	186,056927	110,703869	40,671644
206,096371	280,981482	171,609451	185,998455	111,227246	40,677675
206,064191	280,210699	171,593155	185,906773	111,966015	40,692425
205,419568	279,318976	171,652039	185,787582	112,564779	40,6522
204,635358	278,560522	171,922119	185,621712	112,989301	40,492613
204,072095	277,779913	172,176361	185,43607	113,502912	40,406794
203,49545	276,990088	172,237869	185,265179	114,116284	40,270012
202,712628	276,166113	172,136047	184,95383	114,70671	40,1909

Røgtræk - [Pa]	Pd Kanal - [Pa]	Ps Kanal - [Pa]	Vægt - [Kg]	CO-Lav - [10(	CO-Høj - [%]
38	39	40	43	44	45
Flue draft Pascals	Duct dynamic pressure	Duct static pressure	Platform scale reading	CO low range	CO high range
3,438871	31,608927	143,534703	1,736751	0,001335	0,009071
6,168109	30,857292	144,323199	1,716569	3,096248	0,027053
8,852046	32,810964	146,933906	1,686397	15,595371	0,145244
8,733687	31,678954	143,52448	1,655087	15,947639	0,16029
14,082659	31,547602	144,248269	1,551699	16,734104	0,168014
14,550815	32,08999	145,314339	1,553577	20,313504	0,17972
15,737472	31,317637	141,520055	1,51241	22,441319	0,441004
16,923953	30,422634	143,808881	1,462862	22,441051	0,314244
17,861288	31,275373	143,349077	1,407949	22,440649	0,488554
18,187073	32,294679	146,671635	1,349148	22,440649	0,658721
18,788066	31,470947	142,930136	1,296114	22,440649	0,751226
18,939804	31,64829	144,285734	1,247638	22,440515	0,596648
17,637684	30,303715	143,505748	1,202851	22,44038	0,414191
17,898073	30,792236	143,972377	1,161549	22,44038	0,360064
17,646199	32,232114	145,775857	1,123936	22,440246	0,265849
18,303388	32,047313	146,256107	1,084713	22,440246	0,25895
17,943884	31,202032	141,932186	1,050988	20,003879	0,206371
17,869464	31,553817	142,717268	1,017867	14,613661	0,157232
17,361797	30,790996	142,955679	0,988634	15,553936	0,148201
16,868435	30,998586	143,84806	0,962888	18,336942	0,179901
17,015236	30,914473	146,40938	0,936338	22,110507	0,215724
17,111626	30,310347	143,681166	0,911463	22,440113	0,222764
16,509613	31,256729	147,426063	0,887728	22,439844	0,238554
16,745139	31,064052	145,913795	0,865804	22,440246	0,244991
16,236621	31,422882	141,012563	0,845756	22,440246	0,23258
16,175653	31,682682	144,612711	0,824569	22,439979	0,24135
16,200007	30,04723	139,41684	0,803383	22,440113	0,242718
16,687576	31,511553	142,286405	0,779446	22,439979	0,255872
16,678551	31,89566	144,66721	0,756717	16,596657	0,183079
16,811215	30,830359	138,23666	0,736469	14,391197	0,148684
16,753824	30,454542	142,03096	0,713539	13,510061	0,136877
16,034985	32,481141	150,023149	0,693492	12,709649	0,125854
16,460056	30,41932	145,426749	0,672439	12,99822	0,113383
16,622522	32,036541	143,38143	0,652124	14,473264	0,139029
16,90454	30,21256	139,961797	0,633082	14,726035	0,148422
17,359073	31,202862	145,459103	0,613773	13,86206	0,135066
16,836079	31,874941	145,218977	0,595267	12,871233	0,142207
16,720104	32,257391	144,113728	0,574684	10,614144	0,111895
17,144494	31,035462	142,666166	0,556916	13,97832	0,141563
15,454092	32,460836	145,082738	0,182256	14,180266	0,143072
12,858877	32,541223	146,661412	2,860667	9,88011	0,110809
13,535822	30,500119	142,591236	3,553066	6,649896	0,072129
11,60853	31,970658	142,087157	3,543881	9,984704	0,103487

12,854791	31,732817	143,252002	3,514782	6,121564	0,059276
13,059832	32,890107	145,377362	3,485281	6,08281	0,061509
13,410821	31,364045	143,362698	3,453299	4,872736	0,052779
13,715832	31,403407	143,883827	3,420245	4,969552	0,055796
12,76351	33,391065	148,233291	3,388263	5,335497	0,057989
17,601921	30,856462	143,561961	3,337709	4,723758	0,043527
17,471641	31,918862	142,919928	3,340592	6,820599	0,073296
17,868611	31,230209	143,393353	3,308544	3,677013	0,037794
17,031245	30,592935	140,893342	3,23325	3,736684	0,045035
16,34902	33,185963	149,963539	3,211326	5,55917	0,049098
16,144148	30,154136	140,012898	3,190407	11,819793	0,104573
15,848166	30,219601	140,19681	3,172974	15,441163	0,150434
16,220613	30,838644	141,954316	3,150983	16,002617	0,16206
16,16731	29,82928	140,748593	3,130936	13,491959	0,139974
16,119454	31,131178	143,619857	3,110419	10,937181	0,117668
16,540778	30,711854	140,743482	3,088562	9,469243	0,102139
16,370648	30,969579	143,740761	3,064827	8,178311	0,090654
16,897728	31,483377	141,574554	3,043036	6,931227	0,074241
16,811725	31,546358	144,663797	3,017089	5,942279	0,061991
16,698646	31,682268	146,734643	2,994159	5,218299	0,052337
16,694899	30,495561	144,495204	2,969553	5,293391	0,051391
16,930935	32,88845	146,560939	2,944812	5,594302	0,060423
17,557302	30,464484	142,703631	2,923022	5,710429	0,062273
17,639046	31,514454	145,595342	2,893521	5,681599	0,061046
17,484414	33,569652	150,821852	2,867976	4,179466	0,050909
17,61844	32,331972	148,827635	2,839614	3,967327	0,040831
17,730668	32,529206	148,832747	2,812058	5,104317	0,053202
18,037208	32,549094	147,751342	2,784569	6,952013	0,078083
17,778692	31,594841	148,386564	2,755135	8,468761	0,089206
18,001445	31,634617	145,516999	2,725968	8,410831	0,094979
18,160846	30,87718	141,356558	2,690232	6,2865	0,074804
18,291297	30,19847	141,153914	2,658049	5,428961	0,060041
19,009116	31,826876	143,42742	2,622313	5,36768	0,058411
18,81242	31,73116	147,44651	2,588454	5,909291	0,064707
18,741744	30,347222	142,14164	2,551712	5,108341	0,053403
18,720968	31,593597	143,725442	2,515305	3,717375	0,041153
19,092734	32,675058	147,141662	2,476686	3,681839	0,051934
18,839498	30,427609	142,351111	2,439206	4,905724	0,052317
19,043687	31,324269	143,311612	2,401593	4,744274	0,049299
19,765931	29,804834	138,587482	2,362303	4,681115	0,040932
19,331835	31,700913	145,65835	2,324689	4,76184	0,051311
20,475572	31,568321	144,203978	2,280036	13,636781	0,110105
20,101593	31,114191	143,166864	2,235986	14,961908	0,157956
19,630371	31,680194	143,253716	2,192874	12,095762	0,117306
20,229828	31,718317	146,91176	2,152579	9,447654	0,099203
20,066	29,429844	138,032301	2,110473	7,527815	0,091499
19,970633	30,825801	141,4894	2,068166	6,755697	0,077902
20,662732	30,657574	142,851793	2,030753	5,985725	0,065471

19,702409	30,648459	142,286405	1,991329	6,012276	0,073356
19,800672	30,603708	143,211139	1,95271	4,444304	0,049098
20,747372	31,457274	144,97374	1,915297	4,281379	0,052457
19,969099	31,081043	141,893006	1,877684	4,509876	0,049621
20,266273	30,97248	141,710793	1,840204	4,16914	0,052477
20,813789	30,65426	143,040832	1,801719	3,556192	0,043245
20,005032	29,764228	139,312954	1,767861	3,91275	0,042662
19,790283	31,371503	144,755761	1,731923	3,61439	0,041354
20,330306	31,981017	142,969315	1,696187	3,563031	0,052337
19,7489	32,068032	145,304131	1,662462	3,399301	0,039303
19,638035	29,709118	139,793204	1,628402	3,940509	0,050305
20,255714	31,12372	141,431488	1,594543	3,68023	0,037653
19,741237	31,096373	142,310249	1,561689	3,426389	0,045096
20,137185	30,978281	144,236347	1,528702	3,628872	0,045015
20,300844	32,13184	147,749643	1,493905	3,426925	0,037955
19,605338	31,393048	142,502686	1,464605	3,5165	0,04236
19,447299	31,774667	145,382458	1,430812	3,59213	0,042179
19,563955	31,775911	143,269035	1,399434	4,030887	0,049621
19,967056	31,585725	144,358965	1,367452	3,658105	0,038699
19,885652	31,585725	146,305494	1,335471	3,930854	0,041133
19,682654	30,799281	142,669579	1,305232	3,805742	0,043507
19,451215	30,571386	140,350083	1,273384	3,887406	0,047831
19,675672	30,923588	141,305473	1,244688	3,756127	0,041897
19,643825	30,828285	144,309578	1,216528	3,870109	0,050707
19,493962	32,395371	144,408352	1,18515	4,040275	0,052638
19,179927	31,237667	142,427756	1,158868	3,831221	0,045739
19,28347	31,258799	140,321143	1,1293	3,893844	0,049782
19,409151	30,65633	144,662098	1,103822	4,11872	0,051733
19,271378	30,01947	141,879386	1,073449	4,256436	0,050205
19,463137	30,676218	143,207726	1,048977	3,987977	0,041837
19,253838	33,986076	154,570194	1,023231	4,016138	0,051391
19,05101	30,979525	143,0221	0,998423	4,190328	0,04588
19,298968	31,180074	143,054453	0,970934	4,219426	0,046866
19,367257	33,168558	150,944471	0,94445	4,466026	0,067583
19,046582	31,545945	149,711491	0,922391	4,625331	0,060724
19,086603	31,009772	143,701597	0,895707	4,893924	0,061408
18,956663	30,620282	142,058201	0,875659	5,220444	0,054831
18,837283	31,401337	148,09875	0,851992	5,572178	0,06521
18,48033	32,005463	146,412778	0,833554	6,053845	0,071003
18,472666	32,311257	147,945477	0,809752	6,334506	0,068227
18,664939	31,008946	144,912431	0,788699	6,65392	0,073597
18,8693	31,678124	145,566386	0,770328	6,740679	0,078385
18,252299	30,225816	140,246197	0,749208	6,976015	0,076413
18,454275	32,732239	149,905643	0,733788	6,598806	0,071948
17,98714	31,568734	148,577302	0,7126	6,753284	0,075247
18,133428	31,405895	144,498602	0,693357	6,94571	0,079752
18,085575	31,281175	143,42742	0,674987	6,998543	0,082769
18,22454	31,102588	141,313982	0,657554	7,129822	0,086953

18,193204	31,195817	140,404582	0,639318	6,802496	0,071143
17,916636	31,007289	141,656294	0,622019	6,745237	0,075468
18,291126	30,46117	143,533005	0,603648	6,623883	0,07577
18,210233	30,636025	140,826936	0,585277	6,061489	0,061086
18,167999	31,007702	142,45841	0,568784	6,134839	0,073316
18,218409	32,145513	148,384865	0,55048	6,026893	0,060262
17,958359	31,862512	145,586817	0,534925	5,683744	0,064707
17,801342	30,827045	145,86101	0,517559	5,532485	0,053141
17,803216	30,318632	141,848731	0,501133	5,470129	0,06523
17,655054	31,153967	148,568777	0,485444	5,266841	0,061308
17,838639	29,678871	138,819082	0,468011	5,312568	0,058854
17,747358	32,198966	144,203978	0,452456	5,223394	0,063239
17,814115	30,428435	141,554107	0,436901	4,934956	0,058814
17,263194	30,212973	141,794232	0,421078	4,682188	0,053684
17,790614	31,422882	144,088185	0,405658	4,661135	0,056038
17,724026	29,781632	141,036391	0,389566	4,695195	0,053805
16,150279	29,70456	140,44546	10,002699	4,616079	0,048716

CO2 - [%]
46

CO2 - [%]
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Datotid	Scantid	Rum - [°C]	Filter-1-H - [°C]	Filter-2-D1 - [°C]
		1	2	3
Datotid	Scantime	Ambient temperature	Main train filter temp	Split train 1H filter temp
01-14-19 13:07:00	3,068	23,24653	26,905214	27,002541
01-14-19 13:07:30	3,066	23,223013	27,695841	27,401873
01-14-19 13:08:00	3,066	23,077821	28,525134	28,121477
01-14-19 13:08:30	3,066	23,056656	29,453881	28,506891
01-14-19 13:09:01	3,067	23,36285	30,326011	28,811985
01-14-19 13:09:31	3,066	23,463344	30,749223	29,006814
01-14-19 13:10:01	3,067	23,294445	30,892777	29,051431
01-14-19 13:10:31	3,066	23,484268	30,704715	28,983256
01-14-19 13:11:01	3,066	23,289304	30,711531	29,066018
01-14-19 13:11:31	3,067	23,257703	30,550988	28,978264
01-14-19 13:12:01	3,066	22,988367	30,463486	28,961237
01-14-19 13:12:31	3,066	23,128151	30,300078	28,891724
01-14-19 13:13:01	3,067	23,321239	30,318726	28,936541
01-14-19 13:13:31	3,066	23,571876	30,282134	28,936541
01-14-19 13:14:01	3,066	23,442579	30,239013	28,932645
01-14-19 13:14:31	3,067	23,616518	30,174861	28,918124
01-14-19 13:15:01	3,066	23,492559	30,135646	28,907647
01-14-19 13:15:31	3,068	23,397956	30,224868	29,010142
01-14-19 13:16:01	3,066	23,12874	30,269271	29,080872
01-14-19 13:16:31	3,068	23,007084	30,195983	29,040186
01-14-19 13:17:01	3,065	22,97273	30,206424	29,093909
01-14-19 13:17:31	3,067	22,970089	30,164599	29,078181
01-14-19 13:18:01	3,066	23,226572	30,244614	29,179301
01-14-19 13:18:31	3,067	23,318906	30,295583	29,256581
01-14-19 13:19:01	3,066	23,165691	30,264113	29,290579
01-14-19 13:19:31	3,067	23,463932	30,211825	29,243431
01-14-19 13:20:01	3,067	23,205301	30,175248	29,248663
01-14-19 13:20:31	3,067	23,482809	30,301074	29,353728
01-14-19 13:21:01	3,067	23,279443	30,316613	29,402104
01-14-19 13:21:31	3,067	23,260927	30,290454	29,411248
01-14-19 13:22:01	3,068	23,332193	30,282622	29,426968
01-14-19 13:22:31	3,067	23,453947	30,41228	29,556818
01-14-19 13:23:01	3,067	23,424852	30,352137	29,521469
01-14-19 13:23:31	3,066	23,247945	30,35859	29,568552
01-14-19 13:24:01	3,066	23,195154	30,293286	29,505721
01-14-19 13:24:31	3,066	23,198152	30,438578	29,664324
01-14-19 13:25:01	3,067	23,198236	30,443873	29,685326
01-14-19 13:25:31	3,066	23,240274	30,361447	29,61851
01-14-19 13:26:01	3,067	23,087148	30,377129	29,665621
01-14-19 13:26:31	3,067	23,124576	30,46897	29,752303
01-14-19 13:27:01	3,067	23,161468	30,441487	29,750985
01-14-19 13:27:31	3,065	23,111135	30,387826	29,728671
01-14-19 13:28:01	3,066	23,15883	30,391888	29,754963

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01-14-19 13:35:01	3,067	23,616245	30,620017	30,084158
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01-14-19 13:37:31	3,066	23,495134	30,605904	30,098814
01-14-19 13:38:01	3,065	23,373754	30,618947	30,109284
01-14-19 13:38:31	3,067	23,421255	30,629407	30,132792
01-14-19 13:39:01	3,065	23,566635	30,681889	30,161854
01-14-19 13:39:31	3,067	23,875156	30,707995	30,185385
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01-14-19 13:51:01	3,066	24,177101	30,720017	30,356867
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01-14-19 14:02:01	3,066	24,313564	30,792645	30,594199
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01-14-19 14:45:02	3,067	24,427148	29,703681
01-14-19 14:45:32	3,066	24,311271	29,6932
01-14-19 14:46:02	3,067	24,532457	29,651358
01-14-19 14:46:32	3,066	24,369203	29,664426
01-14-19 14:47:02	3,066	24,097906	29,643491
01-14-19 14:47:32	3,068	24,234888	29,619942
01-14-19 14:48:02	3,067	24,400821	29,627808
01-14-19 14:48:32	3,065	24,208549	29,640876
01-14-19 14:49:02	3,066	24,145336	29,583316
01-14-19 14:49:32	3,067	24,124252	29,630421
01-14-19 14:50:02	3,067	24,290195	29,559768
01-14-19 14:50:32	3,066	24,245441	29,544078
01-14-19 14:51:02	3,066	24,311271	29,541442
01-14-19 14:51:32	3,067	24,200653	29,530984
01-14-19 14:52:02	3,067	24,27178	29,523141
01-14-19 14:52:32	3,066	24,306011	29,473412
01-14-19 14:53:02	3,066	24,179575	29,473412
01-14-19 14:53:32	3,066	24,240152	29,496972
01-14-19 14:54:02	3,065	24,292829	29,423678
01-14-19 14:54:32	3,066	24,290195	29,423678
01-14-19 14:55:02	3,066	24,277042	29,447238
01-14-19 14:55:32	3,067	24,337608	29,42891
01-14-19 14:56:02	3,066	24,416603	29,431525
01-14-19 14:56:32	3,068	24,458738	29,426295
01-14-19 14:57:02	3,066	24,490327	29,421067
01-14-19 14:57:32	3,066	24,566669	29,387019
01-14-19 14:58:02	3,067	24,548235	29,418448
01-14-19 14:58:32	3,066	24,708774	29,410579
01-14-19 14:59:02	3,066	24,798248	29,376555
01-14-19 14:59:32	3,067	24,742998	29,360841
01-14-19 15:00:02	3,067	24,724573	29,326815
01-14-19 15:00:32	3,066	24,577186	29,305863
01-14-19 15:01:02	3,067	24,482437	29,358228
01-14-19 15:01:32	3,067	24,716684	29,282298
01-14-19 15:02:02	3,066	24,666687	29,274449
01-14-19 15:02:32	3,065	24,619308	29,277066
01-14-19 15:03:03	3,066	24,606136	29,258754
01-14-19 15:03:33	3,068	24,632455	29,206361
01-14-19 15:04:03	3,067	24,68246	29,248267

01-14-19 15:04:33	3,065	24,640367	29,214234
01-14-19 15:05:03	3,068	24,648256	29,232547
01-14-19 15:05:33	3,066	24,510656	29,125863
01-14-19 15:06:03	3,066	24,484115	29,124345
01-14-19 15:06:33	3,066	24,555299	29,085158
01-14-19 15:07:03	3,066	24,494638	29,092892
01-14-19 15:07:33	3,066	24,410392	29,106002
01-14-19 15:08:03	3,066	24,460418	29,082423
01-14-19 15:08:33	3,065	24,497266	29,024798
01-14-19 15:09:03	3,067	24,468311	29,053614
01-14-19 15:09:33	3,066	24,544654	29,001221
01-14-19 15:10:03	3,066	24,465679	29,016923
01-14-19 15:10:33	3,066	24,507812	29,003838
01-14-19 15:11:03	3,066	24,47883	28,993365
01-14-19 15:11:33	3,066	24,507812	28,977637
01-14-19 15:12:03	3,067	24,531482	28,959292
01-14-19 15:12:33	3,067	24,468311	28,943585
01-14-19 15:13:03	3,065	24,389322	28,90165
01-14-19 15:13:33	3,066	24,407762	28,857095
01-14-19 15:14:03	3,067	24,43156	28,892566
01-14-19 15:14:33	3,066	24,452629	28,850653
01-14-19 15:15:03	3,066	24,436723	28,862332
01-14-19 15:15:33	3,066	24,471115	28,874284
01-14-19 15:16:03	3,067	24,444736	28,824446
01-14-19 15:16:33	3,067	24,508092	28,831137
01-14-19 15:17:03	3,065	24,413433	28,869227
01-14-19 15:17:33	3,067	24,434551	28,815545
01-14-19 15:18:03	3,067	24,342403	28,83125
01-14-19 15:18:33	3,066	24,395065	28,791951
01-14-19 15:19:03	3,066	24,347663	28,854838
01-14-19 15:19:33	3,066	24,326591	28,820777
01-14-19 15:20:03	3,067	24,445097	28,797187
01-14-19 15:20:33	3,066	24,495121	28,805041
01-14-19 15:21:03	3,065	24,426658	28,773597
01-14-19 15:21:33	3,067	24,23179	28,778832
01-14-19 15:22:03	3,066	24,302888	28,799804
01-14-19 15:22:33	3,066	24,397697	28,79457
01-14-19 15:23:03	3,066	24,225805	28,687764
01-14-19 15:23:33	3,065	24,249376	28,647046
01-14-19 15:24:03	3,066	24,367801	28,607598
01-14-19 15:24:33	3,066	24,338836	28,631202
01-14-19 15:25:03	3,066	24,351991	28,623339
01-14-19 15:25:33	3,067	24,21241	28,64432
01-14-19 15:26:03	3,067	24,294057	28,59974
01-14-19 15:26:33	3,067	24,257169	28,565636
01-14-19 15:27:03	3,067	24,196596	28,57352
01-14-19 15:27:33	3,065	24,275676	28,591918
01-14-19 15:28:03	3,067	24,267957	28,599919

01-14-19 15:28:33	3,066	24,354959	28,609185
01-14-19 15:29:03	3,066	24,391889	28,624968
01-14-19 15:29:33	3,067	24,444612	28,642047
01-14-19 15:30:03	3,068	24,468196	28,585585
01-14-19 15:30:33	3,065	24,441164	28,55481
01-14-19 15:31:03	3,067	24,225126	28,50223
01-14-19 15:31:33	3,067	24,338371	28,499606
01-14-19 15:32:03	3,066	24,304142	28,494368
01-14-19 15:32:33	3,066	24,275175	28,520592
01-14-19 15:33:03	3,066	24,283067	28,507491
01-14-19 15:33:33	3,065	24,362074	28,486508
01-14-19 15:34:03	3,067	24,398927	28,462901
01-14-19 15:34:33	3,066	24,42526	28,43143
01-14-19 15:35:03	3,065	24,314666	28,43143
01-14-19 15:35:33	3,066	24,267255	28,407821
01-14-19 15:36:03	3,066	24,269886	28,4052
01-14-19 15:36:33	3,065	24,296386	28,411893
01-14-19 15:37:03	3,065	24,262262	28,478862
01-14-19 15:37:33	3,066	24,351919	28,33091
01-14-19 15:38:03	3,065	24,415178	28,181938

Filter-3-D2 - [°C] 4	Filter-4-R - [°C] 5	Køler-1-H - [°C] 6	Køler-2-D - [°C] 7	Gasm-H - [°C] 8
Split train remain. filter temp	Room blank filter temp	Main train dryer outlet temperature	Split train dryer outlet temperature	Main train dry gas meter temperature
	23,390502	17,205732	16,689848	27,771424
	23,407855	17,278146	16,710129	27,839602
	23,450092	17,256747	16,616362	27,847443
	23,456664	17,227334	16,592247	27,843541
	23,510846	17,248813	16,585686	27,884186
	23,553182	17,238233	16,605845	27,89474
	23,526797	17,297057	16,581732	27,91042
	23,586126	17,251592	16,619271	27,905257
	23,631171	17,323976	16,622124	27,959004
	23,680024	17,31331	16,646244	27,952494
	23,662849	17,337375	16,630186	27,977335
	23,649649	17,34806	16,611468	27,996998
	23,751439	17,36968	16,681294	28,052071
	23,769908	17,35897	16,694697	28,04946
	23,781743	17,35897	16,692021	28,061234
	23,794908	17,345615	16,681334	28,062586
	23,829181	17,318877	16,686686	28,054726
	23,899321	17,364549	16,777939	28,107209
	23,872953	17,396627	16,708319	28,120264
	23,87424	17,361879	16,724417	28,112477
	23,821508	17,396627	16,670845	28,143843
	23,863679	17,383271	16,700308	28,120337
	23,921912	17,444949	16,740668	28,179301
	23,903485	17,511804	16,739363	28,219862
	23,890281	17,450336	16,743397	28,219895
	23,940372	17,378152	16,783581	28,214672
	23,93774	17,354087	16,791609	28,204203
	24,007882	17,418493	16,834677	28,240992
	23,998607	17,48266	16,81597	28,277644
	24,022332	17,413152	16,818644	28,288086
	23,995975	17,423835	16,832022	28,267176
	24,041019	17,509601	16,845608	28,347065
	24,058156	17,501613	16,863055	28,352349
	24,014663	17,523	16,826939	28,374575
	24,070008	17,469545	16,853716	28,351057
	24,062329	17,517844	16,837813	28,404782
	24,049188	17,493846	16,77361	28,425745
	24,088699	17,424365	16,787035	28,403588
	24,033355	17,493846	16,736147	28,424492
	24,085056	17,526193	16,784592	28,474331
	24,088979	17,526193	16,808672	28,459971
	24,136407	17,483421	16,830149	28,479607
	24,187909	17,45948	16,861018	28,486246

24,240798	17,48104	16,905365	28,492886
24,240798	17,486381	16,873217	28,482451
24,231525	17,456981	16,870592	28,503409
24,305495	17,507926	16,893519	28,527041
24,314828	17,550807	16,90029	28,54279
24,308223	17,5134	16,897614	28,541504
24,281841	17,486673	16,897669	28,561165
24,250272	17,508077	16,844134	28,56641
24,351989	17,497659	16,8765	28,59533
24,358564	17,486953	16,865775	28,59405
24,355895	17,502999	16,868502	28,605849
24,319003	17,553781	16,833702	28,616288
24,366679	17,57805	16,890103	28,625601
24,406217	17,567443	16,94109	28,64922
24,353542	17,620887	16,906292	28,666218
24,361436	17,596835	16,914318	28,666218
24,427358	17,54078	16,973298	28,657132
24,50794	17,58912	17,041775	28,690001
24,503967	17,573102	17,053835	28,682192
24,467088	17,58912	16,965512	28,687409
24,456563	17,578441	16,968186	28,697867
24,520068	17,58945	17,043448	28,739956
24,477929	17,618842	17,022055	28,760849
24,464776	17,63219	17,014008	28,758215
24,48582	17,600129	17,024729	28,755608
24,592807	17,627187	17,093277	28,792464
24,570396	17,653905	17,097315	28,776837
24,554614	17,672616	17,099987	28,795094
24,538806	17,723354	17,089293	28,797724
24,562581	17,718129	17,112168	28,831829
24,620752	17,753082	17,185965	28,839827
24,620752	17,750411	17,202029	28,837216
24,641814	17,721029	17,228783	28,826758
24,636508	17,739736	17,165909	28,832032
24,647222	17,774654	17,176838	28,874005
24,655307	17,841571	17,146176	28,894965
24,636874	17,849574	17,167588	28,889748
24,693435	17,793489	17,251879	28,862372
24,70284	17,881845	17,278843	28,903073
24,755653	17,91402	17,336489	28,918818
24,753022	17,889983	17,360566	28,910996
24,784599	17,88198	17,381943	28,869227
24,74266	17,975661	17,402275	28,934756
24,784959	17,973129	17,441149	28,929619
24,803361	17,962459	17,505341	28,924401
24,76916	18,007833	17,462548	28,895695
24,782228	17,954431	17,493374	28,890562
24,814241	18,096297	17,484301	28,932602

	24,832671	18,072272	17,476288	28,924755
	24,852388	18,002877	17,496369	28,886952
	24,897384	18,024511	17,542117	28,926369
	24,914605	18,035295	17,524813	28,927748
	24,901439	18,005904	17,556891	28,893822
	24,900102	17,984592	17,532912	28,896578
	24,970205	18,043666	17,506466	28,928116
	24,933387	18,008969	17,452988	28,912472
	24,922872	17,995631	17,40754	28,894194
	25,010064	18,033401	17,458739	28,936341
	24,965341	18,060096	17,402581	28,952008
	24,939035	18,041402	17,370491	28,936341
	24,956119	18,025375	17,355791	28,919424
	25,047275	18,041814	17,435084	28,93936
	25,041995	18,025787	17,38694	28,918478
	25,041995	17,993753	17,400301	28,900225
	25,05025	18,074142	17,380537	28,942242
	25,116044	18,039542	17,438157	28,918892
	25,113418	17,991483	17,416785	28,900614
	25,068704	18,036874	17,363293	28,929324
	25,134795	18,037236	17,419819	28,961007
	25,137479	18,053308	17,414519	28,927143
	25,098048	18,050639	17,369046	28,927143
	25,103357	18,026668	17,339684	28,919361
	25,135276	18,083106	17,342739	28,966711
	25,190492	17,986989	17,380175	28,948433
	25,195745	17,986989	17,356102	28,91973
	25,269773	17,998033	17,389908	28,922657
	25,209312	18,040832	17,335152	28,969736
	25,261893	17,960736	17,367243	28,927994
26,755841	25,238286	17,984863	17,353978	28,900662
26,769893	25,283344	18,01723	17,405135	28,944086
26,860189	25,293872	18,003892	17,431878	28,925814
26,94128	25,259708	17,990531	17,407833	28,889283
26,979631	25,310138	18,039056	17,442984	28,937939
27,162267	25,257503	18,073753	17,368166	28,949763
27,248467	25,231214	18,049724	17,33605	28,949763
27,350183	25,2816	18,055453	17,371182	28,964436
27,62524	25,271095	18,036834	17,365946	28,965874
27,704186	25,239551	18,028831	17,317795	28,965874
27,798732	25,226396	18,012803	17,32314	28,944991
27,848994	25,300508	18,039979	17,377045	28,962347
27,946508	25,287317	18,037311	17,374447	28,96111
28,08801	25,308353	18,005279	17,342358	28,932406
28,155284	25,265241	18,034888	17,351918	28,945645
28,208005	25,270734	18,043132	17,376238	28,943257
28,211806	25,253625	18,056468	17,302712	28,948534
28,285283	25,240468	18,021772	17,275959	28,932888

28,340545	25,24323	18,045905	17,262707	28,931662
28,45625	25,290899	18,035604	17,31123	28,959456
28,471997	25,275117	18,022243	17,279112	28,954241
28,534928	25,290899	17,990209	17,297844	28,928143
28,579514	25,259332	17,979539	17,271092	28,928143
28,545197	25,226375	17,990209	17,236388	28,933497
28,700583	25,304519	18,028079	17,298352	28,954741
28,758246	25,291364	17,993381	17,311716	28,931248
28,753007	25,251945	18,036082	17,282294	28,949528
28,773879	25,259755	18,012077	17,283656	28,933934
28,792159	25,245324	18,014785	17,295792	28,923615
28,947413	25,339158	18,028594	17,395146	28,947401
28,97885	25,331279	18,007232	17,392474	28,929125
28,976231	25,302369	18,004564	17,371071	28,910872
28,964244	25,261531	18,0179	17,344395	28,917475
28,986413	25,273345	17,975196	17,359131	28,916209
29,053614	25,265758	17,986125	17,364659	28,91379
29,105088	25,297599	18,034423	17,366228	28,940073
29,149619	25,321256	17,991721	17,366228	28,911368
29,157285	25,317233	17,989053	17,360953	28,923205
29,141455	25,276454	17,96502	17,375691	28,901059
29,096923	25,213367	17,999723	17,306162	28,901059
29,13358	25,239658	17,938321	17,343602	28,893235
29,183837	25,247905	18,04009	17,325129	28,90914
29,241763	25,298112	18,056316	17,364092	28,940598
29,221907	25,296691	18,053647	17,390906	28,913281
29,22049	25,274337	18,083009	17,362831	28,904194
29,249318	25,300624	18,010925	17,408307	28,885912
29,283349	25,319009	18,018924	17,440394	28,875485
29,270243	25,274337	18,048312	17,410979	28,885912
29,26763	25,253303	18,034953	17,42169	28,87027
29,342532	25,32582	18,003106	17,492731	28,866513
29,391185	25,362867	18,030074	17,533101	28,88638
29,37024	25,348441	18,062185	17,529177	28,91255
29,362368	25,303748	18,091546	17,534521	28,904702
29,414725	25,361596	18,067519	17,577307	28,891663
29,438281	25,379977	18,027463	17,609383	28,860346
29,417361	25,377351	18,024797	17,609383	28,857737
29,440898	25,361596	18,006126	17,590687	28,844675
29,419978	25,348441	17,987428	17,561257	28,826395
29,372712	25,315551	18,075519	17,546601	28,87085
29,371257	25,336517	18,051492	17,588066	28,868288
29,35818	25,302354	18,080854	17,569348	28,865679
29,377902	25,326053	18,06223	17,61487	28,847487
29,40408	25,347087	18,048896	17,612198	28,837054
29,456939	25,400031	18,121299	17,65523	28,83598
29,436181	25,38313	18,198827	17,650011	28,88175
29,464968	25,412038	18,142781	17,687447	28,842612

29,423081	25,372626	18,158805	17,676743	28,850436
29,412621	25,377877	18,164138	17,703469	28,842612
29,323598	25,280614	18,246865	17,628647	28,871323
29,383828	25,354222	18,190828	17,692788	28,85826
29,379865	25,354222	18,225513	17,7008	28,849162
29,326175	25,300296	18,273549	17,655379	28,867417
29,348201	25,300231	18,252198	17,687508	28,855772
29,340354	25,313384	18,241533	17,72761	28,837517
29,337712	25,334417	18,241533	17,700882	28,84273
29,353432	25,34492	18,228177	17,719599	28,840126
29,348201	25,342298	18,238868	17,732949	28,845341
29,361275	25,339671	18,228177	17,722268	28,81663
29,308917	25,316011	18,262885	17,703553	28,853163
29,316788	25,347547	18,252198	17,703553	28,832302
29,303685	25,347547	18,244199	17,714232	28,840126
29,293223	25,329143	18,278878	17,700882	28,829668
29,267039	25,326513	18,300229	17,700882	28,855772
29,316788	25,329143	18,276216	17,754332	28,827059
29,274884	25,266065	18,324245	17,730278	28,837517
29,308917	25,313384	18,262885	17,767708	28,803563
29,290606	25,321264	18,289567	17,762343	28,811411
29,253934	25,329143	18,308252	17,757004	28,827059
29,259166	25,323888	18,286901	17,775717	28,824454
29,259166	25,297605	18,313585	17,757004	28,827059
29,256553	25,331767	18,273549	17,815787	28,814021
29,230367	25,300231	18,316249	17,805109	28,819237
29,18061	25,289724	18,337598	17,783726	28,84273
29,18061	25,302858	18,297563	17,813116	28,81663
29,172759	25,302858	18,337598	17,818457	28,814021
29,138718	25,276569	18,390954	17,791735	28,845341
29,128228	25,297605	18,380265	17,813116	28,858406
29,125613	25,268687	18,398946	17,79443	28,837517
29,102034	25,287099	18,412273	17,778387	28,850558
29,11776	25,305482	18,409608	17,781058	28,850558
29,146569	25,342298	18,364276	17,799769	28,829668
29,10991	25,308131	18,441636	17,781058	28,834908
29,14395	25,331767	18,438947	17,839838	28,853163
29,141335	25,347547	18,428287	17,834498	28,824454
29,151801	25,371206	18,398946	17,871893	28,821843
29,14395	25,373832	18,401612	17,890602	28,824454
29,130845	25,365951	18,430951	17,861218	28,814021
29,078458	25,318637	18,500308	17,810448	28,855772
29,06799	25,34492	18,44963	17,861218	28,819237
29,036563	25,316011	18,494979	17,850539	28,837517
28,984166	25,305482	18,524314	17,837168	28,853163
29,018214	25,34492	18,508302	17,887934	28,834908
29,036563	25,342298	18,500308	17,885264	28,821843
29,010365	25,31076	18,548316	17,877259	28,845341

29,018214	25,339671	18,537635	17,837168	28,858406
29,00513	25,326513	18,566966	17,810448	28,863617
28,953431	25,318177	18,473237	17,81279	28,812411
28,894269	25,279895	18,473094	17,775235	28,818844
28,927117	25,343068	18,451823	17,777975	28,803244
28,875941	25,272014	18,483775	17,735136	28,82667
28,860209	25,264135	18,494436	17,732466	28,811018
28,852353	25,253606	18,489106	17,708409	28,829276
28,87856	25,29305	18,44642	17,719115	28,795344
28,841857	25,258882	18,481113	17,70574	28,795344
28,87856	25,319337	18,422412	17,769896	28,790129
28,836621	25,29305	18,47043	17,7004	28,784912
28,818265	25,287799	18,451751	17,711106	28,797957
28,781585	25,258882	18,483775	17,70307	28,795344
28,778964	25,256231	18,449086	17,735136	28,771849
28,773728	25,245725	18,47043	17,716446	28,771849
28,747517	25,243098	18,47043	17,716446	28,784912
28,731782	25,26151	18,475759	17,721785	28,777066
28,747517	25,285169	18,441093	17,735136	28,76924
28,720073	25,265487	18,515775	17,70574	28,754849
28,741046	25,2865	18,433097	17,74584	28,754849
28,713422	25,272014	18,462436	17,732466	28,748347
28,70835	25,226041	18,48644	17,691012	28,760065
28,720073	25,260211	18,435762	17,719115	28,747
28,739821	25,285218	18,430433	17,741793	28,727412
28,683566	25,244525	18,462436	17,711037	28,739104
28,708501	25,255029	18,481113	17,759146	28,740372
28,677022	25,26291	18,483775	17,743102	28,737759
28,697999	25,286571	18,457105	17,769825	28,722113
28,656068	25,236619	18,526431	17,729752	28,740372
28,658688	25,255029	18,526431	17,775166	28,748219
28,682284	25,26028	18,521104	17,7832	28,7195
28,692761	25,281318	18,521104	17,793879	28,727326
28,711116	25,241872	18,537114	17,812592	28,711649
28,679641	25,265533	18,523769	17,775166	28,724718
28,624585	25,197192	18,56911	17,748442	28,743002
28,627206	25,207702	18,587781	17,772498	28,769108
28,567637	25,188861	18,528701	17,785519	28,725727
28,559649	25,216361	18,525966	17,833542	28,687838
28,56088	25,200532	18,547237	17,852181	28,679938
28,537274	25,200532	18,557918	17,87089	28,669501
28,532035	25,211038	18,560582	17,913647	28,700831
28,500571	25,171613	18,595239	17,87089	28,721726
28,505812	25,195279	18,579255	17,900277	28,719092
28,521531	25,200532	18,547237	17,924323	28,706051
28,508433	25,205785	18,563245	17,93233	28,713875
28,449443	25,140037	18,589912	17,868222	28,711268
28,483662	25,172963	18,589912	17,869517	28,726874

28,502091	25,176936	18,61391	17,893567	28,702025
28,496901	25,186168	18,597903	17,894869	28,717701
28,506102	25,173009	18,60592	17,897538	28,718966
28,494208	25,196605	18,584502	17,916165	28,72024
28,399205	25,094909	18,565448	17,865084	28,695155
28,403035	25,108001	18,549394	17,891732	28,689864
28,424025	25,105373	18,541404	17,915779	28,700301
28,416159	25,118509	18,53605	17,910441	28,710759
28,392552	25,097469	18,514734	17,902436	28,713366
28,37156	25,100095	18,498723	17,881056	28,731627
28,382047	25,147433	18,482711	17,894402	28,710759
28,395171	25,134298	18,466722	17,894402	28,708125
28,418784	25,152688	18,45071	17,913111	28,692471
28,395171	25,136924	18,469386	17,886393	28,69508
28,395171	25,152688	18,466722	17,905104	28,700301
28,384688	25,144805	18,474717	17,889063	28,700301
28,390038	25,125108	18,498723	17,882351	28,69896
28,355988	25,079122	18,528054	17,863642	28,721125
28,28019	25,098888	18,512069	17,832888	28,732846
28,216537	25,127814	18,885286	18,302924	28,663607

Gasm-D - [°C]	Gasm-R - [°C]	Flow-H - [ln/min]	Flow-D - [ln/min]	NS-Røgtemp - [°C]
9	10	12	13	24
Split train dry gas meter temperature	Room blank dry gas meter temperature	Main train flow rate Flow-H - [ln/min]	Split train flow rate Flow-D - [ln/min]	EPA Flue gas temperature
27,953267	24,059438	7,191472	6,628642	240,801468
27,991335	24,125505	7,010176	6,416236	201,1362
27,978272	24,154489	6,998912	7,262039	195,350357
27,984822	24,114949	6,980272	7,336664	231,614822
28,052931	24,155936	7,087012	7,099181	284,276947
28,062157	24,178399	7,062875	7,080139	313,918335
28,054297	24,165235	7,051544	7,083961	291,840271
28,111912	24,160052	7,054494	7,080609	267,188446
28,155161	24,226022	7,032972	7,065255	246,258789
28,125113	24,223422	7,072061	7,068808	228,675644
28,152558	24,236583	7,051812	7,053991	221,411362
28,159172	24,263011	7,030357	7,046549	216,935013
28,214215	24,278955	7,010109	7,019931	216,038895
28,198519	24,263164	6,998711	7,012288	213,128143
28,231205	24,289506	6,982754	7,001224	207,405182
28,224739	24,308017	6,987313	7,004845	205,621521
28,222128	24,302753	6,990464	7,012086	204,154739
28,271922	24,323983	6,965388	6,997336	202,956268
28,271922	24,360849	6,967668	6,986206	200,346451
28,286377	24,367498	6,972562	6,990028	200,317169
28,300778	24,382018	6,982351	6,986273	200,860489
28,306	24,382018	6,955197	6,988754	200,046799
28,354468	24,434814	6,998442	6,984932	200,424973
28,359757	24,484906	7,017819	6,971925	200,975021
28,355879	24,484952	6,972495	7,0086	202,444138
28,366347	24,432286	6,998107	6,990028	200,641541
28,382006	24,450729	7,006086	6,982049	201,648849
28,4292	24,506189	6,989391	7,004913	199,721786
28,407063	24,562864	6,998778	6,991101	199,467499
28,447571	24,524697	6,990196	6,970852	199,784042
28,44496	24,543136	7,008835	6,993581	199,102829
28,467322	24,582748	6,991336	6,971121	198,264847
28,489602	24,596027	6,993146	6,980037	198,51918
28,481789	24,61184	6,987246	6,963611	198,592148
28,497475	24,582885	6,976183	6,959655	197,469025
28,539391	24,629075	6,993079	6,957577	195,168503
28,527682	24,659404	6,987514	6,949866	195,499939
28,552599	24,641072	6,968674	6,963544	196,270065
28,557818	24,664767	6,953722	6,94343	196,394608
28,573653	24,704417	6,955867	6,935921	197,764267
28,571068	24,747874	6,957343	6,956102	196,892044
28,597262	24,715041	6,938502	6,948593	198,447937
28,628662	24,678268	6,961566	6,934378	196,787766

28,647044	24,723113	6,971423	6,941619	197,809998
28,641823	24,723113	6,923484	6,923919	197,170013
28,651072	24,724536	6,998912	7,125799	197,044281
28,68776	24,754935	7,137834	7,107092	197,610504
28,665629	24,786565	7,127241	7,104813	198,181656
28,690438	24,77342	7,119598	7,10374	198,196411
28,684	24,810361	7,118457	7,119563	197,73732
28,674893	24,832759	7,128782	7,095359	198,392639
28,736412	24,8395	7,104311	7,114066	197,517059
28,736466	24,830302	7,112021	7,099248	196,883865
28,744355	24,844871	7,105383	7,100321	197,337784
28,726094	24,881721	7,096801	7,091604	197,77626
28,747115	24,914731	7,098879	7,068943	198,234131
28,790333	24,895139	7,089761	7,088386	198,348022
28,770775	24,953057	7,081917	7,072764	198,582336
28,773384	24,942521	7,104444	7,063244	199,552246
28,787798	24,910997	7,06663	7,060092	199,502625
28,834971	24,925689	7,056237	7,050169	199,180145
28,857237	24,921794	7,042292	7,053857	200,795609
28,841566	24,908651	7,039878	7,031061	202,196106
28,823286	24,932332	7,025261	7,004913	200,856491
28,868	24,961578	6,974439	6,984127	201,286133
28,839291	24,977369	6,964986	6,975277	200,353439
28,844506	24,993165	6,934814	6,948458	201,354156
28,860152	24,94844	6,944536	6,937194	199,838867
28,916554	24,973697	6,91584	6,906956	201,265564
28,915301	24,998738	6,878159	6,904877	200,845383
28,910086	25,001363	7,006421	7,050236	200,99118
28,904871	25,035573	6,979401	7,031262	200,26004
28,922024	25,047605	6,946079	6,999414	200,606689
28,946963	25,049068	6,91879	6,978629	199,527954
28,957392	25,030648	6,893178	6,929283	199,308426
28,952177	25,022765	6,866761	6,903336	198,819687
28,956164	25,034665	6,848994	6,879266	198,550186
28,988984	25,065112	6,780136	6,842524	199,281128
28,986454	25,094117	6,739975	6,816509	199,074997
28,970784	25,086236	6,731057	6,767296	198,801926
28,985176	25,052077	6,667229	6,718217	199,234192
29,007595	25,123311	6,637056	6,684493	198,466751
29,015519	25,118158	6,576714	6,635212	196,860138
29,015519	25,078698	6,53548	6,605108	197,848251
28,992031	25,070817	6,515432	6,574802	196,45575
29,021	25,157863	6,511812	6,526193	197,998108
29,02108	25,165847	6,471516	6,499307	198,67775
29,031531	25,089585	6,968674	6,480668	197,845047
28,981951	25,139552	6,997906	7,042727	197,247925
29,013396	25,121278	7,158016	7,100254	197,379196
29,016247	25,179364	7,130861	7,067937	197,186203

29,008425	25,171487	7,115709	7,074709	196,307419
28,991484	25,13471	7,112088	7,037363	195,560196
29,023064	25,150785	7,074273	7,034949	194,657516
29,024456	25,153463	7,07139	7,027508	195,272339
29,008791	25,129792	7,058986	7,002298	195,62825
29,025931	25,166799	7,025329	6,974741	194,833801
29,035279	25,182761	7,010243	6,962337	194,343582
29,024828	25,18539	7,002734	6,934714	193,264069
29,001337	25,161746	6,994352	6,940949	193,442245
29,038268	25,20421	6,994017	6,944704	193,448349
29,004351	25,23838	6,972428	6,914666	192,462418
28,983471	25,20421	6,957343	6,910711	192,7491
28,945675	25,200278	6,96103	6,877791	192,482605
29,033467	25,207231	6,934748	6,873298	192,922745
28,986493	25,22039	6,890161	6,850636	193,185303
28,991707	25,186216	6,938301	6,854525	194,189896
29,006291	25,223228	6,912019	6,860559	192,961685
29,020827	25,22607	6,919461	6,869677	193,238434
29,007767	25,202405	6,912152	6,846748	192,60611
28,973849	25,233949	6,887278	6,836891	191,660309
29,030291	25,232976	7,096131	7,17595	190,856522
29,0082	25,244888	7,10069	7,008801	188,926712
28,984711	25,247514	7,100623	7,104076	189,041824
28,95995	25,222572	7,105115	7,091672	187,297211
28,990363	25,316291	7,093717	7,099248	187,246338
28,979908	25,263717	7,083459	7,072764	186,614853
28,992968	25,242679	7,077559	7,079402	186,707077
29,002409	25,248212	7,077894	7,065255	185,501022
28,993388	25,300958	7,078028	7,057679	183,705399
28,985567	25,237876	7,047856	7,054125	184,250504
28,99479	25,251069	7,063881	7,031329	182,654327
29,01212	25,272502	7,041755	7,050303	181,520706
28,996451	25,24884	7,055232	7,321914	180,462189
28,970354	25,24884	7,055299	5,872346	180,724335
29,004637	25,292529	7,070451	6,933574	178,89679
28,98646	25,349178	7,062607	6,925528	177,599976
28,955153	25,315017	7,058986	7,190634	177,367844
28,967154	25,349416	7,120402	7,200356	176,825241
28,956894	25,353555	7,138437	7,187818	174,537628
28,960837	25,339124	7,130794	7,179437	172,949203
28,93735	25,32862	7,121072	7,174944	172,316971
28,95724	25,347308	7,112088	7,153824	172,705338
28,940428	25,352739	7,109876	7,148997	171,409454
28,940428	25,334356	7,12657	7,174811	169,391174
28,96015	25,33056	7,112624	7,168843	168,93335
28,95776	25,320277	7,144271	7,175079	168,363144
28,925249	25,369008	7,130928	7,148528	167,145828
28,909581	25,358482	7,134616	7,156104	166,241745

28,910984	25,369048	7,118457	7,148461	164,741547
28,951817	25,408918	7,134683	7,144773	164,201569
28,928328	25,372112	7,127307	7,137264	162,890594
28,933545	25,366857	7,134683	7,118222	163,115051
28,912684	25,364232	7,138371	7,125732	162,821075
28,919346	25,377574	7,123352	7,122044	161,579773
28,941868	25,412029	7,103372	7,122781	161,520874
28,96275	25,380496	7,124559	7,112859	160,146591
28,931435	25,391023	7,119731	7,114401	158,937103
28,931504	25,372682	7,130928	7,118356	158,093689
28,935574	25,391256	7,142527	7,093884	158,173615
28,968474	25,375762	7,125296	7,103137	157,82634
28,955414	25,35473	7,118524	7,116949	156,924515
28,924101	25,362607	7,134616	7,110579	156,75914
28,937285	25,395635	7,123285	7,077458	155,428375
28,919073	25,360175	7,127039	7,102064	155,770645
28,912711	25,395824	7,130861	7,098779	154,500107
28,927227	25,410417	7,149769	7,090062	153,8125
28,935049	25,381511	7,139175	7,106891	154,345505
28,928612	25,392156	7,130794	7,088654	152,939926
28,914355	25,368581	7,123285	7,086039	151,499115
28,903925	25,418517	7,146014	7,085302	151,089935
28,888256	25,365951	7,135689	7,076586	151,404083
28,875414	25,437112	7,147019	7,076519	150,251495
28,922518	25,410951	7,157278	7,087984	149,718063
28,920061	25,412423	7,119866	7,078396	149,707428
28,891398	25,440057	7,152786	7,065993	147,225922
28,914887	25,376992	7,140315	7,065993	147,083572
28,901852	25,392749	7,162105	7,060025	146,722168
28,867903	25,408527	7,142192	7,080743	146,01947
28,860077	25,400651	7,149836	7,06787	145,46434
28,878476	25,383712	7,142259	7,11192	145,201416
28,890519	25,382705	7,142326	7,100052	143,488922
28,889328	25,411695	7,138437	7,095694	143,746185
28,884087	25,443225	7,157613	7,104209	143,581696
28,857987	25,427449	7,142259	7,075916	143,157166
28,87105	25,393293	7,134683	7,072898	142,109467
28,88148	25,364381	7,142997	7,080072	142,024628
28,850161	25,385411	7,142393	7,087984	141,674637
28,824061	25,374887	7,136628	7,069144	140,666916
28,818917	25,409187	7,158417	7,061232	140,725281
28,833371	25,392213	7,144606	7,042995	140,195358
28,807267	25,421115	7,149769	7,051846	139,517242
28,821654	25,398818	7,040213	7,061769	139,821808
28,805979	25,388313	7,079503	7,035352	139,358353
28,828404	25,406896	7,051477	7,041721	138,951981
28,827212	25,441127	7,056506	7,046482	137,739716
28,824603	25,399097	7,051544	7,034883	137,833466

28,829821	25,396468	7,051343	7,034883	136,637497
28,827212	25,385944	7,03143	7,009069	136,075592
28,795889	25,438503	7,056304	6,990229	136,732697
28,816759	25,393844	7,058986	7,009337	136,157608
28,821995	25,413566	7,059053	7,028513	134,146637
28,799847	25,438575	7,040213	6,992106	134,595673
28,807791	25,466331	7,066496	7,020132	131,937393
28,81301	25,437425	7,058919	7,016444	131,222672
28,820858	25,426927	7,047924	7,020333	130,835083
28,823466	25,395395	7,037196	7,005248	128,75325
28,81564	25,413776	7,051611	7,021741	128,733353
28,826071	25,437425	7,074206	7,027843	127,647537
28,81301	25,413776	7,059053	7,009069	126,433487
28,805184	25,400645	7,059724	6,992307	125,391113
28,833897	25,390119	7,062406	7,019328	125,322792
28,8104	25,447952	7,057847	7,01269	124,418968
28,792143	25,432176	7,053824	7,005314	124,287636
28,799969	25,4348	7,063143	7,043062	123,121849
28,792143	25,453206	7,058852	7,033944	121,823097
28,81301	25,421672	7,050874	7,022948	121,54248
28,794753	25,421672	7,062808	7,023954	120,694237
28,786904	25,453206	7,064954	7,027708	119,962799
28,79736	25,450578	7,069781	7,033407	119,970596
28,792143	25,463704	7,071122	7,042995	118,899361
28,799969	25,445304	7,055299	7,033742	119,491203
28,786904	25,46108	7,065959	7,020199	117,718933
28,79736	25,476855	7,06368	7,035419	117,038788
28,802575	25,442676	7,062808	7,041252	116,9394
28,784296	25,453206	7,078631	7,040045	116,77462
28,79736	25,466331	7,063814	7,039911	114,929413
28,807791	25,474231	7,080374	7,036961	114,997345
28,794753	25,505758	7,081112	7,054259	114,857597
28,789534	25,500507	7,066161	7,04675	114,826241
28,79736	25,484733	7,059053	7,033206	113,647339
28,8104	25,46108	7,081782	7,043196	113,028793
28,794753	25,508382	7,059053	7,054796	113,15538
28,823466	25,489984	7,076151	7,050371	111,984047
28,818249	25,508382	7,073469	7,051108	111,551231
28,818249	25,513629	7,059053	7,050437	110,813538
28,81301	25,489984	7,089359	7,050437	110,662392
28,802575	25,500507	7,066562	7,058014	109,982338
28,792143	25,558305	7,070519	7,084163	109,45105
28,81301	25,495231	7,012857	7,049164	109,564247
28,802575	25,529407	7,020166	7,054125	109,332413
28,789534	25,558305	7,017417	7,076519	108,621742
28,799969	25,508382	7,021574	7,067534	108,426422
28,81564	25,521508	7,013864	7,065389	107,70826
28,805184	25,545154	7,032771	7,058886	107,073364

28,818249	25,558305	7,019697	7,04675	107,111153
28,802575	25,553052	7,036391	7,035419	107,424484
28,802302	25,483182	6,998912	7,061567	106,532448
28,770907	25,518552	7,031564	7,054326	106,49604
28,777459	25,498882	7,032771	7,061701	104,895302
28,770907	25,534303	7,04142	7,076117	105,362854
28,778756	25,523801	7,038134	7,061769	104,286217
28,763081	25,515928	7,036592	7,054192	104,72258
28,768298	25,497525	7,036391	7,050371	104,144661
28,76047	25,526426	7,021574	7,080407	103,343819
28,763081	25,487024	7,036526	7,084229	103,692978
28,744797	25,526426	7,036526	7,084095	103,577423
28,736971	25,523801	7,044571	7,084163	102,156746
28,74219	25,518552	7,058986	7,084296	102,303329
28,752648	25,536924	7,032771	7,076586	102,619835
28,736971	25,539575	7,032771	7,051242	102,200859
28,726538	25,531675	7,032838	7,07672	101,097427
28,736971	25,518552	7,036659	7,076251	101,335937
28,734364	25,508027	7,045107	7,097572	101,600441
28,723847	25,546096	7,00508	7,103271	102,046532
28,729063	25,506673	7,059053	7,019394	100,827797
28,74219	25,487024	7,039073	7,01269	101,167435
28,700348	25,536878	7,031631	7,019461	100,091759
28,734284	25,506673	7,037263	7,015238	99,692734
28,723772	25,50265	7,040348	7,012622	99,620186
28,701546	25,509179	7,052147	7,005248	99,254921
28,692376	25,523601	7,056304	7,011349	99,262688
28,70805	25,502574	7,044035	7,019461	98,768013
28,697592	25,468423	7,051209	7,023954	98,72657
28,697592	25,534099	7,056304	7,020266	98,760262
28,694983	25,49995	7,053086	7,020132	98,998497
28,679331	25,515723	7,044705	6,989894	97,833328
28,710661	25,507825	7,059187	7,009002	96,953407
28,692376	25,515723	7,05141	7,023484	97,336395
28,687155	25,492074	7,04028	7,011818	97,30275
28,674115	25,552499	7,064015	7,014299	97,690979
28,684552	25,555124	7,046449	6,990229	96,451477
28,652947	25,487903	6,991201	6,990296	96,761963
28,672495	25,477294	6,859185	6,921103	96,254898
28,67899	25,502254	6,855364	6,813022	96,104858
28,668555	25,539025	6,859453	6,778829	95,791916
28,665944	25,478605	6,837529	6,786472	96,071243
28,663336	25,544276	6,840814	6,798541	95,357475
28,671162	25,546903	6,843966	6,819794	95,15062
28,67899	25,528527	6,844099	6,775074	94,850716
28,684206	25,531152	6,847921	6,812151	94,75248
28,680254	25,54292	6,840277	6,797066	95,034279
28,688031	25,540248	6,851676	6,820666	94,835205

28,707581	25,542804	6,842356	6,778761	94,375092
28,69842	25,542804	6,851877	6,780169	94,799019
28,704903	25,55985	6,84772	6,800417	94,010681
28,685295	25,571628	6,840211	6,778963	94,12957
28,653696	25,579257	6,840277	6,797937	93,700584
28,647126	25,591027	6,842892	6,787477	93,139931
28,647126	25,580531	6,83887	6,805178	93,292358
28,64976	25,577903	6,829081	6,778829	92,963066
28,654972	25,591027	6,840277	6,801692	92,34581
28,688912	25,577903	6,840345	6,775074	92,893486
28,699345	25,556882	6,828544	6,787679	92,339752
28,699345	25,535861	6,821371	6,796261	92,436562
28,707198	25,562131	6,824052	6,775476	91,632172
28,675867	25,583156	6,821438	6,778225	92,32679
28,688912	25,591027	6,841887	6,790226	92,69738
28,683695	25,593677	6,810911	6,824354	91,647591
28,68623	25,588357	6,809302	6,799144	91,593369
28,680935	25,611921	6,807626	6,819727	91,873558
28,682232	25,589561	6,810307	6,807726	91,404915
28,605156	25,551437	0,000363	0,000396	90,891182

Ovf-Top - [°C]	Ovf-Bag - [°C]	Ovf-Side-1 - [°C]	Ovf-Side-2 - [°C]	Ovf-Bund - [°C]
27	28	29	30	31
Surface temperature Top	Surface temperature Rear	Surface temperature Right side	Surface temperature Left side	Surface temperature Bottom
202,712628	276,166113	172,136047	184,95383	114,70671
201,343304	272,127264	172,157211	184,916503	116,027778
199,554822	266,828986	172,10878	184,989107	117,291381
200,754254	263,834753	172,178406	184,843432	118,275263
203,427838	262,086035	171,988174	184,644608	118,933184
206,234952	262,766302	172,420212	184,3581	118,860221
208,375287	266,556616	172,496475	184,029573	119,318792
209,572629	271,314062	172,536652	183,716988	119,7257
210,52348	274,342932	172,597885	183,55507	120,119564
210,742429	275,259711	172,656586	183,252861	120,528912
210,699689	275,869055	172,605713	183,022396	120,949106
210,349454	276,959631	172,62561	182,883146	121,312236
210,113995	278,694647	172,404312	182,730458	121,86708
209,504727	279,870001	172,661392	182,643044	122,217521
209,099713	280,404059	172,567581	182,559521	122,873085
209,366605	280,768927	172,509689	182,450616	123,363787
209,252957	281,293707	172,676895	182,316689	123,733677
208,806592	281,504156	172,663498	182,216018	124,201456
208,73132	282,125983	172,416794	182,111079	124,595063
208,685757	282,477728	172,499603	182,016803	124,928767
208,557446	282,573859	172,247879	181,961181	125,287615
208,279446	282,888068	172,239838	181,818131	125,360442
208,015607	283,48606	171,669022	181,92224	125,980385
207,661374	284,439978	171,883163	181,950036	126,041437
207,380627	285,135413	171,492233	181,944757	126,400519
207,288205	285,64762	170,983414	181,990938	126,747863
207,326596	286,322943	171,328384	181,991873	126,860676
207,674161	287,150153	171,218597	182,10841	127,092352
207,863995	287,691992	171,148987	182,148165	127,214698
208,144269	288,05448	170,822021	182,237872	127,362927
208,122739	288,666022	171,019958	182,351574	127,568304
208,280469	288,80332	170,904816	182,523777	127,729774
209,133099	288,95368	170,985123	182,518469	127,771437
209,064526	288,889685	170,874954	182,658458	127,892256
209,204755	288,966101	171,022064	182,753684	128,041777
209,514737	289,139716	171,056885	182,923234	128,208489
209,765546	289,516302	171,144897	183,202382	128,274775
209,99928	289,399573	170,986816	183,403498	128,350065
210,048642	289,869696	171,273193	183,645847	128,484132
210,234326	290,447211	171,17276	183,749112	128,55708
210,684171	290,961005	171,428162	183,861456	128,665059
210,667981	291,096716	171,43866	184,045334	128,778038
210,478314	291,560156	171,674286	184,175112	128,824958

211,012234	292,140936	172,038086	184,345672	128,956412
211,274014	292,674109	172,367447	184,435741	129,003302
211,228497	292,923651	172,329758	184,651395	129,176283
211,400662	293,315527	172,688538	184,983813	129,193202
211,676816	293,845648	173,175659	185,327979	129,159183
212,003979	294,426276	173,498337	185,537179	129,32594
211,938474	294,772711	173,561081	185,816478	129,55637
211,927365	295,56745	174,115173	186,10623	129,437575
212,157056	296,260291	174,554443	186,323438	129,518423
212,69238	296,964423	175,075272	186,541746	129,597625
213,027448	297,328772	175,459656	186,864904	129,670558
212,589154	297,551917	175,585236	187,210307	129,875096
212,928265	298,210699	176,013855	187,456623	129,924644
212,961575	298,754309	176,248093	187,78619	130,079513
213,617001	299,288885	176,742355	188,125244	130,337633
213,811551	299,634589	176,980515	188,445475	130,319264
214,137173	299,868262	177,028702	188,928816	130,417031
214,170392	300,212775	177,447845	189,417255	130,449343
214,393262	300,623236	177,936768	189,954891	130,605783
214,170163	301,396063	178,4832	190,243375	130,669592
214,262051	302,059119	179,15564	190,551843	130,67216
214,583615	302,643347	179,842819	190,862784	130,840125
214,350034	303,190222	179,718155	191,307682	131,119258
214,368588	303,88645	180,647964	191,635922	131,262721
214,707318	304,480627	181,307007	191,962819	131,378752
215,187543	305,007758	181,915146	192,271091	131,523243
215,307614	305,623877	182,475266	192,591489	131,792088
215,738492	306,273322	182,940216	193,015091	131,943497
215,189877	306,620978	183,509476	193,557688	132,214895
215,459195	307,179938	184,120285	193,957205	132,326802
215,552594	307,517462	184,310593	194,436398	132,744625
215,691312	307,916785	185,061005	194,915547	132,851697
215,892651	308,757697	185,698807	195,263574	133,067172
216,397855	309,376715	186,467636	195,688066	133,183082
216,275067	309,943091	186,955322	196,042684	133,378889
216,461835	310,241797	187,461838	196,421192	133,83354
216,501859	310,710333	188,01123	196,77584	133,998183
216,511014	310,991949	188,544312	197,173924	134,316818
216,239896	311,373938	189,369354	197,706899	134,554468
217,077466	311,57984	189,589111	198,143517	134,878723
217,488156	312,025031	190,344742	198,611851	134,975448
217,165463	312,338965	190,886032	198,963725	135,1742
217,262585	312,810828	191,409546	199,46346	135,383059
217,548993	313,148962	191,882217	199,833597	135,639275
217,948972	313,398474	192,217133	200,238332	135,93226
218,308896	313,570837	192,750275	200,72766	136,225305
218,246152	313,818915	193,201523	201,174428	136,429178
218,108701	313,840613	193,628662	201,667512	136,592582

218,841565	313,987036	194,065109	202,136752	136,826728
218,617657	314,254553	194,555283	202,448734	136,96285
218,734937	314,412695	194,886063	202,915379	137,262587
219,062695	314,735297	195,369354	203,172931	137,421973
219,169125	314,700446	195,584808	203,574634	137,872319
219,080991	314,482977	196,057358	204,037087	138,151179
218,75842	314,467535	196,531342	204,359551	138,392153
219,054242	314,575446	196,922226	204,662016	138,723372
219,270093	314,469946	197,184555	205,012109	139,037672
220,026563	314,371924	197,465393	205,352747	139,324493
219,283047	314,227911	197,808121	205,59585	139,507973
219,770734	314,144263	197,833527	205,837596	139,894571
219,376233	313,998816	198,35144	206,13991	140,198417
219,594373	314,091101	198,97493	206,295524	140,307091
219,575742	314,057684	199,459412	206,472554	140,566691
219,399823	314,281439	199,981369	206,583481	140,682087
219,884747	314,299231	200,305054	206,752306	141,058126
219,577969	314,441718	200,694183	206,917226	141,401702
219,966992	314,561285	200,767761	207,061136	141,765066
220,116193	314,512396	201,163818	207,169423	141,843784
220,335919	314,593298	201,445969	207,364687	142,245081
220,652676	314,607153	202,033035	207,451634	142,369556
220,547345	314,64826	202,311218	207,594172	142,70946
220,933621	314,347357	202,201508	207,81604	143,113793
220,973508	313,987128	202,80069	208,033761	143,230443
221,490033	313,965094	203,195053	208,119365	143,529637
222,243527	313,64469	203,204254	208,246022	143,851293
221,97717	313,266516	203,247055	208,372784	144,134987
222,958325	312,932043	203,634857	208,50208	144,243933
223,50105	312,235754	203,519547	208,690572	144,654792
223,611356	311,696509	203,81366	208,897736	144,909664
223,89082	310,926947	203,835052	208,984878	145,069955
224,39375	309,960242	203,935333	209,128713	145,339344
224,810971	309,312201	204,163559	209,293271	145,458502
225,321759	308,431433	204,404251	209,417364	145,529471
225,087674	307,102118	204,110092	209,70247	145,960632
224,987698	305,966711	204,254303	209,855399	145,998685
225,007367	304,653021	204,526794	210,026668	146,170503
224,573743	303,386816	204,430496	210,156009	146,457143
224,118542	301,996161	204,330078	210,357773	146,643825
223,732495	300,784308	204,221634	210,442096	146,731819
223,570004	299,448126	204,258896	210,506555	146,772288
223,133496	298,252295	204,109116	210,464326	146,811761
222,356091	296,691687	204,010178	210,48808	146,895933
221,999142	294,845709	203,41626	210,569778	146,911643
221,008054	293,360632	202,982559	210,445384	147,048007
221,032025	291,784613	202,867523	210,392612	147,163781
220,509869	290,388953	202,88623	210,339811	147,069065

219,737134	288,686926	202,696289	210,281776	146,958593
218,896161	287,145819	202,522263	210,129812	146,992507
218,033704	285,829687	202,246674	209,991196	147,072705
216,777646	284,529791	202,005859	209,806429	147,080591
215,793271	283,094275	201,641968	209,579433	147,238436
215,028668	281,929297	201,399689	209,48953	147,097616
214,094266	280,718268	200,953873	209,297901	147,163056
213,006268	279,479529	200,512207	209,103783	147,193268
212,082318	278,127112	199,808304	208,900481	147,232725
211,398557	276,807837	199,023987	208,702457	147,337955
210,265607	275,417273	198,772064	208,543751	147,349451
209,738934	274,299628	198,217697	208,268961	147,403259
208,701978	272,801062	197,596558	207,936227	147,574307
207,699521	271,635474	197,071732	207,656279	147,398017
207,307736	270,346564	196,438263	207,372213	147,476721
206,700497	269,206946	195,965347	207,041816	147,419982
205,327039	267,871069	195,726929	206,726079	147,371279
204,521848	266,70835	194,995743	206,300758	147,289721
203,745953	265,372443	194,390396	205,804054	147,266035
202,952435	264,094489	193,886597	205,433887	147,281488
202,233929	262,931219	193,282532	205,060009	147,130245
201,540372	261,608649	192,785324	204,714863	147,128795
200,317014	260,282965	192,182526	204,363366	147,13668
199,358487	258,926306	191,747147	203,94177	147,024864
198,391705	257,715704	191,144119	203,510718	147,069306
197,470486	256,406195	190,664474	203,103585	147,01932
196,456464	255,07865	189,727798	202,646064	147,035
195,220135	253,816153	189,213211	202,359072	147,015241
194,003842	252,486014	188,588837	201,935998	146,941599
193,304471	251,333823	188,263016	201,545742	146,905782
192,377377	249,954886	187,177673	201,05121	146,984697
191,318936	248,633032	186,574631	200,530164	147,024154
190,269589	247,199622	185,968781	200,150465	146,880721
189,685239	245,940665	185,227585	199,696639	146,774056
188,453671	244,636221	184,698151	199,275842	146,700186
187,62283	243,543707	184,196976	198,699069	146,539759
186,633908	242,337073	183,636841	198,214854	146,547644
185,979962	241,198553	183,01506	197,746519	146,505588
184,709607	239,959021	182,232513	197,204012	146,405661
183,87576	238,97106	181,716232	196,706132	146,361944
183,237881	238,009467	181,077026	196,226968	146,21851
182,763547	237,011832	180,559784	195,763746	146,242182
181,897946	235,989981	179,99704	195,364049	146,115954
181,490628	234,946494	179,099335	194,824046	146,142254
180,935925	234,040366	178,720169	194,287933	146,047538
179,671078	233,095343	178,158661	193,784729	145,951327
179,427258	232,215109	177,293213	193,32932	145,804117
178,615338	231,376883	176,834961	192,832797	145,733072

177,680203	230,73342	176,632553	192,381203	145,531873
177,204602	230,049994	176,110077	191,90848	145,456886
176,743817	229,501791	175,654556	191,478061	145,217543
175,614819	228,725165	175,026367	191,033103	145,225368
174,98544	227,917838	174,587067	190,60671	145,012476
173,807187	227,171347	173,842453	190,063781	145,051888
173,194043	226,257208	173,486252	189,579128	144,959922
172,091046	225,201895	173,132767	189,067931	144,933637
170,969525	224,183432	172,54628	188,458747	144,875811
170,05	223,012686	172,041306	187,932785	144,760082
169,326138	221,88819	171,462875	187,351307	144,795461
168,380383	220,714041	170,880554	186,887647	144,656181
167,374615	219,627341	170,394562	186,336634	144,47604
166,533566	218,552298	169,911377	185,740572	144,420827
165,383908	217,360922	169,073608	185,171038	144,38927
164,718335	216,099829	168,543701	184,635967	144,229023
163,780301	215,190344	168,153	183,979004	144,079276
163,016171	214,285986	167,815857	183,314108	143,919029
162,337659	213,23989	167,20047	182,699556	143,687889
161,090482	212,289633	166,662766	182,010846	143,637978
160,370877	211,308356	166,014008	181,42801	143,559139
159,531247	210,271964	165,492294	180,763009	143,373952
158,607907	209,446494	164,996185	180,12066	143,274145
158,034314	208,391104	164,325043	179,424063	143,211107
156,626202	207,380881	163,910645	178,777793	143,176967
155,957013	206,506766	163,392044	178,094498	142,927518
154,981564	205,485403	162,662354	177,408563	142,798874
154,115689	204,455801	162,226746	176,619439	142,649247
153,183484	203,466132	161,561401	175,928271	142,531132
152,195737	202,529745	160,794678	175,271625	142,523261
151,575558	201,587897	160,197678	174,666604	142,418183
150,653592	200,663214	159,666229	174,01133	142,395841
150,020551	199,599203	159,040054	173,387864	142,208161
149,404889	198,683661	158,213776	172,779043	142,257981
148,744229	197,792014	157,431763	172,199329	142,127977
147,924298	196,850729	156,982086	171,587928	142,07281
147,124615	195,916083	156,107056	170,883986	142,051812
146,373044	194,941122	155,746979	170,238335	141,952081
145,661496	194,033057	155,341599	169,653614	141,915343
145,040417	193,124884	154,930954	169,037191	141,713297
144,16882	192,29299	154,524338	168,371918	141,591239
143,720563	191,526694	154,044495	167,684234	141,40498
142,930325	190,572729	153,452744	167,034978	141,40362
142,221234	189,823752	152,838516	166,391106	141,282952
141,697903	189,010458	152,416275	165,768515	141,025859
141,034207	188,356543	151,918091	165,086456	141,021901
140,298001	187,51499	151,215027	164,438905	141,05864
139,794934	186,716238	150,583908	164,0001	140,974664

139,309262	185,983267	150,030334	163,425439	140,994348
138,831647	185,263647	149,604462	162,882495	140,867123
138,239026	184,475668	149,235886	162,347513	140,819901
137,694226	183,738638	148,608032	161,758509	140,777921
137,191983	183,025793	147,984406	161,218506	140,71236
136,414838	182,366461	147,624054	160,720747	140,465842
135,998669	181,7246	147,346191	160,158362	140,430358
135,636807	181,102942	146,740158	159,522272	140,451401
135,025433	180,463766	146,415863	158,945605	140,473637
134,472333	179,780371	145,654587	158,375559	140,394934
134,043393	179,129248	145,172409	157,890136	140,486658
133,73071	178,573248	144,829849	157,363933	140,391036
133,246564	177,92478	144,509796	156,831124	140,309629
132,86279	177,382239	143,884537	156,356424	140,266289
132,459302	176,838354	143,454529	155,90293	140,292514
131,962354	176,277136	143,148056	155,460129	140,304387
131,456265	175,843085	142,80304	155,081817	140,22301
131,398297	175,312704	142,139832	154,607435	140,296426
130,918744	174,873434	141,70491	154,114713	140,320022
130,513074	174,327017	141,410538	153,672123	140,283299
130,25369	173,760611	141,231628	153,130852	140,195471
129,883679	173,2638	140,607315	152,644932	140,181045
129,678311	172,84873	140,326385	152,265791	140,076163
129,159756	172,414923	140,204468	151,81557	139,987021
129,115033	171,922278	139,407013	151,368093	140,141723
128,351956	171,459082	139,293121	150,912819	139,958198
128,057347	170,945074	139,065323	150,45759	139,863815
127,760175	170,506049	138,736923	150,015604	139,845476
127,476163	170,008185	138,405975	149,550029	139,795656
127,165936	169,579947	138,022095	149,216028	139,693432
126,958249	169,116965	137,580093	148,747979	139,59642
126,464139	168,736945	137,299606	148,337875	139,512565
126,16721	168,303458	137,143478	147,990889	139,423424
126,190869	167,878027	136,696365	147,56513	139,426052
125,644444	167,463324	136,397476	147,213015	139,376247
125,347668	167,027289	136,040436	146,863586	139,300263
125,211125	166,730338	135,678223	146,459032	139,289764
124,725385	166,355872	135,538071	146,112347	139,198054
124,546872	166,002844	135,31604	145,697432	139,119442
124,378888	165,609702	134,91156	145,279983	139,061766
123,893391	165,184515	134,702805	144,933479	138,943847
123,743832	164,772742	134,499329	144,589644	138,94646
123,410649	164,387747	134,179657	144,31407	138,812846
123,211316	164,01882	133,960403	143,930992	138,728976
123,017201	163,65528	133,780777	143,587309	138,642524
122,710385	163,26235	133,590637	143,277785	138,54036
122,692052	162,989752	133,260529	142,93947	138,393664
122,112653	162,677084	133,065155	142,616931	138,286244

122,052373	162,305655	132,832825	142,223644	138,170999
121,640904	161,934256	132,465912	141,882871	138,097658
121,564908	161,613638	132,362991	141,523803	137,950977
121,536084	161,122107	131,803543	141,138599	137,977171
121,289815	160,716116	131,465851	140,897562	137,898589
120,95184	160,342215	131,463211	140,622501	137,639336
120,632298	160,123236	131,149338	140,363184	137,482216
120,396657	159,838873	131,079468	140,060704	137,32774
120,00002	159,533179	130,682632	139,760908	137,179866
119,850903	159,151511	130,496811	139,50307	137,104002
119,687444	158,769873	130,026398	139,173322	136,965297
119,505566	158,334845	129,872208	138,859274	136,719323
119,266141	158,001227	129,575775	138,56619	136,59373
119,001843	157,741064	129,561295	138,253514	136,328087
118,867123	157,368857	129,379486	137,967066	136,120075
118,53098	157,104788	129,246506	137,594379	135,896534
118,381917	156,862006	129,04628	137,293618	135,721256
118,17529	156,599203	128,554993	137,02557	135,629637
117,903325	156,221793	128,448364	136,741912	135,35768
117,947781	155,880408	128,177139	136,509245	135,310594

Kanal-EPA - [°C]	Røgtræk - [Pa]	Pd Kanal - [Pa]	Ps Kanal - [Pa]	Vægt - [Kg]
36	38	39	40	43
EPA Duct temperature	Flue draft Pascals	Duct dynamic pressure	Duct static pressure	Platform scale reading
40,1909	16,150279	29,70456	140,44546	10,002699
46,638188	14,459704	31,721218	143,240079	1,647711
53,697625	15,561551	31,903945	144,236347	4,345299
59,577013	17,132062	32,377966	146,942415	4,296556
64,930756	20,72898	31,121232	145,03505	4,199069
65,459094	21,524452	30,462414	141,543899	4,276508
63,400069	20,391955	30,67995	140,481227	4,113516
59,238425	19,999923	29,865329	139,863022	4,068796
55,044606	18,44559	31,4407	144,818769	4,02756
51,078744	18,066329	29,904696	140,845669	3,996316
47,906731	17,604305	30,51545	140,39947	3,967016
45,373006	17,988674	30,662958	141,777198	3,931079
43,410525	18,141774	29,779975	139,622913	3,897421
42,064888	17,909654	30,962951	141,448522	3,867317
40,958606	17,61316	30,700251	142,645735	3,843448
40,041381	17,723345	30,796794	141,627338	3,812137
39,309894	17,293507	30,988227	140,632785	3,78572
38,715188	17,472152	30,245291	140,864402	3,761919
38,149975	17,3635	30,761989	141,70057	3,735167
37,853625	17,208187	31,242639	142,964204	3,71056
37,317919	16,941154	31,467633	142,388576	3,684076
37,027606	17,61282	30,03273	138,963846	3,653905
36,740644	17,188602	31,496223	141,956014	3,62541
36,643425	17,305428	31,090572	142,822853	3,594233
36,47245	17,757235	31,460588	143,783338	3,563994
36,396019	17,394666	30,595419	142,620192	3,531879
36,34305	17,568712	31,1635	142,356223	3,500769
36,121794	17,118608	31,099687	141,678424	3,472207
36,204931	17,347662	31,78627	144,871569	3,441164
36,182137	17,043165	30,998586	141,034693	3,415619
36,148612	17,087613	31,503268	141,778913	3,386386
35,934062	17,312581	30,207998	139,726783	3,356952
35,880425	17,183664	30,944307	142,090555	3,330401
35,729569	17,156244	30,769034	142,294914	3,305661
35,649781	16,937066	31,642075	143,136209	3,277434
35,752362	17,179065	30,106897	139,806825	3,250749
35,711463	16,947115	31,987232	147,073543	3,221316
35,72085	17,375932	31,420398	143,560246	3,193089
35,6357	17,223173	30,602051	141,387213	3,163789
35,600162	17,258255	30,607022	143,349077	3,134355
35,496244	16,847148	31,265014	144,750649	3,104251
35,530437	16,7293	31,465146	141,717603	3,075756
35,553231	16,809001	30,667516	138,389933	3,046523

35,564631	16,832502	30,854805	143,376319	3,020777
35,6243	17,166633	30,362552	142,09908	2,990673
35,615587	16,685533	30,563514	143,648813	2,961373
35,615587	17,16442	30,990298	141,974747	2,929324
35,681294	17,47641	31,697599	143,250303	2,902841
35,634356	17,06258	30,304128	142,645735	2,873339
35,665869	17,456995	31,473434	141,331015	2,846051
35,62095	17,252806	31,514454	142,107589	2,814874
35,643075	17,14245	30,825801	141,06876	2,786379
35,560606	17,186048	30,373742	141,058537	2,756074
35,537813	17,103963	30,997756	142,13483	2,729656
35,6652	17,209038	30,53078	141,470668	2,698546
35,635031	16,80866	30,926489	147,52825	2,667168
35,840863	17,00059	31,862099	142,119511	2,637801
35,851594	17,164929	30,209242	142,519719	2,607696
35,780525	16,872693	30,388242	143,001669	2,578464
35,734931	17,090168	31,851739	145,770745	2,545409
35,638381	17,141939	30,582163	142,6832	2,514366
35,531775	17,066155	32,106981	146,00406	2,480374
35,504956	17,606348	31,763894	145,539144	2,452951
35,613575	17,47641	31,144852	141,656294	2,423651
35,704087	17,237137	31,421638	146,009172	2,392474
35,860306	17,089317	31,962786	143,003367	2,362303
35,9059	17,374229	32,123138	141,712492	2,329182
35,940769	17,470279	30,784364	141,48259	2,299681
35,918637	17,423616	30,995272	142,921627	2,270649
35,922663	17,117927	31,042507	144,202279	2,241349
35,942106	17,669359	30,868891	141,920264	2,208429
35,944787	17,441158	31,45603	144,323199	2,181543
35,956856	17,364181	30,607022	138,064655	2,151708
36,030606	17,089998	30,759505	141,8283	2,122206
36,003787	17,434004	31,923006	146,838529	2,092973
35,986356	17,394495	29,961459	137,18418	2,064545
36,038656	17,071605	29,279434	136,359918	2,036251
35,99105	16,944389	28,911071	135,453916	2,008762
35,887125	17,037715	29,857044	137,357916	1,978456
35,87975	17,040441	30,28134	138,739041	1,952911
35,909925	17,280223	28,748232	135,963122	1,923679
36,027925	16,965679	30,257724	137,555464	1,894312
35,933387	16,93945	31,12165	139,382788	1,869571
35,934731	17,09102	29,504842	133,815632	1,838327
35,984344	17,040271	30,986984	142,512909	1,813519
35,934062	17,254849	29,610504	136,474027	1,788042
35,72085	16,747522	29,314656	137,284684	1,758876
35,660506	16,862476	29,946129	138,137886	1,732191
35,672575	17,19286	31,877429	146,441733	1,706378
35,66185	16,817346	30,940162	140,545933	1,679894
35,661175	17,020345	29,938257	139,180127	1,654081

35,67995	16,839484	30,387002	142,000305	1,62753
35,724875	16,692686	30,359238	141,523452	1,602924
35,777169	16,74582	30,656744	140,450572	1,578317
35,7879	16,531241	31,693041	144,840914	1,553443
35,755713	17,00621	30,140045	142,935248	1,526959
35,671906	16,842549	30,678706	143,425706	1,50309
35,643075	16,894832	30,922345	144,909034	1,479691
35,540494	16,720955	30,623182	143,439342	1,453743
35,5358	16,437747	30,245708	139,726783	1,429873
35,679281	16,687067	31,858367	143,408688	1,404999
35,723531	16,456309	30,826628	141,911739	1,383007
35,766444	16,422249	30,972067	141,678424	1,356389
35,844887	16,269149	31,241395	144,421973	1,333727
35,927356	16,849703	28,879167	140,605544	1,309791
35,875731	16,776814	31,557548	145,304131	1,285386
35,837513	16,430423	30,727184	141,148802	1,263193
35,742306	16,675997	31,356999	144,798338	1,239324
35,630337	16,565642	30,227473	142,546961	1,219277
35,620281	16,562407	31,438212	141,804456	1,193531
35,6471	16,820921	31,349128	145,276874	1,171607
35,473444	16,376609	30,783121	141,709079	1,152498
35,429194	16,000414	31,009359	141,344636	1,131311
35,531775	15,644317	30,899556	142,516306	1,112806
35,537138	16,272724	31,366532	141,944092	1,089138
35,426513	16,039073	29,688403	141,300361	1,070768
35,320575	16,212269	31,405064	145,98874	1,051056
35,289738	15,677355	29,710779	141,675027	1,030539
35,18715	15,951368	31,166814	140,73837	1,014917
35,175088	15,883758	30,214217	141,525167	0,994803
35,089262	15,834201	31,310178	142,83306	0,975627
35,042331	15,914243	29,985908	141,721001	0,961011
34,925	16,127119	31,185871	142,679803	0,943511
34,880075	16,007056	31,182557	147,071844	0,928895
34,873369	15,327217	31,030491	144,868156	0,911463
34,851919	15,435358	30,923588	143,742476	0,896713
34,85795	15,318362	30,519594	142,279594	0,880286
34,757381	15,563083	30,39156	144,3215	0,866474
34,660163	15,269823	30,036044	143,204329	0,852863
34,618594	15,179053	30,347635	141,147088	0,840191
34,489187	15,321428	30,322776	142,017323	0,82933
34,411413	15,123706	31,660719	145,45569	0,816524
34,3913	15,118767	31,010603	143,459774	0,806064
34,273969	15,187908	32,704475	152,528272	0,79413
34,239775	14,698977	30,907841	143,076599	0,782263
34,037962	14,73525	30,577605	141,729525	0,768652
33,775806	14,874215	31,502851	143,228157	0,759466
33,722837	14,65606	30,317805	142,586125	0,751153
33,734237	14,457491	31,496637	142,025848	0,740157

33,787206	14,95034	32,236672	146,835132	0,729161
33,734906	14,556094	30,673318	142,340903	0,717159
33,740944	14,599691	32,483625	151,770431	0,708041
33,678587	14,371488	30,924415	142,346015	0,7008
33,540469	14,591346	31,309352	144,866457	0,689804
33,470069	14,407251	30,853561	144,711485	0,678607
33,396319	14,17377	30,862677	142,6832	0,668617
33,326588	14,305753	30,079138	140,353496	0,660303
33,16165	14,131365	30,987397	143,15664	0,650716
33,128125	14,069887	31,110873	143,23157	0,641128
33,118744	14,119103	30,827872	144,851122	0,632948
33,09125	14,240016	29,916712	143,354189	0,622019
32,898156	14,196249	31,257142	142,875637	0,613906
32,813675	13,885963	31,214462	142,55547	0,604587
32,881394	13,829422	32,109051	144,926052	0,593658
32,9471	13,90146	31,670252	142,986333	0,584472
32,971906	13,695907	30,836987	140,023106	0,575354
33,012806	13,928026	30,48893	142,044581	0,566102
32,914919	13,820226	31,312666	145,769046	0,559598
32,82105	13,714811	31,531028	143,078297	0,548669
32,713106	13,503635	29,938257	142,48054	0,539484
32,683606	13,415759	30,982012	145,74009	0,532042
32,652763	13,724858	30,33728	139,435572	0,523996
32,638013	13,51266	31,146509	145,402905	0,516621
32,556213	13,389192	30,800112	143,001669	0,510251
32,428156	13,257211	30,362139	138,802064	0,503949
32,308138	13,509595	30,071679	138,764599	0,494696
32,200194	13,231665	30,499706	141,281628	0,48826
32,15795	13,275432	30,790579	142,993144	0,479074
32,106994	13,414908	29,805248	141,988383	0,473643
32,129794	13,249716	31,405482	140,300696	0,46714
32,096938	13,025772	32,049383	143,297991	0,460837
32,1023	13,151453	30,310347	138,112343	0,452389
32,007094	12,942665	30,62691	140,155948	0,444142
31,99905	12,917291	29,927898	143,907655	0,437773
31,96955	12,792291	31,457274	142,535039	0,429526
31,850206	12,76351	30,448323	141,824887	0,423961
31,726169	12,928019	30,55813	141,010848	0,418396
31,666494	12,68977	30,14502	141,227129	0,411222
31,587381	12,788544	29,254988	139,636534	0,40492
31,541119	12,898558	30,189767	139,719973	0,395801
31,506925	12,607004	29,663127	137,834753	0,391175
31,388919	12,523216	30,457025	137,475422	0,383867
31,402331	12,669333	29,267418	137,153525	0,374816
31,402331	12,759082	31,013086	144,195469	0,366367
31,34735	12,703564	30,694866	141,01596	0,358255
31,2099	12,614837	29,461335	139,314668	0,352824
31,175706	12,74716	30,659231	141,167535	0,345449

31,176381	12,570219	31,266258	144,473059	0,339012
31,149562	12,619265	30,729254	145,057195	0,334252
31,122069	12,284454	31,465563	144,513937	0,327614
31,211913	12,488645	31,272472	143,987697	0,32339
31,2032	12,58793	30,839061	142,674691	0,319636
31,12475	12,16303	30,600394	141,23394	0,317088
30,998031	12,142424	30,931047	142,361335	0,311389
30,960488	11,944193	30,759919	141,594985	0,308572
30,976575	11,959009	30,354681	138,389933	0,304952
30,920925	11,900767	29,39877	138,265616	0,30227
30,923612	11,805398	30,632711	137,053036	0,300393
30,849188	11,68159	29,893093	140,353496	0,293152
30,833094	11,731317	29,0851	138,035699	0,292213
30,743925	11,766229	30,739614	142,078633	0,287587
30,757331	11,481657	31,831434	142,265973	0,286246
30,677544	11,480976	30,449154	139,607578	0,281419
30,635306	11,401615	32,508488	143,747587	0,279541
30,65475	11,397188	29,941158	137,698514	0,275854
30,658775	11,547053	30,704395	140,406281	0,271228
30,501213	11,115851	30,333549	140,082716	0,269484
30,449587	11,07464	30,511305	141,726112	0,26754
30,330237	11,220247	29,803177	138,836116	0,26117
30,377844	10,720926	29,653181	137,764935	0,261103
30,3698	10,969053	29,932455	140,314333	0,257549
30,296719	11,031384	29,741853	140,717939	0,254734
30,254475	10,817827	31,213222	142,928437	0,249102
30,21425	10,879304	30,851491	142,276181	0,249169
30,0882	10,821403	29,768372	137,989725	0,245347
29,981594	10,885946	31,006458	140,081018	0,242866
29,883706	10,786321	30,091567	143,214537	0,240922
29,801238	10,758392	29,449736	138,958735	0,237234
29,730169	10,659618	31,174272	143,887224	0,232608
29,643675	10,603928	32,051871	143,659021	0,230127
29,612831	10,647696	30,816686	137,185878	0,22711
29,604119	10,289551	30,516693	139,319764	0,2253
29,6363	10,443335	29,817681	140,452271	0,222551
29,65105	10,458663	30,76572	140,452271	0,21712
29,643675	10,462409	29,763401	142,747923	0,216114
29,650381	10,354099	30,589204	140,777549	0,211623
29,631606	10,304031	30,143359	138,170239	0,210616
29,591381	10,088767	29,717407	138,573861	0,206124
29,555844	10,282058	30,576361	141,889609	0,204314
29,460638	10,085191	30,873866	140,072493	0,201565
29,433819	10,18158	30,34971	139,440684	0,197811
29,401631	10,216323	30,384928	140,656629	0,195129
29,376825	9,792786	30,683264	139,869849	0,191374
29,327881	10,134919	29,862015	142,470332	0,188625
29,242062	10,154844	31,040019	138,958735	0,18487

29,274913	10,06237	29,929141	138,52957	0,182188
29,311794	9,943502	30,162421	138,074878	0,178501
29,324531	9,844727	30,087009	139,994166	0,176757
29,244075	9,963426	32,713591	143,84125	0,173808
29,132775	10,013325	30,046816	138,626646	0,170388
29,0322	10,115334	29,286066	135,750238	0,167773
29,065056	9,801641	28,670333	137,52481	0,166834
28,99935	9,849495	30,377887	142,065012	0,162276
28,931631	9,83519	30,060907	137,33577	0,159459
28,850506	9,905013	31,215292	142,998255	0,157582
28,813631	9,814754	29,44062	139,852815	0,152084
28,8438	9,639175	30,312417	142,05309	0,150207
28,84045	9,780013	30,638513	142,065012	0,145714
28,816312	9,537505	29,345317	136,862298	0,144642
28,790163	9,555728	29,144355	135,021354	0,140284
28,737194	9,509917	29,722795	138,166842	0,136529
28,698306	9,641218	29,150573	135,862649	0,134719
28,587006	9,605796	29,044494	136,312229	0,130026
28,507894	9,659269	30,722213	138,762885	0,129087
28,554156	9,664719	29,425703	136,164068	0,126337
28,531356	9,741014	29,885221	137,259141	0,123722
28,536725	9,463084	30,029829	137,363027	0,120906
28,593713	9,358179	29,922096	136,743093	0,116414
28,568237	9,501742	31,185871	145,18491	0,115475
28,595725	9,361245	30,749973	141,748258	0,111989
28,534044	9,453547	30,561857	138,125964	0,108167
28,487781	9,311346	29,649037	136,204946	0,106289
28,426763	9,276775	29,270319	135,915434	0,103541
28,440844	9,323437	29,009689	136,753316	0,100792
28,43615	9,202865	29,400427	136,269653	0,099853
28,392569	9,151093	29,565753	137,674669	0,094422
28,420731	9,402286	30,839061	143,771416	0,092411
28,453581	9,256851	29,976376	138,92127	0,089729
28,446206	9,13253	30,21173	139,176714	0,086041
28,444869	9,292954	30,05013	137,158621	0,082421
28,454925	9,084166	29,733981	138,306479	0,081549
28,40665	9,249358	30,233692	138,120852	0,078666
28,374469	9,093192	31,189603	144,713184	0,075112
28,37715	9,116522	30,281757	138,23666	0,072229
28,366425	8,965125	29,471694	137,357916	0,071492
28,319487	8,947074	30,245708	138,669222	0,067737
28,282612	9,01298	29,426116	137,873917	0,063312
28,24775	8,949798	29,273219	136,823135	0,061234
28,248419	8,775922	30,215874	138,841228	0,058686
28,24775	9,134745	30,042672	138,015268	0,057814
28,272556	8,906202	30,55813	140,379039	0,054194
28,259144	8,985391	30,077481	137,776857	0,052852
28,225625	8,97381	29,814363	136,526812	0,049634

28,2102	8,870098	30,539482	139,306143	0,047757
28,186062	8,825821	30,147504	137,136491	0,043265
28,223613	8,737775	30,457442	139,365754	0,042259
28,114994	8,853408	29,812706	139,718274	0,039443
28,099575	8,722617	29,620864	140,942729	0,036761
28,104937	8,834334	29,985491	137,158621	0,033946
28,10695	8,881848	29,715336	139,415141	0,032068
28,176681	8,751229	29,510643	139,827272	0,029453
28,140475	8,714613	29,750555	139,060922	0,025766
28,050631	8,635254	30,897482	139,181826	0,023956
28,025819	8,836208	29,265348	138,968958	0,020201
28,027831	8,766385	30,336863	139,318065	0,018323
27,992969	8,635594	29,180403	138,84634	0,015641
27,991625	8,523878	29,835499	139,438985	0,014702
27,968831	8,658244	30,604534	138,621534	0,011887
27,942681	8,456779	30,296674	139,295936	0,009138
27,858875	8,841318	30,57056	139,876659	0,006456
27,828031	8,479088	30,546114	136,748205	0,003707
27,857531	8,43481	29,875275	137,209722	0,00183
27,883681	8,59353	30,04599	139,188637	0,001092

CO-Lav - [100ppm]	CO-Høj - [%]	CO2 - [%]
44	45	46
CO low range	CO high range	CO2 - [%]
4,616079	0,048716	6,911515
7,686315	0,083654	3,69069
11,062694	0,090493	1,867936
10,75441	0,130621	1,951344
5,759239	0,065149	2,482091
18,923741	0,187202	6,195986
15,497616	0,144802	8,333728
22,440783	0,287713	11,704337
15,603819	0,175194	11,915269
22,440783	0,24129	12,186143
22,44038	0,289906	11,280597
22,440515	0,290288	11,813759
22,440113	0,372253	13,392996
22,440113	0,312856	13,966251
18,258765	0,196375	12,535459
19,111474	0,188369	11,095547
17,387954	0,18155	10,928196
15,589069	0,156709	10,87362
13,470235	0,137138	10,68441
12,911595	0,143193	10,915457
13,145724	0,14802	10,981164
11,31278	0,122817	11,313182
15,736975	0,146411	11,995725
22,440246	0,38571	12,796541
22,440113	0,530251	13,095305
22,440113	0,555736	13,16557
22,439844	0,53007	13,149211
22,43971	0,436177	13,015384
22,43971	0,320037	12,83382
22,439576	0,269389	12,670224
22,43971	0,254183	12,561339
18,999907	0,199774	12,361404
16,318946	0,168798	12,265929
15,30157	0,160833	12,216448
14,573701	0,158077	12,233746
14,38503	0,152868	12,189629
18,19145	0,181691	12,206256
22,439844	0,238313	12,439581
22,439307	0,377101	12,734054
22,439307	0,485718	13,026649
22,439307	0,460877	12,955578
22,439307	0,431188	12,850581
22,439174	0,386092	12,807805

22,43904	0,381144	12,748938
22,43904	0,424208	12,829395
22,43904	0,405965	12,907036
22,439174	0,432134	12,943911
22,43904	0,43497	12,930234
22,439307	0,485959	12,88424
22,439174	0,487005	13,003717
22,438905	0,499898	12,938816
22,439174	0,532202	12,982665
22,43904	0,527857	12,992722
22,439174	0,536567	13,010155
22,43904	0,530432	13,03523
22,439307	0,546765	13,124001
22,43904	0,553986	13,084442
22,439174	0,57231	13,318706
22,438905	0,605377	13,382805
22,43904	0,56891	13,49102
22,439174	0,581522	13,404662
22,43904	0,564626	13,344452
22,43904	0,577499	13,681569
22,43904	0,598901	13,70584
22,438905	0,644138	13,696587
22,438905	0,658338	13,575231
22,43904	0,657675	13,619349
22,43904	0,645284	13,545999
22,438905	0,628449	13,436309
22,43904	0,650956	13,439259
22,439174	0,634081	13,423168
22,43904	0,606866	13,347939
22,43904	0,624667	13,173616
22,43904	0,612739	13,169459
22,438905	0,60763	13,11971
22,439174	0,571022	13,05682
22,43904	0,562333	13,040729
22,439307	0,583151	13,095573
22,43904	0,54425	13,061915
22,439174	0,583232	13,038851
22,438905	0,548776	13,121051
22,439174	0,561187	13,075861
22,43904	0,544391	12,982934
22,43904	0,471618	12,977837
22,43904	0,477471	12,954237
22,43904	0,487186	13,021419
22,43904	0,416324	12,991784
22,439174	0,414091	13,037107
22,439174	0,482319	12,892017
22,439174	0,441426	12,856616
22,43904	0,428754	12,833284

22,43904	0,496318	12,637102
22,439307	0,490425	12,640858
22,43904	0,472724	12,60264
22,439441	0,417772	12,583196
22,439174	0,435372	12,6013
22,43904	0,460837	12,588962
22,439174	0,453575	12,508774
22,439174	0,458182	12,553696
22,439174	0,477914	12,529559
22,439307	0,476546	12,537336
22,438905	0,501769	12,553964
22,43904	0,465563	12,531436
22,43904	0,47017	12,50797
22,43904	0,451524	12,475652
22,439174	0,42628	12,48866
22,43904	0,371449	12,576224
22,439174	0,409605	12,531436
22,439307	0,393896	12,527414
22,439174	0,400976	12,561339
22,439307	0,376417	12,3197
22,43904	0,342846	12,08651
22,439174	0,299641	11,94088
22,438905	0,26607	11,865921
22,438905	0,270717	11,705007
19,51644	0,206472	11,760389
19,111609	0,189958	11,873296
21,079855	0,213914	11,878526
18,684249	0,199472	11,722038
19,096321	0,193337	11,4218
22,080202	0,229764	11,128534
16,673895	0,184728	10,970436
12,621414	0,147618	10,808986
9,258176	0,103668	10,603685
6,581776	0,072069	10,409918
5,391683	0,065894	10,334423
3,901486	0,052638	10,149238
3,665882	0,054348	9,932675
2,599693	0,035903	9,617686
2,037969	0,026228	9,242219
2,652794	0,041234	9,192872
2,991118	0,043708	8,932729
2,739016	0,038297	8,770206
2,9588	0,041294	8,742447
3,739769	0,053785	8,754651
3,654484	0,050888	8,664271
3,802793	0,04944	8,521863
4,034106	0,050607	8,509525
3,834171	0,042199	8,379721

4,055428	0,048796	8,364704
4,25295	0,061167	8,212505
4,53361	0,06702	8,248041
4,788123	0,063922	8,092623
4,82406	0,064445	8,056015
5,34703	0,066497	7,965233
5,720351	0,073557	7,961611
5,805234	0,069494	7,811694
6,996398	0,086973	7,840793
7,343838	0,087355	7,82269
7,936134	0,095743	7,773879
7,760737	0,08814	7,813169
7,882361	0,087516	7,808744
8,467151	0,102441	7,757921
8,211969	0,08995	7,788495
8,964778	0,101697	7,836635
7,132772	0,091479	7,868281
7,624095	0,083936	7,926747
7,733249	0,090433	7,860236
7,859029	0,090654	7,702273
8,642816	0,097835	7,590438
9,273464	0,094697	7,388089
10,399861	0,114107	7,444274
10,951529	0,127363	7,213362
12,229589	0,13752	7,232539
12,673845	0,138928	7,26271
12,883033	0,131627	7,127543
14,147816	0,149509	7,103539
14,828886	0,148261	7,052985
18,808018	0,200599	6,999616
19,277484	0,203555	6,985401
20,003476	0,209409	6,997739
21,76642	0,220834	6,974137
22,439576	0,251166	6,915673
21,171844	0,236442	6,954157
20,712032	0,23437	6,938469
18,98757	0,215362	6,921439
19,06387	0,213009	6,971859
17,73526	0,189676	7,008869
17,092137	0,170347	7,020937
17,821214	0,17797	7,000689
18,231813	0,193901	7,027507
17,693423	0,198829	7,06264
16,647881	0,168557	7,164284
16,789754	0,174128	7,188824
15,934631	0,164856	7,249569
15,38082	0,161919	7,229052
15,207435	0,155824	7,165491

14,095921	0,158902	7,123654
15,621787	0,157253	6,970249
20,231169	0,207357	6,749664
22,439844	0,249194	6,526395
22,43971	0,398784	5,960784
22,439844	0,445469	5,590011
22,43971	0,489037	5,314846
22,439576	0,566416	5,122958
22,43971	0,586128	5,002271
22,439576	0,721034	4,720672
22,43971	0,757803	4,653894
22,439576	0,779949	4,646116
22,439441	0,758326	4,624125
22,439307	0,778038	4,617687
22,439441	0,754303	4,601999
22,439307	0,771018	4,659124
22,439441	0,79069	4,973441
22,439441	0,752815	4,911892
22,439307	0,729543	4,923424
22,439174	0,728698	4,84927
22,439441	0,70625	4,869786
22,439441	0,717494	4,900896
22,439307	0,710414	4,879306
22,439307	0,721678	4,887486
22,439441	0,725077	4,877698
22,439441	0,712023	4,909479
22,439174	0,710354	4,880111
22,439441	0,714899	4,876222
22,439441	0,714135	4,922887
22,439174	0,716167	4,969285
22,439441	0,701423	4,879575
22,439441	0,703012	4,905991
22,439307	0,727209	4,909612
22,439576	0,715563	4,898616
22,439307	0,723549	4,875955
22,439441	0,757662	4,946756
22,439576	0,763676	4,931872
22,439441	0,74666	4,89218
22,43904	0,770817	4,907869
22,439441	0,747605	4,859595
22,439174	0,765024	4,857718
22,439307	0,766754	4,861204
22,439441	0,768987	4,86469
22,439307	0,763395	4,83224
22,439576	0,766995	4,87515
22,439576	0,862538	5,193089
22,439174	0,822309	5,284541
22,439441	0,804207	5,31136

22,439576	0,786727	5,303046
22,439307	0,759432	5,306801
22,439441	0,762188	5,292319
22,439174	0,756757	5,248873
22,439174	0,740505	5,222321
22,439174	0,755047	5,259868
22,43904	0,74849	5,23962
22,439174	0,749214	5,205291
22,439174	0,757461	5,213203
22,439307	0,751829	5,181289
22,439174	0,753559	5,20623
22,43904	0,747122	5,12631
22,438905	0,774458	5,164526
22,438905	0,788075	5,18853
22,439174	0,768967	5,156615
22,438771	0,769811	5,141596
22,43904	0,761383	5,148435
22,43904	0,765105	5,136902
22,438905	0,747565	5,108878
22,438905	0,759714	5,158895
22,438905	0,764702	5,141194
22,438771	0,759754	5,127248
22,438905	0,742758	5,054702
22,438638	0,759513	5,119203
22,438771	0,758869	5,053363
22,438905	0,754504	5,07133
22,438905	0,745031	5,037673
22,438905	0,75195	5,05068
22,438905	0,734129	4,995432
22,438771	0,7432	5,022117
22,438771	0,753318	5,028017
22,438905	0,755027	5,021581
22,438771	0,772386	5,018364
22,439174	0,774639	4,98779
22,439174	0,768745	5,030431
22,43904	0,77848	5,032578
22,438905	0,779305	5,043708
22,438905	0,765768	5,036331
22,43904	0,77657	5,021447
22,438771	0,768242	5,02185
22,43904	0,767237	5,00482
22,43904	0,767538	4,972771
22,43904	0,773371	4,860801
22,438905	0,752976	4,839346
22,438905	0,754343	4,834251
22,43904	0,744266	4,831301
22,43904	0,742295	4,818964
22,438905	0,730609	4,809577

22,439174	0,73785	4,84404
22,43904	0,735496	4,820574
22,439174	0,741229	4,792547
22,43904	0,732721	4,798045
22,43904	0,725882	4,772701
22,439174	0,718258	4,759962
22,439307	0,716448	4,78839
22,438905	0,72029	4,780479
22,439174	0,71502	4,772568
22,439174	0,70794	4,765059
22,439441	0,709087	4,749235
22,43904	0,703957	4,73596
22,43904	0,70271	4,738239
22,438905	0,699633	4,7019
22,43904	0,720873	4,695999
22,439174	0,726103	4,709275
22,439174	0,706995	4,676957
22,439307	0,707135	4,649469
22,439174	0,714537	4,676287
22,439174	0,713351	4,665291

Datotid	Scantid	Rum - [°C]	NS-Røgtemp - [°C]	Ovf-Top - [°C]
		1	24	27
Datotid		Ambient temperature	EPA Flue gas temperature	Surface temperature Top
15-01-2019 11:55:38	3,066	22,819788	44,900246	23,719943
15-01-2019 11:56:08	3,067	22,883207	100,796745	24,171351
15-01-2019 11:56:38	3,067	22,867347	132,012695	24,66771
15-01-2019 11:57:08	3,065	22,922817	128,065292	26,168853
15-01-2019 11:57:38	3,067	22,980919	127,26265	28,554158
15-01-2019 11:58:08	3,066	22,95981	170,110031	31,9679
15-01-2019 11:58:38	3,066	22,994135	161,768936	34,979081
15-01-2019 11:59:08	3,067	22,994135	159,298569	37,937302
15-01-2019 11:59:38	3,067	23,025819	163,598984	40,802426
15-01-2019 12:00:08	3,066	23,046951	172,739761	43,462338
15-01-2019 12:00:38	3,067	23,09976	188,583328	46,227143
15-01-2019 12:01:08	3,066	23,115614	206,184921	49,336831
15-01-2019 12:01:38	3,066	23,202711	216,29213	52,628957
15-01-2019 12:02:08	3,067	23,15254	223,723297	55,888543
15-01-2019 12:02:38	3,067	23,107685	228,526306	59,20696
15-01-2019 12:03:08	3,066	23,110323	227,593979	62,788712
15-01-2019 12:03:38	3,067	23,11296	232,08786	66,368497
15-01-2019 12:04:08	3,066	23,099746	234,093399	69,584714
15-01-2019 12:04:38	3,065	23,099746	235,065735	72,75816
15-01-2019 12:05:08	3,066	23,147287	229,641434	75,61823
15-01-2019 12:05:38	3,066	23,215915	230,892426	78,458798
15-01-2019 12:06:08	3,066	23,281908	229,23201	81,507184
15-01-2019 12:06:38	3,067	23,223844	227,960007	84,311177
15-01-2019 12:07:08	3,067	23,200086	227,967957	87,237859
15-01-2019 12:07:38	3,066	23,21064	226,009644	90,244199
15-01-2019 12:08:08	3,066	23,186891	227,16568	93,454861
15-01-2019 12:08:38	3,066	23,147302	229,87178	96,697827
15-01-2019 12:09:08	3,067	23,184267	239,824661	99,673428
15-01-2019 12:09:38	3,067	23,210666	240,530426	102,658292
15-01-2019 12:10:08	3,067	23,210666	242,049698	105,390515
15-01-2019 12:10:38	3,066	23,284576	241,747299	107,865308
15-01-2019 12:11:08	3,067	23,163164	241,431488	110,369283
15-01-2019 12:11:38	3,067	23,118314	241,890717	112,859731
15-01-2019 12:12:08	3,067	23,179033	240,022308	114,917935
15-01-2019 12:12:38	3,066	23,04438	240,434677	117,297513
15-01-2019 12:13:08	3,067	23,176397	237,70015	119,347997
15-01-2019 12:13:38	3,066	23,361234	236,061584	121,065633
15-01-2019 12:14:08	3,066	23,284698	236,074844	123,173093
15-01-2019 12:14:38	3,067	23,234489	236,395172	125,309407
15-01-2019 12:15:08	3,067	23,160593	237,139084	127,445729
15-01-2019 12:15:38	3,066	23,017997	235,816177	129,74635
15-01-2019 12:16:08	3,065	23,163326	235,077011	131,729718
15-01-2019 12:16:38	3,067	23,057716	232,206665	133,522794

15-01-2019 12:17:08	3,067	23,121059	228,144745	135,366605
15-01-2019 12:17:38	3,067	23,150076	226,702133	136,663739
15-01-2019 12:18:08	3,067	23,057651	225,963257	138,313519
15-01-2019 12:18:38	3,067	23,163362	197,08078	138,613751
15-01-2019 12:19:08	3,066	23,192411	168,015839	138,52229
15-01-2019 12:19:38	3,065	23,374502	173,385208	138,807797
15-01-2019 12:20:08	3,067	23,202913	173,575348	139,445538
15-01-2019 12:20:38	3,065	23,092035	198,722946	140,263409
15-01-2019 12:21:08	3,065	23,099949	252,315002	141,538617
15-01-2019 12:21:38	3,067	23,353494	242,864029	142,258023
15-01-2019 12:22:08	3,067	23,440519	232,875656	142,4409
15-01-2019 12:22:38	3,067	23,522287	230,270798	142,955151
15-01-2019 12:23:08	3,066	23,524921	233,836365	143,149915
15-01-2019 12:23:38	3,066	23,329681	235,029465	143,413434
15-01-2019 12:24:08	3,066	23,366701	228,748947	144,012799
15-01-2019 12:24:38	3,067	23,34826	234,082275	144,1255
15-01-2019 12:25:08	3,066	23,430017	240,744858	144,7104
15-01-2019 12:25:38	3,066	23,498624	244,792831	144,96777
15-01-2019 12:26:08	3,066	23,503894	247,809113	145,474683
15-01-2019 12:26:38	3,066	23,472242	246,536163	146,156949
15-01-2019 12:27:08	3,066	23,672802	247,08519	146,82449
15-01-2019 12:27:38	3,067	23,522449	247,339371	147,224118
15-01-2019 12:28:08	3,066	23,364128	248,557968	147,562802
15-01-2019 12:28:38	3,067	23,358854	248,190613	147,760648
15-01-2019 12:29:08	3,067	23,332464	246,485458	148,302731
15-01-2019 12:29:38	3,067	23,27709	248,25119	148,60571
15-01-2019 12:30:08	3,067	23,504118	248,485657	149,097501
15-01-2019 12:30:38	3,066	23,538341	249,605759	149,723431
15-01-2019 12:31:08	3,065	23,279777	252,695755	150,21394
15-01-2019 12:31:38	3,067	23,306171	265,209351	151,126401
15-01-2019 12:32:08	3,067	23,511964	272,368591	152,032452
15-01-2019 12:32:38	3,067	23,519895	282,251404	153,40759
15-01-2019 12:33:08	3,067	23,477737	282,534485	154,856732
15-01-2019 12:33:38	3,067	23,567457	282,064362	156,343991
15-01-2019 12:34:08	3,068	23,50943	279,928955	157,626263
15-01-2019 12:34:38	3,066	23,530538	281,588257	158,837323
15-01-2019 12:35:08	3,067	23,62021	281,755859	160,39996
15-01-2019 12:35:38	3,066	23,678312	281,546844	161,762936
15-01-2019 12:36:08	3,067	23,678341	280,151245	163,224057
15-01-2019 12:36:38	3,067	23,667801	280,559326	164,584195
15-01-2019 12:37:08	3,065	23,630863	279,642792	166,010236
15-01-2019 12:37:38	3,066	23,636135	280,89389	167,128979
15-01-2019 12:38:08	3,066	23,770868	281,530518	168,067746
15-01-2019 12:38:38	3,066	23,493803	280,398804	169,109677
15-01-2019 12:39:08	3,067	23,422586	280,248138	170,404706
15-01-2019 12:39:38	3,066	23,572942	280,79007	171,768307
15-01-2019 12:40:08	3,066	23,644378	280,266174	172,818951
15-01-2019 12:40:38	3,066	23,6812	279,562408	173,845425

15-01-2019 12:41:08	3,066	23,575706	279,200989	174,862988
15-01-2019 12:41:38	3,066	23,673299	278,600189	175,827176
15-01-2019 12:42:08	3,065	23,884481	279,597626	177,028394
15-01-2019 12:42:38	3,065	23,763151	280,16571	178,154828
15-01-2019 12:43:08	3,066	23,75781	280,107056	178,807095
15-01-2019 12:43:38	3,065	23,752542	280,256042	180,080807
15-01-2019 12:44:09	3,067	23,837183	279,340851	180,343396
15-01-2019 12:44:39	3,066	23,771148	279,975281	181,195493
15-01-2019 12:45:09	3,066	23,808031	279,334442	182,201627
15-01-2019 12:45:39	3,066	23,889904	279,502197	182,77644
15-01-2019 12:46:09	3,066	23,948045	280,696198	183,80119
15-01-2019 12:46:39	3,067	23,842451	280,564789	184,737759
15-01-2019 12:47:09	3,067	23,789722	280,245056	185,316647
15-01-2019 12:47:39	3,067	23,934908	280,346436	186,034909
15-01-2019 12:48:09	3,066	24,000902	279,660309	186,683392
15-01-2019 12:48:39	3,065	23,95858	280,038422	187,46452
15-01-2019 12:49:09	3,065	23,92959	279,462006	188,199872
15-01-2019 12:49:39	3,067	24,098526	279,654388	188,821652
15-01-2019 12:50:09	3,067	23,924522	280,189941	189,266507
15-01-2019 12:50:39	3,066	23,91657	281,515411	189,660382
15-01-2019 12:51:09	3,067	24,000902	280,434418	190,196301
15-01-2019 12:51:39	3,066	24,204126	280,760468	190,878186
15-01-2019 12:52:09	3,066	24,053787	280,303772	191,549176
15-01-2019 12:52:39	3,067	24,051153	281,86554	192,004697
15-01-2019 12:53:09	3,065	24,156902	280,515686	192,330212
15-01-2019 12:53:39	3,066	24,125192	281,478607	192,937009
15-01-2019 12:54:09	3,066	23,998611	282,460541	193,574704
15-01-2019 12:54:39	3,066	24,104168	281,495392	194,157407
15-01-2019 12:55:09	3,067	24,056951	281,631195	194,729001
15-01-2019 12:55:39	3,067	23,909183	280,290253	195,104062
15-01-2019 12:56:09	3,067	23,932907	281,361115	195,401257
15-01-2019 12:56:39	3,067	24,086149	281,080505	196,239713
15-01-2019 12:57:09	3,067	24,006946	279,652039	196,594586
15-01-2019 12:57:39	3,066	24,11231	278,643799	197,139249
15-01-2019 12:58:09	3,066	24,257614	278,423981	197,416455
15-01-2019 12:58:39	3,066	24,215412	277,918091	197,524823
15-01-2019 12:59:09	3,065	24,152029	276,905792	197,875638
15-01-2019 12:59:39	3,065	24,249647	277,301392	198,199704
15-01-2019 13:00:09	3,066	24,321043	277,100372	198,228741
15-01-2019 13:00:39	3,066	24,241834	275,326141	198,532574
15-01-2019 13:01:09	3,066	24,212829	275,306671	198,667783
15-01-2019 13:01:39	3,066	24,115789	274,892517	198,833813
15-01-2019 13:02:09	3,066	24,115661	275,063049	198,907407
15-01-2019 13:02:39	3,066	24,02071	275,050751	198,85481
15-01-2019 13:03:09	3,067	23,839243	272,629913	199,248288
15-01-2019 13:03:39	3,067	24,113405	273,748138	199,309888
15-01-2019 13:04:09	3,067	24,105262	273,479736	199,692761
15-01-2019 13:04:39	3,066	24,034525	272,252991	199,436963

15-01-2019 13:05:09	3,066	24,192653	271,835297	199,476743
15-01-2019 13:05:39	3,066	24,134485	272,162628	199,531598
15-01-2019 13:06:09	3,065	24,113405	270,140747	199,793988
15-01-2019 13:06:39	3,066	24,261423	270,64444	199,654736
15-01-2019 13:07:09	3,066	24,300787	269,64032	199,311642
15-01-2019 13:07:39	3,066	24,213743	269,077789	199,466809
15-01-2019 13:08:09	3,067	24,269317	268,730499	199,493573
15-01-2019 13:08:39	3,066	24,303775	268,370087	199,544446
15-01-2019 13:09:09	3,067	24,208742	267,444977	199,533521
15-01-2019 13:09:39	3,065	24,171848	267,214844	199,056592
15-01-2019 13:10:09	3,065	24,409338	266,226898	199,222592
15-01-2019 13:10:39	3,066	24,359214	266,535339	198,928052
15-01-2019 13:11:09	3,066	24,219514	266,242584	198,810254
15-01-2019 13:11:39	3,067	24,306495	265,060242	198,938336
15-01-2019 13:12:09	3,066	24,404428	266,406769	199,117657
15-01-2019 13:12:39	3,067	24,354108	264,011139	198,686536
15-01-2019 13:13:09	3,066	24,346214	264,28064	198,483029
15-01-2019 13:13:39	3,066	24,422842	264,309387	198,228558
15-01-2019 13:14:09	3,066	24,401901	263,188904	198,28436
15-01-2019 13:14:39	3,066	24,280649	261,615204	197,971021
15-01-2019 13:15:09	3,067	24,354393	261,604736	198,075467
15-01-2019 13:15:39	3,066	24,404998	260,994354	197,360394
15-01-2019 13:16:09	3,065	24,344141	259,568146	197,429517
15-01-2019 13:16:39	3,066	24,180845	259,248291	197,100079
15-01-2019 13:17:09	3,065	24,399437	258,123199	196,982236
15-01-2019 13:17:39	3,066	24,315273	258,054962	196,668881
15-01-2019 13:18:09	3,067	24,270696	257,240387	196,457135
15-01-2019 13:18:39	3,066	24,383928	255,663483	196,247876
15-01-2019 13:19:09	3,067	24,291769	255,314117	195,588849
15-01-2019 13:19:39	3,066	24,115219	254,420975	195,224545
15-01-2019 13:20:09	3,067	24,275957	252,690216	194,935178
15-01-2019 13:20:39	3,066	24,376321	252,123474	194,558667
15-01-2019 13:21:09	3,066	24,352621	250,394394	194,372113
15-01-2019 13:21:39	3,066	24,41057	249,241302	193,410291
15-01-2019 13:22:09	3,066	24,320797	247,360367	193,004315
15-01-2019 13:22:39	3,067	24,471437	246,868851	192,378568
15-01-2019 13:23:09	3,067	24,244958	246,09111	192,354459
15-01-2019 13:23:39	3,066	24,242328	245,147736	192,118344
15-01-2019 13:24:09	3,066	24,073549	244,269104	191,300992

Ovf-Bag - [°C]	Ovf-Side-1 - [°C]	Ovf-Side-2 - [°C]	Ovf-Bund - [°C]	Kanal-EPA - [°C]
28	29	30	31	36
Surface temperature Rear	Surface temperature Right side	Surface temperature Left side	Surface temperature Bottom	EPA Duct temperature
21,70595	21,079872	22,965924	23,57303	22,877238
22,214695	21,107683	23,039323	23,629444	24,555438
23,344387	21,178011	23,307049	23,737084	28,507225
24,853363	21,326838	23,850463	23,876497	32,251819
26,865588	21,651051	24,53524	24,057988	35,205925
32,76367	22,073423	25,041351	24,102705	36,507987
39,4037	22,463783	25,481696	24,123749	34,756706
45,751078	22,891148	25,95329	24,17109	33,153606
51,846819	23,395063	26,496487	24,216994	31,937369
58,03015	23,926704	27,095785	24,228789	31,189119
64,324301	24,534994	27,737935	24,287909	30,857906
72,624152	25,162848	28,469866	24,324736	30,83645
81,559607	25,867092	29,295298	24,406241	31,196494
90,090704	26,689871	30,180074	24,479861	31,757681
98,11843	27,593948	31,144901	24,57186	32,119737
106,313589	28,550055	32,220821	24,732203	32,437537
113,268164	29,571062	33,40079	24,896241	32,699025
120,103873	30,599068	34,675635	25,059006	32,9062
126,319937	31,710392	35,999657	25,235048	33,054375
131,303717	32,899338	37,354409	25,44649	33,156956
135,826468	34,139431	38,778529	25,674922	33,163663
140,11759	35,388607	40,295191	25,913781	33,212606
144,132529	36,712475	41,839661	26,165811	33,266919
148,184073	38,060944	43,441377	26,451891	33,340669
151,901633	39,4627	45,048707	26,753648	33,405031
155,328497	40,922829	46,682272	27,126109	33,498231
158,940924	42,404625	48,401124	27,472226	33,686631
163,030325	43,934135	50,166617	27,847081	34,001087
167,124075	45,508648	52,004269	28,344905	34,330956
170,711295	47,069607	53,917838	28,864731	34,716481
173,806494	48,706699	55,856063	29,43657	35,069819
176,863989	50,394905	57,881554	30,091622	35,366838
179,627493	52,113686	60,022448	30,781664	35,741638
182,07012	53,900795	62,122153	31,548385	36,133862
184,353491	55,739189	64,254741	32,279378	36,462394
186,326056	57,529442	66,503088	33,135014	36,664206
188,027869	59,382767	68,732508	33,984745	36,81305
189,76972	61,190926	70,966181	34,872827	36,941113
191,506094	63,005699	73,173936	35,778414	37,022238
193,140417	64,773163	75,350984	36,703971	37,1503
194,751501	66,619446	77,535506	37,68189	37,208631
196,204352	68,427826	79,711491	38,686143	37,287075
197,686484	70,240921	81,825784	39,712722	37,301156

198,92475	72,06279	83,891325	40,760451	37,378262
199,89115	73,820229	85,831718	41,800883	37,293112
200,710196	75,582809	87,739971	42,861036	37,196562
199,342322	77,339073	89,649243	44,28174	43,612337
196,77709	79,204872	91,629866	45,845111	49,510506
194,531119	81,008034	93,623391	47,374304	53,07005
192,682669	82,857063	95,483194	48,553275	54,262162
191,40856	84,637032	97,335351	49,860792	57,457644
191,743399	86,460464	99,065013	50,8218	57,778131
192,14263	88,148117	100,691124	51,712881	55,284638
191,960425	89,714119	102,210878	52,549624	53,375788
191,697852	91,435898	103,624049	53,339758	51,700275
191,543677	92,95459	105,026625	54,125643	50,142094
192,057822	94,360252	106,341448	54,879023	48,841369
192,958044	95,715271	107,562326	55,547696	46,475262
194,223822	96,945541	108,735086	56,251875	44,489319
195,916464	98,121971	109,925242	56,908217	43,104794
197,675894	99,101028	111,151158	57,660574	42,093044
199,748114	100,176437	112,380527	58,266872	41,440675
201,875815	101,203148	113,605598	58,916469	40,974694
204,005103	102,143234	114,871307	59,518466	40,695781
205,779425	102,92038	116,118774	60,075628	40,428919
207,547736	103,57843	117,276656	60,640309	40,142625
209,102911	104,337891	118,405445	61,149698	39,907962
210,371786	104,896446	119,580504	61,780601	39,931425
211,731085	105,403191	120,782274	62,30155	39,941481
213,095206	105,93605	121,938225	62,865823	39,993113
214,585287	106,520897	123,146646	63,359671	40,028644
216,174857	107,048759	124,305402	63,849641	40,042725
218,350104	107,530083	125,442961	64,275824	40,172794
221,387793	107,908554	126,592736	64,820271	40,433613
225,442267	108,456429	127,757812	65,259	40,734669
229,567847	108,755836	128,913273	65,748773	41,088675
233,342505	109,182915	130,105955	66,243562	41,445369
236,833319	109,67495	131,406021	66,750926	41,753787
239,821234	110,133438	132,627721	67,24684	42,01125
242,841025	110,638992	133,962489	67,723464	42,165456
245,628867	111,22541	135,244577	68,293005	42,355875
248,177695	111,861717	136,548563	68,813021	42,454431
250,310568	112,498306	137,819445	69,338052	42,601262
252,482153	113,260323	139,060948	69,800612	42,680381
254,532019	114,004204	140,335901	70,315227	42,727988
256,391302	114,740837	141,520108	70,857993	42,731338
257,719122	115,446335	142,782243	71,38276	42,823194
258,698767	116,394012	143,965077	71,913818	42,898288
259,930945	117,305611	145,132935	72,497182	42,8594
261,048468	118,15876	146,273722	72,949363	42,828556
261,972815	119,192886	147,424221	73,514788	42,808444

262,847327	120,026093	148,525508	73,955489	42,897612
263,669165	120,896423	149,637835	74,546497	42,882194
264,338873	121,8405	150,713604	75,104119	42,927119
265,179755	122,895432	151,717613	75,558703	42,946562
265,701331	123,937874	152,764063	76,079617	42,982762
266,472266	124,964958	153,796366	76,571135	42,970694
267,07337	125,924568	154,758087	77,121386	42,939856
267,653387	126,884674	155,6964	77,684357	42,858725
268,33631	127,96492	156,641364	78,136236	42,884206
268,889929	128,972229	157,588184	78,655905	42,882863
269,625922	129,948257	158,478326	79,176804	43,005563
270,271765	130,927597	159,333282	79,668466	43,020312
270,858893	131,982788	160,167381	80,093977	43,042437
271,492804	132,896027	160,993727	80,646925	43,06255
272,224158	133,888718	161,845154	81,190619	43,130269
272,801581	134,852982	162,617643	81,612377	43,165806
273,42951	135,881058	163,436418	82,142348	43,117531
273,992407	136,740585	164,252946	82,754073	43,017631
274,435339	137,552872	164,995619	83,161926	42,997512
275,020026	138,315063	165,726331	83,6525	42,92175
275,582526	139,268311	166,384576	84,118926	42,986119
276,062842	140,174316	167,102363	84,589333	42,907675
276,830542	141,133545	167,829426	85,068623	42,998856
277,249518	142,16507	168,477461	85,527685	43,020981
277,885718	143,11615	169,130743	85,935719	43,071937
278,377234	144,139191	169,803874	86,510631	43,163125
278,863623	144,996872	170,436268	86,946883	43,210056
279,375861	145,874786	171,073911	87,408732	43,339456
279,904639	146,774017	171,699549	87,87682	43,401813
280,627264	147,653961	172,308295	88,379608	43,468187
281,259863	148,422333	172,918157	88,832356	43,49635
281,792456	149,207092	173,444919	89,294424	43,426619
282,153479	150,009369	173,990216	89,720827	43,376331
282,562262	150,816971	174,555194	90,235216	43,37365
282,907599	151,506546	175,115076	90,648839	43,335431
283,035986	152,417328	175,591539	91,186332	43,227488
283,303442	153,09407	176,08402	91,710087	43,167819
283,261938	153,770966	176,513022	92,095937	43,171169
283,249854	154,394363	176,998655	92,534092	43,045787
283,410712	155,063446	177,443342	93,032287	42,970025
283,440558	155,711426	177,863083	93,593385	42,915719
283,240607	156,338242	178,278888	93,918145	42,967344
283,154883	157,129272	178,612527	94,281291	42,89225
282,976721	157,682709	179,008243	94,760739	42,946562
282,944098	158,248322	179,356285	95,204257	42,8775
282,736365	158,934402	179,644996	95,698132	42,826544
282,562354	159,385635	179,976086	96,204884	42,764862
282,32981	159,994431	180,292533	96,643878	42,806431

282,095648	160,693817	180,625885	97,181175	42,760838
281,837164	161,281448	180,84439	97,599821	42,6891
281,699469	161,743668	181,040363	98,096747	42,634788
281,424078	162,171188	181,215191	98,619414	42,601262
281,124854	162,812256	181,498291	99,065123	42,53355
280,831091	163,381393	181,720612	99,664627	42,472538
280,532233	163,849197	181,964303	100,07998	42,424262
280,287878	164,202103	182,136492	100,649287	42,351181
280,006934	164,788834	182,328363	101,072487	42,2781
279,775275	165,391495	182,522722	101,657045	42,177525
279,473669	165,806046	182,641928	102,167763	42,005212
279,177222	166,094925	182,787603	102,583614	41,822844
278,956213	166,544312	182,949189	103,048341	41,837594
278,737311	167,022705	183,094442	103,541022	41,822844
278,438116	167,308884	183,216212	104,103554	41,683387
278,217017	167,637985	183,351315	104,522389	41,708194
278,133765	167,937653	183,465243	104,995311	41,65925
277,804541	168,278732	183,556548	105,51575	41,598906
277,566107	168,804169	183,726957	105,971874	41,502356
277,079443	169,061096	183,859405	106,486293	41,53655
276,816565	169,483978	183,893867	106,807881	41,537225
276,085089	169,668655	183,954783	107,366305	41,442687
275,592444	170,093735	184,073461	107,924426	41,334069
275,167944	170,203491	184,123804	108,362151	41,315294
274,605322	170,356064	184,187359	108,887575	41,270375
273,982642	170,546143	184,192698	109,392507	41,060519
273,534216	170,81366	184,261305	109,867627	41,065213
272,901831	170,900391	184,352459	110,357295	40,931112
272,459906	171,322037	184,377585	110,747858	40,854681
271,682776	171,356827	184,367013	111,230139	40,9338
271,065802	171,462479	184,390707	111,625974	40,878819
270,235937	171,383347	184,365384	112,068269	40,804394
269,380804	171,492874	184,38769	112,648868	40,782938
268,534857	171,573181	184,432724	113,100672	40,697787
267,719824	171,656113	184,43001	113,49699	40,6227
266,988104	171,907669	184,443071	113,829954	40,566375
266,287665	171,795212	184,408639	114,27431	40,511388
265,588019	171,798981	184,298466	114,677313	40,486581
264,833533	171,832397	184,180572	115,128339	40,221744

Røgtræk - [Pa]	Pd Kanal - [Pa]	Ps Kanal - [Pa]	Vægt - [Kg]	CO-Lav - [100ppm]
38	39	40	43	44
Flue draft Pascals	Duct dynamic pressure	Duct static pressure	Platform scale reading	CO low range
3,711184	29,66064	136,630698	1,861391	0,076429
9,070711	31,485451	139,076241	1,834706	6,465516
10,921198	29,552493	137,95907	1,817207	13,501479
9,934816	29,770443	138,02719	1,766989	14,007955
9,737779	30,737543	141,119846	1,682643	20,213335
13,043994	29,63495	136,402495	1,672452	21,323774
13,311707	30,148334	139,796617	1,644225	22,440918
13,744613	29,401671	138,50744	1,484786	20,162781
14,020159	29,899721	135,79453	1,586162	19,826199
13,987291	29,502358	137,448165	1,55532	20,941201
15,092029	29,694618	136,061897	1,519048	20,160501
15,863834	29,946129	135,697454	1,481166	18,889414
16,778346	29,264517	136,5217	1,442546	13,430677
17,003827	29,722378	135,3279	1,402518	8,851065
17,146197	29,888948	137,230154	1,365575	8,406809
16,572794	28,468545	135,603792	1,329101	7,432205
17,021878	30,079138	136,891254	1,293298	6,293473
17,519496	29,018391	137,286383	1,258567	5,462083
17,775287	30,000825	137,400492	1,225714	5,347566
17,053384	28,795053	136,671576	1,196481	5,478442
17,360265	29,045324	137,899459	1,165237	7,26338
17,144154	28,547683	135,099697	1,135938	8,117433
17,662889	29,449318	137,322149	1,104827	12,307766
16,978111	29,539234	137,575895	1,075528	9,882255
16,750417	29,462165	139,307858	1,047234	10,620983
17,050148	29,557465	137,380045	1,018672	10,665771
16,964998	29,816437	140,530614	0,986623	11,105604
17,626274	30,540312	137,674669	0,953569	7,502337
17,581996	29,937013	141,680138	0,924336	4,507596
17,252634	30,506334	139,370866	0,895841	5,468251
17,406075	30,267253	138,459752	0,868418	7,100455
17,596131	30,924832	138,146395	0,840996	6,946112
17,514386	30,483959	138,735643	0,814378	6,827975
16,861623	29,837569	137,994837	0,789705	7,007259
17,0464	31,763068	147,998277	0,763824	8,396484
16,999398	30,90494	142,761543	0,742906	9,698814
16,998377	30,420563	140,019709	0,721852	12,688461
16,987307	32,491914	148,059586	0,702744	8,719384
17,222151	29,690474	138,781617	0,680619	7,714207
17,1995	30,71061	142,153563	0,660303	6,733304
16,565472	30,253993	141,446824	0,641195	10,222856
17,188942	31,006045	142,783673	0,622019	13,112201
16,64398	29,823483	138,22985	0,603783	16,15173

16,360259	29,470454	136,138525	0,588161	18,299396
16,524599	30,118087	137,858597	0,571599	19,985776
13,722815	29,346147	139,101784	0,133981	17,37079
13,055405	30,905771	139,26698	1,404328	10,146287
13,136637	30,411035	142,162087	3,788603	7,594996
15,825346	30,219188	140,501658	3,608112	7,895101
13,775438	30,120571	139,484959	3,724305	11,225619
16,382568	30,615724	140,004373	3,64653	8,69337
17,933837	30,650529	140,94103	3,532884	11,20403
17,006381	30,083695	138,958735	3,592356	17,599555
16,662032	29,652768	138,907649	3,543948	19,589523
16,617242	30,018226	137,770031	3,524637	21,683147
17,08591	28,992701	139,55138	3,505529	22,440246
16,599191	30,840718	140,256421	3,504591	20,71324
17,237137	29,808979	139,868134	3,479783	13,819686
17,458528	30,241563	137,647428	3,453366	18,084174
17,724026	30,861433	138,919571	3,426681	13,748079
17,967555	30,229547	140,564666	3,398321	12,749876
18,080125	30,48976	139,513915	3,368954	13,669098
17,938775	30,728841	140,666853	3,340526	12,784473
17,97522	29,94986	139,030268	3,313975	11,589686
17,758597	30,783951	137,678083	3,287558	10,990416
17,813434	29,662297	138,849737	3,260873	11,226424
17,853965	30,340594	139,835781	3,23506	11,91433
17,614694	31,964856	143,23157	3,211526	12,333244
17,626784	30,628567	141,257784	3,185914	12,450577
17,956486	30,617794	141,082381	3,161375	11,723245
17,687582	31,114604	142,640624	3,135495	11,891801
18,149948	31,476748	144,33682	3,107938	11,626427
18,54828	32,196066	149,410073	3,072336	9,687281
18,472837	30,945547	140,176379	3,035661	3,50175
18,716539	31,834748	144,777891	2,994293	3,954051
18,774783	30,681607	142,407324	2,955138	7,108769
19,231188	30,620695	140,220654	2,917524	6,33169
19,508267	30,010354	141,215207	2,882592	4,868847
18,800158	29,973475	139,909012	2,848867	4,921412
19,193893	30,124715	142,194441	2,814874	5,188395
18,962624	29,484954	138,262203	2,782826	5,114241
19,145868	30,642244	139,164792	2,749905	4,956009
19,019164	30,873449	140,639596	2,718928	5,143876
19,614534	30,350953	139,375977	2,687617	5,365803
19,054416	29,704977	140,155948	2,655434	5,141462
18,948319	29,929968	137,68829	2,622514	5,207436
18,713985	29,067696	137,981216	2,592276	4,875418
18,639904	29,908836	140,44546	2,561903	4,710214
19,326046	29,500701	140,46759	2,530659	5,212666
18,833706	29,385097	135,68042	2,499884	5,216421
19,137863	29,38758	137,255728	2,471389	5,22393

18,932822	29,477082	138,7101	2,442894	5,311494
18,993279	29,644066	137,020683	2,412656	5,827225
18,72829	29,279434	136,622189	2,384496	6,013885
19,402339	29,185792	138,551716	2,355062	6,33987
19,262352	30,432993	140,075906	2,326432	5,849485
19,105505	29,076398	136,359918	2,296194	5,857263
19,254008	29,806905	136,496157	2,267029	5,766212
19,115724	29,686746	137,274461	2,239673	5,771576
18,802712	30,036044	136,972994	2,210307	5,563059
19,064294	29,02875	137,422622	2,18094	5,579686
19,129518	30,278439	137,320451	2,153652	5,542006
19,024443	28,737873	137,691703	2,123346	5,510359
19,149444	28,942562	136,302022	2,094784	5,218701
18,948489	28,330565	132,172236	2,066423	5,245385
18,889736	29,447248	135,820073	2,036184	5,320746
19,213476	28,505833	135,465838	2,009566	5,195905
19,054926	30,735473	141,005752	1,980468	5,19738
18,881901	29,880663	137,960769	1,953917	5,141999
19,269675	29,335375	135,086076	1,924617	5,093859
19,166815	29,791161	137,284684	1,895251	4,682993
19,507414	29,504015	137,015571	1,867761	4,729658
19,217394	29,728179	136,547243	1,840204	4,518324
18,979994	29,950273	139,748929	1,812849	4,27816
19,136671	29,975549	137,633791	1,783684	4,133739
19,078257	30,341007	138,398442	1,756999	3,908191
19,166815	30,24032	135,406243	1,727565	3,914494
18,683672	30,00704	137,071769	1,701014	3,837524
18,771037	29,595174	138,452941	1,672452	3,70611
19,248047	30,292942	135,331297	1,644158	3,625251
19,196617	29,757183	136,908288	1,617607	3,706781
18,864191	29,917952	141,772102	1,589112	3,847849
19,038408	29,718233	139,268678	1,562696	4,06763
18,529548	30,071262	138,87528	1,536078	3,886334
18,459383	30,390729	140,060571	1,510466	4,092169
19,002815	30,313661	139,456019	1,484786	4,163374
18,794538	29,583571	138,790142	1,461051	4,269176
18,350732	30,061733	138,292858	1,433427	4,391202
18,645695	29,985908	139,125629	1,409491	4,257644
18,547088	30,19847	138,214515	1,385086	4,381547
18,49123	30,917374	140,840557	1,359138	4,506121
19,014907	31,333797	141,843619	1,336476	4,465356
18,656083	30,881325	138,905934	1,311669	4,291168
18,717562	30,939332	141,349748	1,287867	4,290631
18,945423	30,641827	139,176714	1,263328	4,220901
18,636839	30,772762	142,32387	1,24033	4,372831
18,640415	31,132422	141,417867	1,215657	4,177991
18,451379	29,420315	137,136491	1,192727	4,126766
18,515752	29,340346	136,484235	1,169864	4,090426

18,677201	30,125546	137,637204	1,145927	4,292374
18,521032	29,059824	135,831995	1,123869	4,24933
18,268647	29,92417	136,998553	1,099196	4,26931
18,307645	30,495148	141,0977	1,077405	4,342391
18,124402	29,152644	136,775446	1,054609	4,40032
18,599199	29,550006	136,535321	1,032416	4,27749
18,45768	30,013668	139,014932	1,011431	4,357276
18,421236	29,266178	136,264557	0,988567	4,202396
18,276651	29,073497	136,25092	0,966442	4,435454
18,325016	30,382027	140,590208	0,945456	4,352985
18,414424	30,341421	140,225766	0,925342	4,455165
18,616571	29,272806	133,905897	0,901473	4,600524
18,045043	29,529705	135,363666	0,880353	4,644105
18,436904	29,545035	136,267954	0,860306	4,776322
18,588471	30,165322	141,254387	0,838314	5,082059
18,114696	29,428187	136,334375	0,816457	4,826205
18,043169	29,044494	135,072455	0,795069	4,999187
18,358566	29,050295	136,121491	0,777636	5,133149
18,210574	29,193663	136,112982	0,757522	5,279178
18,126958	29,779145	136,155559	0,737408	5,55689
18,166637	29,629979	134,338459	0,719104	5,820655
18,203932	31,788757	144,578643	0,701604	6,016031
17,860607	29,623347	136,516588	0,680686	6,512181
17,971984	29,841714	137,405588	0,662114	6,734242
17,875083	28,721712	135,813262	0,645687	6,798607
18,061732	30,536581	136,259445	0,627584	6,944905
18,135132	28,856378	133,749211	0,612029	7,175146
18,12934	29,24546	135,736618	0,592719	7,593388
17,457166	30,709366	137,429432	0,575421	7,356844
17,839149	29,955661	136,756714	0,559665	7,50341
17,469428	29,351949	134,500241	0,543976	8,218943
17,559857	29,751798	136,690308	0,527549	8,824111
17,414931	29,983834	138,333736	0,512061	9,383421
17,553215	29,709948	136,324152	0,498384	9,480372
17,462616	30,549428	138,584069	0,483701	9,583357
17,318712	28,846432	136,71755	0,470961	9,583894
17,142962	31,441944	145,50849	0,455138	9,570216
17,609925	29,824309	135,663386	0,441461	9,590867
17,336083	30,0348	137,359614	0,428587	9,773639

CO-Høj - [%]	CO2 - [%]
45	46
CO high range	CO2 - [%]
-0,004124	0,109147
0,055133	1,344431
0,136374	2,035555
0,11457	2,147792
0,191748	2,39788
0,210957	3,123603
0,358254	9,359284
0,213431	9,312619
0,196797	8,949759
0,205466	9,274804
0,210173	9,717721
0,193579	10,654909
0,141684	11,286497
0,088462	11,398869
0,085626	11,557504
0,078183	11,489785
0,064546	10,922833
0,059316	10,905132
0,05823	10,657456
0,059859	9,914706
0,075086	9,16431
0,079149	9,337293
0,12165	9,008224
0,103266	9,426869
0,10751	9,478495
0,103568	9,409168
0,115737	9,498476
0,083192	10,315649
0,043305	10,851226
0,05109	10,104048
0,07058	9,656841
0,072592	9,439876
0,067764	9,517115
0,06871	9,514299
0,089146	9,223982
0,105016	9,006883
0,124185	8,416733
0,08997	8,106434
0,074281	8,091014
0,078264	8,149749
0,101295	8,064194
0,134383	7,96121
0,166545	7,738612

0,177869	7,478334
0,19915	7,05969
0,179519	6,823818
0,120564	3,401715
0,083051	1,890599
0,08454	1,593579
0,108214	1,917954
0,087657	1,961133
0,110467	3,662932
0,159183	4,230154
0,193639	3,480698
0,215161	3,318443
0,237026	3,425852
0,212486	4,058244
0,149006	6,848491
0,182496	7,376959
0,143615	7,91374
0,130923	8,323403
0,137661	8,586764
0,131748	8,427191
0,125432	8,397556
0,118211	8,190514
0,117768	8,074385
0,124124	7,899124
0,128972	7,692751
0,130963	7,590974
0,127222	7,624631
0,120826	7,639248
0,108536	7,799222
0,113444	8,737353
0,052719	11,027159
0,052055	11,942757
0,076132	12,481151
0,061589	12,237366
0,04588	11,734106
0,055756	11,298566
0,048837	11,032389
0,045156	10,761651
0,055635	10,579011
0,055857	10,383635
0,067764	10,216151
0,058391	10,153395
0,05642	10,089834
0,049501	10,033245
0,052578	9,937368
0,047389	9,827679
0,062695	9,711284
0,0565	9,66006

0,046705	9,562305
0,065793	9,479032
0,068086	9,450873
0,06698	9,403937
0,045337	9,404071
0,064767	9,426869
0,072531	9,431563
0,062615	9,429416
0,068931	9,457443
0,062273	9,410643
0,066557	9,417213
0,062333	9,39026
0,065069	9,38798
0,060905	9,413459
0,061951	9,423651
0,057003	9,380069
0,058632	9,410776
0,056742	9,36572
0,06165	9,375375
0,051794	9,296796
0,051391	9,292772
0,04759	9,31919
0,048113	9,374974
0,043124	9,38731
0,036004	9,439742
0,040429	9,459856
0,039785	9,438133
0,045236	9,462003
0,036829	9,459051
0,04057	9,39093
0,042139	9,370548
0,049521	9,282716
0,047228	9,184156
0,050929	9,057972
0,041334	8,992401
0,050687	8,930985
0,047791	8,832828
0,043547	8,754383
0,057768	8,709729
0,050205	8,735609
0,046142	8,70879
0,041616	8,730111
0,053946	8,695515
0,051331	8,699001
0,043828	8,632625
0,044392	8,570003
0,044372	8,574695
0,052679	8,570673

0,060423	8,52441
0,060302	8,48673
0,043728	8,457229
0,041596	8,414184
0,045437	8,354646
0,048253	8,339494
0,03886	8,303556
0,048656	8,330106
0,042722	8,319648
0,044573	8,290146
0,051552	8,278077
0,048736	8,255416
0,05471	8,23329
0,064848	8,261852
0,059558	8,184211
0,065371	8,203924
0,036487	8,150018
0,059578	8,033353
0,079511	7,987493
0,060302	7,903682
0,062313	7,743171
0,061288	7,671832
0,077077	7,61739
0,0706	7,530498
0,069876	7,495901
0,07227	7,43529
0,08812	7,397609
0,080114	7,314872
0,081844	7,254261
0,079451	7,123251
0,093712	7,008466
0,07929	6,867399
0,089065	6,731292
0,105297	6,676581
0,100611	6,611814
0,098257	6,574937
0,100752	6,54946
0,104734	6,478255
0,11453	6,466321

Datotid	Scantid	Rum - [°C]	Filter-1-H - [°C]	Filter-2-D1 - [°C]
		1	2	3
Datotid	Scantime	Ambient temperature	Main train filter temp	Split train 1H filter temp
15-01-2019 13:25:09	3,067	24,38223	27,405841	27,815473
15-01-2019 13:25:39	3,067	24,398014	27,489576	27,914583
15-01-2019 13:26:09	3,066	24,416124	28,620529	28,216459
15-01-2019 13:26:39	3,067	24,385172	29,593013	29,333389
15-01-2019 13:27:09	3,067	24,348022	29,955488	29,773031
15-01-2019 13:27:39	3,066	24,272281	30,214157	30,030473
15-01-2019 13:28:09	3,068	24,324676	30,27526	30,142433
15-01-2019 13:28:39	3,066	24,379909	30,177394	30,079824
15-01-2019 13:29:09	3,066	24,625421	30,170183	30,017805
15-01-2019 13:29:39	3,066	24,522415	30,016075	29,832393
15-01-2019 13:30:09	3,067	24,469856	29,922277	29,737232
15-01-2019 13:30:39	3,066	24,599437	29,974977	29,67902
15-01-2019 13:31:09	3,066	24,50696	29,854723	29,613556
15-01-2019 13:31:39	3,066	24,517505	29,802545	29,535253
15-01-2019 13:32:09	3,066	24,681297	29,851369	29,556615
15-01-2019 13:32:39	3,065	24,788993	29,801662	29,48604
15-01-2019 13:33:09	3,066	24,575746	29,782018	29,415517
15-01-2019 13:33:39	3,067	24,660059	29,789938	29,442985
15-01-2019 13:34:09	3,066	24,705423	29,842678	29,557075
15-01-2019 13:34:39	3,066	24,744762	29,858228	29,530891
15-01-2019 13:35:09	3,067	24,852417	29,831958	29,51769
15-01-2019 13:35:39	3,066	24,778751	29,837175	29,455043
15-01-2019 13:36:10	3,068	24,781639	29,888279	29,507476
15-01-2019 13:36:40	3,067	24,897762	29,886007	29,610895
15-01-2019 13:37:10	3,065	24,839628	29,892322	29,570282
15-01-2019 13:37:40	3,066	24,81595	29,881872	29,557218
15-01-2019 13:38:10	3,066	24,76596	29,868843	29,570282
15-01-2019 13:38:40	3,067	24,853426	29,96725	29,675212
15-01-2019 13:39:10	3,066	24,800537	29,955305	29,612424
15-01-2019 13:39:40	3,066	24,608429	29,900535	29,617637
15-01-2019 13:40:10	3,066	24,776857	29,900535	29,562828
15-01-2019 13:40:40	3,066	24,753542	29,92695	29,593155
15-01-2019 13:41:10	3,067	24,830148	29,865926	29,629945
15-01-2019 13:41:40	3,066	24,782508	29,856573	29,576269
15-01-2019 13:42:10	3,067	24,806163	29,80961	29,58933
15-01-2019 13:42:40	3,066	24,843086	29,783615	29,585479
15-01-2019 13:43:10	3,067	24,95689	29,836401	29,626506
15-01-2019 13:43:40	3,066	24,848693	29,804842	29,551912
15-01-2019 13:44:10	3,067	24,832872	29,786512	29,524471
15-01-2019 13:44:40	3,066	24,895994	29,729116	29,558397
15-01-2019 13:45:10	3,066	24,81973	29,726509	29,487909
15-01-2019 13:45:40	3,067	24,870308	29,787067	29,56937
15-01-2019 13:46:10	3,067	24,759613	29,692983	29,582309

15-01-2019 13:46:40	3,067	24,791179	29,732135	29,530105
15-01-2019 13:47:10	3,067	24,754352	29,669498	29,537927
15-01-2019 13:47:40	3,067	24,783292	29,67995	29,472652
15-01-2019 13:48:10	3,066	24,884081	29,771988	29,564705
15-01-2019 13:48:40	3,066	24,991487	29,667299	29,496576
15-01-2019 13:49:10	3,066	24,762632	29,638595	29,467863
15-01-2019 13:49:40	3,067	24,852092	29,602045	29,480905
15-01-2019 13:50:10	3,066	24,87577	29,60728	29,433902
15-01-2019 13:50:40	3,067	24,862751	29,570882	29,411853
15-01-2019 13:51:10	3,066	24,915638	29,547672	29,400402
15-01-2019 13:51:40	3,066	24,870916	29,516348	29,376899
15-01-2019 13:52:10	3,067	24,794624	29,477178	29,345567
15-01-2019 13:52:40	3,067	24,857778	29,443246	29,32467
15-01-2019 13:53:10	3,067	24,834098	29,43803	29,282875
15-01-2019 13:53:40	3,066	24,789524	29,419895	29,264766
15-01-2019 13:54:10	3,066	24,816106	29,433216	29,304214
15-01-2019 13:54:40	3,066	24,834505	29,42015	29,298971
15-01-2019 13:55:10	3,067	24,847669	29,425392	29,262418
15-01-2019 13:55:40	3,066	24,831876	29,380998	29,228471
15-01-2019 13:56:10	3,066	24,889743	29,344446	29,225856
15-01-2019 13:56:40	3,067	24,852766	29,344329	29,183963
15-01-2019 13:57:10	3,065	24,802534	29,304952	29,160284
15-01-2019 13:57:40	3,066	24,887231	29,339365	29,21817
15-01-2019 13:58:10	3,066	24,969091	29,365772	29,268085
15-01-2019 13:58:40	3,066	24,963836	29,331833	29,268085
15-01-2019 13:59:10	3,066	24,998016	29,352703	29,273304
15-01-2019 13:59:40	3,066	24,916488	29,329197	29,257625
15-01-2019 14:00:10	3,066	24,926742	29,280704	29,231338
15-01-2019 14:00:40	3,065	24,860811	29,271423	29,220777
15-01-2019 14:01:10	3,066	24,90028	29,245304	29,181606
15-01-2019 14:01:40	3,067	24,876695	29,25064	29,168657
15-01-2019 14:02:10	3,067	24,887451	29,28609	29,134868
15-01-2019 14:02:40	3,066	24,959009	29,321825	29,231966
15-01-2019 14:03:10	3,066	25,006349	29,2931	29,216285
15-01-2019 14:03:40	3,066	24,969541	29,306144	29,17972
15-01-2019 14:04:10	3,068	24,861312	29,282365	29,135032
15-01-2019 14:04:40	3,066	24,874393	29,271869	29,116741
15-01-2019 14:05:10	3,067	24,924373	29,224851	29,129789
15-01-2019 14:05:40	3,067	24,900697	29,196119	29,124569
15-01-2019 14:06:10	3,066	24,919117	29,201336	29,074924
15-01-2019 14:06:40	3,066	24,845459	29,19351	29,05665
15-01-2019 14:07:10	3,067	24,877046	29,138651	29,103662
15-01-2019 14:07:40	3,066	24,845459	29,167385	29,061874
15-01-2019 14:08:10	3,065	24,924596	29,162368	29,096061
15-01-2019 14:08:40	3,066	24,924759	29,196514	29,088403
15-01-2019 14:09:10	3,067	24,869588	29,165205	29,130251
15-01-2019 14:09:40	3,066	24,940614	29,175647	29,106735
15-01-2019 14:10:10	3,066	24,945869	29,196552	29,114566

15-01-2019 14:10:40	3,066	24,993215	29,154766	29,140691
15-01-2019 14:11:10	3,067	24,985307	29,167814	29,135471
15-01-2019 14:11:40	3,067	24,914287	29,173036	29,104124
15-01-2019 14:12:10	3,067	24,927452	29,159986	29,11981
15-01-2019 14:12:40	3,067	24,937757	29,151964	29,059589
15-01-2019 14:13:10	3,066	24,895443	29,128292	29,024166
15-01-2019 14:13:40	3,066	24,929653	29,086502	29,047685
15-01-2019 14:14:10	3,067	24,963928	29,089212	29,056919
15-01-2019 14:14:40	3,067	24,806329	29,124691	29,080606
15-01-2019 14:15:10	3,067	24,925256	29,207454	29,167284
15-01-2019 14:15:40	3,067	25,009433	29,194404	29,190796
15-01-2019 14:16:10	3,067	25,033104	29,168281	29,154235
15-01-2019 14:16:40	3,066	24,969974	29,168281	29,151601
15-01-2019 14:17:10	3,066	24,998901	29,155206	29,130722
15-01-2019 14:17:40	3,066	24,930305	29,113247	29,099239
15-01-2019 14:18:10	3,066	24,943243	29,071266	29,069057
15-01-2019 14:18:40	3,067	24,901149	29,066045	29,037681
15-01-2019 14:19:10	3,067	24,940614	29,052969	29,061201
15-01-2019 14:19:40	3,066	24,930536	29,126535	29,091646
15-01-2019 14:20:10	3,066	25,043846	29,167225	29,083965
15-01-2019 14:20:40	3,066	25,05196	29,181802	29,099826
15-01-2019 14:21:10	3,067	25,015131	29,181802	29,07892
15-01-2019 14:21:40	3,065	25,122957	29,194852	29,058014
15-01-2019 14:22:10	3,067	25,09404	29,184414	29,037128
15-01-2019 14:22:40	3,067	25,072654	29,080942	29,025152
15-01-2019 14:23:10	3,066	25,051494	29,061275	28,991113
15-01-2019 14:23:40	3,066	25,030477	29,082182	28,928398
15-01-2019 14:24:10	3,067	25,046239	29,014236	28,951921
15-01-2019 14:24:40	3,065	25,069906	28,985489	28,805534
15-01-2019 14:25:10	3,065	25,081115	29,057972	28,514509
15-01-2019 14:25:40	3,067	25,136562	29,056873	
15-01-2019 14:26:10	3,065	25,097114	29,101274	
15-01-2019 14:26:40	3,067	25,152322	29,103885	
15-01-2019 14:27:10	3,066	25,144168	29,018766	
15-01-2019 14:27:40	3,066	25,057214	29,014709	
15-01-2019 14:28:10	3,067	25,007246	29,017318	
15-01-2019 14:28:40	3,067	25,015131	29,040842	
15-01-2019 14:29:10	3,067	25,018118	29,068584	
15-01-2019 14:29:40	3,066	25,105236	29,095028	
15-01-2019 14:30:10	3,067	25,121263	29,088686	
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15-01-2019 14:31:10	3,067	25,089643	29,131767	
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15-01-2019 14:35:40	3,067	25,153228	29,145311
15-01-2019 14:36:10	3,067	25,155534	29,04841
15-01-2019 14:36:40	3,066	25,176466	29,054842
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15-01-2019 14:38:10	3,066	25,181821	29,041896
15-01-2019 14:38:40	3,066	25,274698	29,152382
15-01-2019 14:39:10	3,067	25,264169	29,128866
15-01-2019 14:39:40	3,067	25,248413	29,115818
15-01-2019 14:40:10	3,066	25,256221	29,085735
15-01-2019 14:40:40	3,066	25,184879	29,016199
15-01-2019 14:41:10	3,067	25,113849	29,008291
15-01-2019 14:41:40	3,066	25,100692	28,992626
15-01-2019 14:42:10	3,067	25,190696	29,040231
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15-01-2019 14:43:10	3,066	25,488012	29,082347
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15-01-2019 14:45:41	3,067	25,314611	28,990944
15-01-2019 14:46:11	3,065	25,343881	28,992593
15-01-2019 14:46:41	3,067	25,338756	29,014917
15-01-2019 14:47:11	3,067	25,286195	28,978317
15-01-2019 14:47:41	3,067	25,307228	29,004451
15-01-2019 14:48:11	3,066	25,228376	28,983566
15-01-2019 14:48:41	3,066	25,257164	28,982151
15-01-2019 14:49:11	3,066	25,185884	28,946659
15-01-2019 14:49:41	3,067	25,281316	29,042778
15-01-2019 14:50:11	3,066	25,268316	29,010202
15-01-2019 14:50:41	3,065	25,242031	29,012815
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15-01-2019 14:51:41	3,066	25,165796	28,96838
15-01-2019 14:52:11	3,066	25,291973	28,98929
15-01-2019 14:52:41	3,065	25,165796	28,999759
15-01-2019 14:53:11	3,066	25,139886	29,04195
15-01-2019 14:53:41	3,066	25,284599	29,065614
15-01-2019 14:54:11	3,066	25,281974	29,018571
15-01-2019 14:54:41	3,066	25,345062	29,034259
15-01-2019 14:55:11	3,067	25,305631	29,036869
15-01-2019 14:55:41	3,066	25,247814	28,984607
15-01-2019 14:56:11	3,067	25,253065	28,950615
15-01-2019 14:56:41	3,066	25,342361	28,96235
15-01-2019 14:57:11	3,066	25,318584	28,919136
15-01-2019 14:57:41	3,067	25,313001	28,861364
15-01-2019 14:58:11	3,067	25,374347	28,92622

15-01-2019 14:58:41	3,067	25,421781	28,932863
15-01-2019 14:59:11	3,068	25,440179	28,914583
15-01-2019 14:59:41	3,066	25,492723	28,906725
15-01-2019 15:00:11	3,067	25,293018	28,893667
15-01-2019 15:00:41	3,066	25,39813	28,896276
15-01-2019 15:01:11	3,066	25,350776	28,837431
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15-01-2019 15:02:11	3,067	25,277654	28,866663
15-01-2019 15:02:41	3,066	25,314594	28,854997
15-01-2019 15:03:11	3,065	25,338222	28,844528
15-01-2019 15:03:41	3,067	25,31722	28,847137
15-01-2019 15:04:11	3,066	25,296188	28,865446
15-01-2019 15:04:41	3,067	25,364502	28,886362
15-01-2019 15:05:11	3,065	25,346124	28,860221
15-01-2019 15:05:41	3,066	25,325098	28,868053
15-01-2019 15:06:11	3,066	25,272178	28,798557
15-01-2019 15:06:41	3,067	25,298267	28,770921
15-01-2019 15:07:11	3,067	25,282512	28,763082
15-01-2019 15:07:41	3,066	25,306169	28,739551
15-01-2019 15:08:11	3,066	25,279888	28,739551
15-01-2019 15:08:41	3,065	25,361351	28,671552
15-01-2019 15:09:11	3,066	25,348343	28,713548
15-01-2019 15:09:41	3,067	25,295644	28,676805
15-01-2019 15:10:11	3,065	25,35124	28,688917
15-01-2019 15:10:41	3,066	25,349149	28,796632
15-01-2019 15:11:11	3,066	25,396585	28,779718
15-01-2019 15:11:41	3,065	25,173126	28,757476
15-01-2019 15:12:11	3,067	25,27799	28,707594
15-01-2019 15:12:41	3,066	25,325098	28,638122
15-01-2019 15:13:11	3,067	25,424951	28,643346
15-01-2019 15:13:41	3,066	25,456474	28,606741
15-01-2019 15:14:11	3,066	25,417051	28,606741
15-01-2019 15:14:41	3,066	25,382902	28,596264
15-01-2019 15:15:11	3,066	25,267282	28,59888
15-01-2019 15:15:41	3,065	25,243625	28,564884
15-01-2019 15:16:11	3,067	25,304067	28,502111
15-01-2019 15:16:41	3,067	25,301441	28,525632
15-01-2019 15:17:11	3,066	25,267282	28,523021
15-01-2019 15:17:41	3,067	25,183149	28,530887
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15-01-2019 15:18:41	3,066	25,238374	28,491634
15-01-2019 15:19:11	3,067	25,235748	28,50473
15-01-2019 15:19:41	3,066	25,209234	28,507183
15-01-2019 15:20:11	3,067	25,222046	28,417965
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15-01-2019 15:21:11	3,067	25,235201	28,410122
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15-01-2019 15:23:41	3,066	25,266735	28,318523
15-01-2019 15:24:11	3,067	25,217182	28,31497
15-01-2019 15:24:41	3,066	25,101245	28,334364
15-01-2019 15:25:11	3,068	25,206676	28,343774
15-01-2019 15:25:41	3,066	25,21746	28,332225
15-01-2019 15:26:11	3,066	25,109958	28,391351
15-01-2019 15:26:41	3,067	25,199491	28,356117
15-01-2019 15:27:11	3,066	25,191587	28,32995
15-01-2019 15:27:41	3,066	25,241529	28,371828
15-01-2019 15:28:11	3,066	25,362434	28,327333
15-01-2019 15:28:41	3,066	25,328279	28,316875
15-01-2019 15:29:11	3,066	25,254684	28,277608
15-01-2019 15:29:41	3,066	25,259937	28,298549
15-01-2019 15:30:11	3,066	25,270441	28,264534
15-01-2019 15:30:41	3,066	25,220497	28,277608
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15-01-2019 15:31:41	3,066	25,254684	28,259304
15-01-2019 15:32:11	3,066	25,267814	28,251434
15-01-2019 15:32:41	3,066	25,238906	28,233129
15-01-2019 15:33:11	3,067	25,262563	28,196468
15-01-2019 15:33:41	3,066	25,283592	28,186004
15-01-2019 15:34:11	3,067	25,24665	28,195078
15-01-2019 15:34:41	3,067	25,307088	28,195078
15-01-2019 15:35:11	3,066	25,2674	28,162084
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15-01-2019 15:36:41	3,067	25,267814	28,151985
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15-01-2019 15:37:41	3,066	25,275716	28,154598
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15-01-2019 15:38:41	3,066	25,272815	28,121618
15-01-2019 15:39:11	3,067	25,223148	28,144113
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15-01-2019 15:40:41	3,067	25,211813	27,953548
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15-01-2019 15:42:11	3,067	25,101133	27,904855
15-01-2019 15:42:41	3,066	25,21693	27,912857
15-01-2019 15:43:11	3,066	25,177375	27,881277
15-01-2019 15:43:41	3,065	25,122169	27,902235
15-01-2019 15:44:11	3,065	25,030128	27,917961
15-01-2019 15:44:41	3,065	25,080091	27,928428
15-01-2019 15:45:11	3,067	25,056423	27,928428
15-01-2019 15:45:41	3,066	25,103756	27,89962
15-01-2019 15:46:11	3,067	25,106386	27,883895

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15-01-2019 15:48:11	3,066	25,080091	27,8577
15-01-2019 15:48:41	3,066	25,13793	27,844614
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15-01-2019 15:50:11	3,066	25,098503	27,855081
15-01-2019 15:50:41	3,067	25,09843	27,820963
15-01-2019 15:51:11	3,067	25,150886	27,782867
15-01-2019 15:51:41	3,067	25,153556	27,845756
15-01-2019 15:52:11	3,065	25,071544	27,790271
15-01-2019 15:52:41	3,067	25,079551	27,781194
15-01-2019 15:53:11	3,067	25,100587	27,783815
15-01-2019 15:53:42	3,065	25,140037	27,762849
15-01-2019 15:54:11	3,067	25,074298	27,773344
15-01-2019 15:54:42	3,068	25,137415	27,741882
15-01-2019 15:55:12	3,067	25,12688	27,702592
15-01-2019 15:55:42	3,067	25,12951	27,728796
15-01-2019 15:56:12	3,065	25,140037	27,710443
15-01-2019 15:56:42	3,066	25,150545	27,713066
15-01-2019 15:57:12	3,068	25,11375	27,715679
15-01-2019 15:57:42	3,066	25,187364	27,726177
15-01-2019 15:58:12	3,067	25,132133	27,692117
15-01-2019 15:58:42	3,067	25,161075	27,739263
15-01-2019 15:59:12	3,067	25,174209	27,681625
15-01-2019 15:59:42	3,067	25,102975	27,648641
15-01-2019 16:00:12	3,067	25,089426	27,607652
15-01-2019 16:00:42	3,065	25,126299	27,614227
15-01-2019 16:01:12	3,067	25,063259	27,620813
15-01-2019 16:01:42	3,065	25,065887	27,612957
15-01-2019 16:02:12	3,066	25,073793	27,62343
15-01-2019 16:02:42	3,065	25,050125	27,584127
15-01-2019 16:03:12	3,066	25,034338	27,591983
15-01-2019 16:03:42	3,067	25,008041	27,591983
15-01-2019 16:04:12	3,067	25,000158	27,584127
15-01-2019 16:04:42	3,067	24,994903	27,57625
15-01-2019 16:05:12	3,065	24,997532	27,552681
15-01-2019 16:05:42	3,066	24,989624	27,560535
15-01-2019 16:06:12	3,066	25,060632	27,568391
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15-01-2019 16:07:12	3,066	25,079046	27,571012
15-01-2019 16:07:42	3,067	25,063259	27,536945
15-01-2019 16:08:12	3,067	25,063259	27,542179
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15-01-2019 16:09:42	3,066	25,091793	27,486749
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15-01-2019 16:11:12	3,067	25,039095	27,515457
15-01-2019 16:11:42	3,066	25,096933	27,486599
15-01-2019 16:12:12	3,066	24,752382	27,502336
15-01-2019 16:12:42	3,067	24,641843	27,499719
15-01-2019 16:13:12	3,066	24,631326	27,494482
15-01-2019 16:13:42	3,066	24,733957	27,494482
15-01-2019 16:14:12	3,065	24,670812	27,483978
15-01-2019 16:14:42	3,065	24,765525	27,499719
15-01-2019 16:15:12	3,067	24,731395	27,536476
15-01-2019 16:15:42	3,066	24,204975	27,56015
15-01-2019 16:16:12	3,065	23,99912	27,516586
15-01-2019 16:16:42	3,065	24,267498	27,509693
15-01-2019 16:17:12	3,065	24,227975	27,45202
15-01-2019 16:17:42	3,065	24,15158	27,501833
15-01-2019 16:18:12	3,066	24,317514	27,51231
15-01-2019 16:18:42	3,067	24,380731	27,517547
15-01-2019 16:19:12	3,066	24,599231	27,51231
15-01-2019 16:19:42	3,066	24,391254	27,525404
15-01-2019 16:20:12	3,067	24,269436	27,431755
15-01-2019 16:20:42	3,066	24,079885	27,431793
15-01-2019 16:21:12	3,066	24,137914	27,454122
15-01-2019 16:21:42	3,067	24,101038	27,517055
15-01-2019 16:22:12	3,066	24,024622	27,472484
15-01-2019 16:22:42	3,067	23,895479	27,480339
15-01-2019 16:23:12	3,065	23,755737	27,538005
15-01-2019 16:23:42	3,066	23,870782	27,37459
15-01-2019 16:24:12	3,066	24,139577	27,413932
15-01-2019 16:24:42	3,067	24,084535	27,395818
15-01-2019 16:25:12	3,067	24,179575	27,443134
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15-01-2019 16:27:42	3,067	23,983751	27,342765
15-01-2019 16:28:12	3,068	24,263034	27,36502
15-01-2019 16:28:42	3,066	24,160658	27,413793
15-01-2019 16:29:12	3,066	24,281812	27,377094
15-01-2019 16:29:42	3,065	24,460878	27,392835
15-01-2019 16:30:12	3,067	24,371366	27,395456
15-01-2019 16:30:42	3,066	24,026287	27,411172
15-01-2019 16:31:12	3,066	23,844038	27,374162
15-01-2019 16:31:42	3,066	23,848856	27,326553
15-01-2019 16:32:12	3,066	23,880481	27,280616
15-01-2019 16:32:42	3,066	24,107307	27,339782
15-01-2019 16:33:12	3,066	24,302429	27,368738
15-01-2019 16:33:42	3,066	24,202333	27,366119
15-01-2019 16:34:12	3,066	24,128566	27,350374

15-01-2019 16:34:42	3,066	24,197069	27,282205
15-01-2019 16:35:12	3,067	24,265426	27,299163
15-01-2019 16:35:42	3,067	24,152042	27,317394
15-01-2019 16:36:12	3,066	24,069688	27,179079
15-01-2019 16:36:42	3,067	24,146194	27,235563
15-01-2019 16:37:12	3,066	24,317764	27,224025
15-01-2019 16:37:42	3,066	24,259803	27,250253
15-01-2019 16:38:12	3,065	24,330919	27,218784
15-01-2019 16:38:42	3,066	24,270353	27,203035
15-01-2019 16:39:12	3,067	24,262458	27,252874
15-01-2019 16:39:42	3,067	24,251909	27,231886
15-01-2019 16:40:12	3,067	24,154226	27,240877
15-01-2019 16:40:42	3,067	24,11403	27,105163
15-01-2019 16:41:12	3,067	24,166721	27,131397
15-01-2019 16:41:42	3,067	24,061428	27,180006
15-01-2019 16:42:12	3,067	24,051126	27,17756
15-01-2019 16:42:42	3,067	24,119754	27,181591
15-01-2019 16:43:12	3,066	24,177707	27,15798
15-01-2019 16:43:42	3,066	24,304142	27,181591
15-01-2019 16:44:12	3,068	24,106567	27,2052
15-01-2019 16:44:42	3,065	24,109199	27,176671
15-01-2019 16:45:12	3,067	23,897714	27,100971

Filter-3-D2 - [°C]	Filter-4-R - [°C]	Køler-1-H - [°C]	Køler-2-D - [°C]	Gasm-H - [°C]
4	5	6	7	8
Split train rem. filter temp	Room blank filter temp	Main train dryer outlet temperature	Split train dryer outlet temperature	Main train dry gas meter temperature
	24,783006	20,600311	22,787486	26,083432
	24,806691	19,659482	22,091639	26,996235
	24,88161	19,148423	21,564511	27,205897
	24,959621	18,991599	21,156418	27,292607
	24,947719	18,781081	20,78489	27,295298
	24,999425	18,701484	20,535569	27,342707
	25,048036	18,517505	20,291148	27,307419
	25,061174	18,384141	20,078469	27,272093
	25,081325	18,397845	19,913901	27,314278
	25,058913	18,304462	19,738358	27,309126
	25,090516	18,187083	19,645251	27,262043
	25,16059	18,208776	19,493786	27,301558
	25,193399	18,099349	19,392661	27,275452
	25,203904	18,059322	19,307442	27,241413
	25,259496	18,062297	19,225151	27,237742
	25,26212	18,046357	19,110686	27,245713
	25,230554	18,059695	18,974772	27,23655
	25,241136	18,003684	18,913502	27,231381
	25,363774	17,980005	18,911127	27,23946
	25,378186	17,971976	18,813864	27,221177
	25,383411	17,963977	18,753884	27,215994
	25,34925	18,012038	18,673878	27,218613
	25,332328	18,014846	18,637997	27,233153
	25,420648	17,991086	18,671561	27,201908
	25,394311	18,004422	18,596938	27,229493
	25,404815	17,98842	18,548912	27,182339
	25,402187	17,961696	18,482199	27,161381
	25,463031	18,023475	18,463843	27,168217
	25,436752	18,092931	18,367886	27,222037
	25,394696	18,047544	18,317171	27,187994
	25,371064	18,042211	18,22373	27,180142
	25,406774	18,03709	18,222578	27,1803
	25,495029	17,99458	18,245453	27,179179
	25,439796	18,026611	18,162735	27,177929
	25,460822	17,965211	18,1761	27,172696
	25,450351	17,925203	18,152125	27,154417
	25,499402	18,011022	18,152439	27,191355
	25,453345	18,013688	18,077734	27,215023
	25,442819	17,989658	18,013621	27,212408
	25,503274	17,936256	17,9602	27,175747
	25,440194	17,984321	17,896098	27,178366
	25,529958	18,040759	17,985932	27,217965
	25,535234	17,987436	18,027417	27,225935

25,501058	18,038163	18,003399	27,215468
25,548356	17,976741	18,054123	27,199746
25,493182	18,000772	17,949952	27,184019
25,558076	18,054618	17,998423	27,24461
25,556668	18,065286	17,985129	27,23947
25,538272	18,059953	17,971785	27,229006
25,585567	18,041257	17,982458	27,197554
25,530397	18,027923	17,95575	27,21328
25,546273	18,052051	17,918456	27,208155
25,57549	18,08711	17,953543	27,24778
25,549218	18,055059	17,932167	27,24778
25,517696	18,03103	17,916129	27,253016
25,50982	18,036388	17,881407	27,232058
25,486169	18,03103	17,862696	27,25825
25,523112	18,055219	17,876233	27,279379
25,562803	18,044858	17,932644	27,300629
25,557553	18,050193	17,929949	27,303244
25,552303	18,052861	17,881882	27,313712
25,541778	18,020829	17,897896	27,292756
25,552303	18,004802	17,889889	27,290141
25,504939	18,028831	17,89659	27,321633
25,518033	17,994132	17,91001	27,313818
25,560411	18,013105	17,928957	27,33763
25,597413	18,039979	17,930434	27,35084
25,613183	18,053313	17,911726	27,37179
25,631555	18,064006	17,901051	27,377024
25,594789	18,066673	17,901051	27,363942
25,569751	18,069341	17,885075	27,37843
25,573667	18,085366	17,883778	27,377135
25,56314	18,085366	17,894453	27,379776
25,569791	18,074737	17,842385	27,392918
25,548904	18,120229	17,79175	27,438822
25,637277	18,144546	17,826725	27,456049
25,650422	18,11519	17,829398	27,442946
25,63203	18,096523	17,800005	27,453434
25,57676	18,152572	17,774689	27,47711
25,587259	18,147237	17,766678	27,490189
25,597755	18,109855	17,785393	27,490189
25,634547	18,11519	17,764012	27,492804
25,592506	18,12588	17,747965	27,542542
25,59513	18,136548	17,750636	27,52685
25,645047	18,080495	17,814785	27,505902
25,605655	18,141879	17,812115	27,524235
25,643935	18,107362	17,821612	27,54011
25,642829	18,152988	17,796505	27,574397
25,698056	18,139709	17,804593	27,571822
25,669166	18,174398	17,77253	27,597994
25,663896	18,179731	17,719082	27,624167

	25,716424	18,145042	17,729762	27,595381
	25,698056	18,139709	17,708376	27,592766
	25,65602	18,209085	17,697695	27,618937
	25,645526	18,227771	17,678978	27,632008
	25,638931	18,219772	17,715081	27,653021
	25,596824	18,227771	17,719124	27,666155
	25,644113	18,129018	17,743182	27,653082
	25,638931	18,134418	17,748587	27,647906
	25,64038	18,158572	17,787428	27,680706
	25,688024	18,1909	17,831789	27,705782
	25,711665	18,188234	17,842492	27,711012
	25,706418	18,193567	17,813103	27,718857
	25,706418	18,1909	17,818442	27,724108
	25,703792	18,193567	17,826451	27,729336
	25,69192	18,177568	17,822485	27,72938
	25,705005	18,188234	17,823859	27,76084
	25,707629	18,201589	17,81585	27,742543
	25,694509	18,222943	17,791798	27,739928
	25,686921	18,295226	17,796023	27,776738
	25,684415	18,335372	17,749358	27,822602
	25,735776	18,284795	17,765522	27,8214
	25,754165	18,282132	17,744139	27,842329
	25,712136	18,290153	17,728094	27,842329
	25,701638	18,266135	17,736105	27,863238
	25,743594	18,220765	17,790919	27,848952
	25,742257	18,204744	17,808335	27,855534
	25,689729	18,244786	17,746857	27,884306
	25,742257	18,204744	17,786953	27,860764
	25,681857	18,252782	17,754889	27,886917
	25,753177	18,250488	17,792626	27,904202
27,11632	25,788802	18,263965	17,800759	27,916069
27,206981	25,752048	18,28798	17,79809	27,921292
27,288202	25,749398	18,298642	17,766028	27,929156
27,398315	25,746721	18,274652	17,794117	27,951477
27,476987	25,745382	18,271962	17,814204	27,947588
27,571361	25,721744	18,263965	17,8035	27,939724
27,652871	25,708598	18,309333	17,766098	27,976349
27,730474	25,733766	18,309514	17,770256	27,983035
27,765989	25,772084	18,341724	17,75573	28,009333
27,855094	25,805053	18,32319	17,76655	28,000277
27,896999	25,812923	18,285846	17,769223	28,009459
27,932237	25,797181	18,288512	17,646269	28,035605
27,936128	25,781362	18,283155	17,647646	28,046128
27,985898	25,798391	18,248475	17,662375	28,037011
27,978049	25,766883	18,248475	17,654362	28,052687
28,035665	25,787894	18,216457	17,731875	28,023928
28,156553	25,782647	18,261831	17,747921	28,055298
28,201328	25,814525	18,32619	17,789627	28,097407

28,214408	25,894838	18,310373	17,836563	28,10537
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28,192002	25,855466	18,387742	17,801834	28,132861
28,227332	25,860635	18,342384	17,851283	28,132935
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28,318937	25,843555	18,358401	17,898083	28,142102
28,304628	25,777898	18,390407	17,844651	28,157795
28,416486	25,827859	18,353116	17,820668	28,152634
28,434787	25,855972	18,420291	17,807694	28,213087
28,458339	25,827089	18,409608	17,81573	28,223559
28,453109	25,832338	18,430951	17,794346	28,220946
28,412389	25,837585	18,409608	17,794346	28,237954
28,413667	25,828319	18,364276	17,807778	28,234126
28,452932	25,828319	18,326911	17,786396	28,213236
28,474313	25,833564	18,316249	17,791735	28,22629
28,57137	25,870696	18,335256	17,79872	28,252701
28,521657	25,872243	18,396812	17,786883	28,299879
28,534751	25,90377	18,386152	17,818941	28,276354
28,587075	25,909015	18,394145	17,826975	28,284211
28,543817	25,869621	18,460841	17,805594	28,302489
28,495296	25,889278	18,426175	17,809632	28,299954
28,541442	25,860332	18,436835	17,800309	28,302637
28,580899	25,905311	18,471784	17,825932	28,326367
28,60852	25,897563	18,471906	17,816681	28,34606
28,590196	25,899043	18,501399	17,79546	28,370974
28,621612	25,914804	18,448056	17,79813	28,347479
28,605905	25,909536	18,464069	17,79546	28,352702
28,61766	25,906913	18,453387	17,830191	28,339623
28,622739	25,902936	18,448056	17,840891	28,348795
28,721458	25,85563	18,461381	17,822258	28,373736
28,713687	25,917897	18,525888	17,878777	28,41462
28,708461	25,925849	18,523284	17,846774	28,429015
28,682309	25,902221	18,493949	17,836096	28,405499
28,666606	25,910089	18,469945	17,865487	28,397669
28,705823	25,915336	18,443273	17,89754	28,40289
28,67967	25,907466	18,485957	17,862816	28,415966
28,753318	25,894326	18,507299	17,905573	28,418578
28,784837	25,934123	18,566379	17,983471	28,468632
28,745622	25,915895	18,603862	18,010319	28,481842
28,769136	25,989404	18,561189	18,074433	28,481842
28,745622	25,968398	18,57187	18,069071	28,479231
28,732532	25,950017	18,550533	18,042365	28,471377
28,693311	25,965776	18,547866	18,023686	28,48967
28,722081	25,981511	18,491866	18,047726	28,476624
28,708921	25,936902	18,542539	17,991616	28,483193
28,64342	25,927657	18,539874	17,952931	28,489752
28,699027	25,919715	18,545203	17,964985	28,481972
28,714778	25,966262	18,62836	18,002819	28,538538

28,709552	25,984702	18,639104	18,010905	28,545107
28,706939	25,979457	18,639104	18,010905	28,552937
28,686008	25,966321	18,649759	17,986864	28,537278
28,680782	25,968944	18,657775	17,99487	28,545107
28,63108	25,955833	18,636441	17,99487	28,550326
28,634885	26,013574	18,623096	18,032277	28,522936
28,670798	25,943963	18,639104	17,980212	28,563454
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28,689191	26,040399	18,677011	18,03553	28,605767
28,670875	26,02202	18,687665	18,032862	28,592696
28,704869	26,016776	18,639672	18,056902	28,584866
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28,626191	25,983852	18,589011	18,064988	28,611111
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28,551746	25,965471	18,647689	18,094363	28,608508
28,513704	25,962922	18,695733	18,097107	28,632103
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28,611268	26,019897	18,714839	18,124171	28,675503
28,603429	26,038335	18,68827	18,137625	28,695137
28,553571	26,006843	18,706912	18,121596	28,686022
28,514259	26,00938	18,68827	18,147	28,691328
28,49332	25,997546	18,664273	18,204447	28,68484
28,438369	26,010658	18,685605	18,183083	28,695275
28,446239	26,01855	18,69626	18,201779	28,690058
28,409589	25,966052	18,746911	18,196444	28,703102
28,399127	25,952916	18,7709	18,188418	28,721383
28,401744	25,942428	18,760249	18,151047	28,744887
28,359859	25,958162	18,768237	18,15905	28,73445
28,359859	26,010658	18,728242	18,156382	28,697882
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28,393901	25,98968	18,728242	18,119009	28,713559
28,372958	25,973922	18,760249	18,030863	28,742278
28,344167	25,987058	18,744247	18,030863	28,726599
28,346788	26,015929	18,733594	18,049567	28,718777
28,382018	25,997546	18,71759	18,06024	28,700491
28,292876	25,946315	18,722917	18,026894	28,73976
28,281123	25,969865	18,640275	18,081684	28,737204
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28,224801	25,946237	18,664273	18,025605	28,778984
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28,210508	25,946237	18,632283	18,062983	28,760706

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28,232646	25,956752	18,64294	18,049643	28,77377
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28,218353	26,016057	18,619155	18,091235	28,770037
28,229057	25,977811	18,624347	18,060397	28,786894
28,238378	25,995053	18,629836	18,067198	28,793538
28,28836	26,007053	18,640634	18,094048	28,802765
28,24524	25,992812	18,702108	18,082135	28,845976
28,237395	26,045366	18,664861	18,175673	28,821209
28,284526	26,050634	18,648881	18,175673	28,808144
28,229552	25,990249	18,710189	18,124939	28,829031
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28,171954	26,000762	18,686195	18,146305	28,849921
28,187652	26,027009	18,622218	18,143637	28,826426
28,179799	25,990249	18,670213	18,0929	28,839466
28,171954	25,998141	18,680867	18,103596	28,831644
28,122203	25,998141	18,678205	18,087563	28,862961
28,137895	26,032256	18,659534	18,07956	28,818577
28,143127	25,982381	18,710189	18,050185	28,860352
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28,091979	26,037502	18,584872	18,098235	28,857743
28,097211	26,037418	18,552814	18,116843	28,859013
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28,080291	25,935128	18,590226	18,066193	28,886454
28,069621	25,974517	18,534232	18,082226	28,889059
28,075057	25,907384	18,547404	18,067423	28,87982
28,041999	25,924634	18,579545	18,0929	28,899514
27,958188	25,909923	18,563333	18,072678	28,883706
27,897651	25,965049	18,549985	18,126086	28,847151
27,890992	25,921497	18,544437	18,119225	28,822171
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27,834544	25,917442	18,512357	18,105803	28,818217
27,842399	25,938369	18,504283	18,095028	28,823349
27,860748	25,909494	18,498954	18,079018	28,836413
27,881713	25,888488	18,544275	18,068322	28,862515
27,886949	25,862233	18,584285	18,05765	28,878188
27,876479	25,877996	18,573604	18,062983	28,865124
27,855512	25,885863	18,54161	18,060316	28,878188
27,837167	25,888488	18,528287	18,03361	28,865124

27,813579	25,925254	18,498954	18,079018	28,852084
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27,795253	25,875373	18,544275	18,054982	28,880793
27,842399	25,919986	18,512279	18,05765	28,862515
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27,813579	25,925254	18,501619	18,065653	28,883398
27,792556	25,891109	18,560283	18,03361	28,891226
27,774135	25,893682	18,565524	18,06024	28,883324
27,772733	25,929019	18,5148	18,085589	28,897646
27,746158	25,842221	18,533227	18,029202	28,858178
27,747512	25,799911	18,522355	18,023703	28,873719
27,755365	25,843286	18,52502	18,038357	28,869759
27,758008	25,819652	18,530351	18,057036	28,874974
27,752748	25,832792	18,519693	18,035689	28,893256
27,742276	25,809158	18,493022	18,033022	28,893256
27,718684	25,835418	18,474345	18,043696	28,888012
27,70033	25,845908	18,466352	18,046364	28,869759
27,72392	25,848531	18,471681	18,086436	28,872368
27,713451	25,848531	18,469016	18,081074	28,872368
27,697709	25,864293	18,442346	18,113139	28,869759
27,726539	25,856401	18,471681	18,115807	28,880188
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27,726539	25,843286	18,511699	18,139841	28,893256
27,663644	25,827522	18,533014	18,12381	28,921961
27,672643	25,861671	18,519693	18,155848	28,91935
27,623845	25,847055	18,532872	18,125023	28,891827
27,608041	25,81264	18,524581	18,090014	28,890269
27,61592	25,788842	18,516435	18,068509	28,875727
27,626395	25,800716	18,527116	18,064461	28,861342
27,629014	25,790195	18,519099	18,048453	28,890051
27,613275	25,798091	18,53511	18,040423	28,897871
27,629014	25,784948	18,524427	18,075159	28,861342
27,626395	25,7797	18,527116	18,067131	28,900481
27,613275	25,77708	18,532445	18,083163	28,897871
27,608041	25,787572	18,511104	18,107201	28,861342
27,608041	25,792821	18,51377	18,088499	28,858733
27,610656	25,782325	18,508441	18,077828	28,882227
27,623777	25,769208	18,508441	18,077828	28,890051
27,623777	25,782325	18,500447	18,029751	28,882227
27,597562	25,803336	18,529781	17,984335	28,882227
27,5792	25,787572	18,51377	17,997706	28,890051
27,575242	25,811208	18,524427	18,021746	28,884837
27,59098	25,803266	18,532355	18,021668	28,876938
27,555274	25,791415	18,532279	17,996169	28,888575
27,532874	25,754377	18,502652	17,973231	28,864787
27,507877	25,771339	18,489249	17,978478	28,839945
27,547195	25,752872	18,523864	17,986435	28,816393

27,557695	25,745004	18,553197	18,013146	28,865969
27,534097	25,731883	18,585189	18,021151	28,847714
27,541953	25,752872	18,550533	18,117302	28,829436
27,523593	25,679353	18,641179	18,106606	28,860752
27,515737	25,71087	18,617181	18,138644	28,865969
27,499994	25,71874	18,643844	18,168038	28,845107
27,515737	25,731883	18,654523	18,186711	28,860752
27,528859	25,747626	18,662513	18,170704	28,865969
27,532827	25,737128	18,675855	18,184042	28,876423
27,555124	25,745004	18,686509	18,189377	28,873816
27,516813	25,730529	18,683761	18,14255	28,868437
27,502092	25,680347	18,672818	18,150284	28,843396
27,441787	25,64203	18,685929	18,106041	28,849739
27,488992	25,697189	18,667285	18,156777	28,828854
27,507329	25,668298	18,696611	18,154086	28,839308
27,502092	25,631509	18,723268	18,151419	28,875843
27,502092	25,655154	18,717941	18,135413	28,888905
27,507329	25,676173	18,723268	18,146082	28,88369
27,449111	25,655154	18,707263	18,178118	28,909792
27,425531	25,599517	18,645534	18,164418	28,887276
27,433391	25,653276	18,584066	18,186943	28,845295
27,470094	25,633611	18,624072	18,166872	28,85702
27,441253	25,604716	18,650735	18,169564	28,9014
27,409787	25,651982	18,634727	18,249657	28,893553
27,470094	25,659879	18,642719	18,270995	28,877903
27,338268	25,638862	18,704053	18,25766	28,919653
27,361852	25,589629	18,615518	18,242508	28,874884
27,364618	25,581756	18,618182	18,293232	28,890526
27,380407	25,584426	18,647508	18,301182	28,895695
27,406635	25,622573	18,636855	18,323834	28,90605
27,425002	25,591027	18,666179	18,323834	28,932146
27,402551	25,564756	18,700828	18,339833	28,934756
27,366786	25,534391	18,684694	18,322384	28,933363
27,307668	25,492019	18,676425	18,310145	28,927945
27,303706	25,507724	18,655019	18,328751	28,913546
27,330074	25,510278	18,652307	18,326008	28,904309
27,340558	25,543224	18,67628	18,325936	28,923769
27,337939	25,543224	18,654971	18,339297	28,934225
27,353685	25,545844	18,657636	18,317936	28,931618
27,348417	25,548473	18,652307	18,373984	28,929011
27,329816	25,537973	18,665628	18,368649	28,955107
27,307178	25,507529	18,649419	18,343132	28,944527
27,245513	25,415237	18,66249	18,274821	28,93651
27,258681	25,451951	18,614446	18,306788	28,929881
27,324321	25,420491	18,678422	18,297425	28,918082
27,31384	25,377153	18,694431	18,280024	28,957171
27,300712	25,408689	18,713071	18,304049	28,94674
27,250865	25,403436	18,710408	18,290692	28,957171

27,250795	25,45337	18,670434	18,33874	28,94674
27,268985	25,433572	18,678344	18,329367	28,953215
27,160981	25,407155	18,688876	18,299889	28,959647
27,203021	25,396274	18,592574	18,302285	28,928065
27,161166	25,36209	18,643235	18,279551	28,965893
27,211021	25,402946	18,592574	18,324864	28,914887
27,192647	25,363509	18,651227	18,29817	28,961871
27,182162	25,400294	18,597903	18,356886	28,935772
27,205781	25,43185	18,592574	18,367577	28,948807
27,203159	25,387166	18,629918	18,332863	28,9723
27,193811	25,358255	18,635246	18,32753	28,9723
27,094897	25,346269	18,656432	18,304753	28,989159
27,12638	25,327445	18,570731	18,312437	28,922322
27,163182	25,285377	18,63738	18,285744	28,935383
27,148841	25,280124	18,661376	18,23898	28,954932
27,134452	25,327485	18,648059	18,256316	28,957461
27,11608	25,344615	18,664041	18,286969	28,937846
27,126563	25,378778	18,634717	18,321659	28,937846
27,171178	25,368274	18,650722	18,302992	28,958731
27,184287	25,318332	18,714696	18,297659	28,969185
27,165509	25,341991	18,698714	18,321659	28,984827
27,151085	25,334964	18,618327	18,342711	28,936266

Gasm-D - [°C]	Gasm-R - [°C]	Gas-Disp - [°C]	Flow-H - [ln/min]	Flow-D - [ln/min]
9	10	11	12	13
Split train dry gas meter temperature	Room blank dry gas meter temperature	Gas-Disp - [°C]	Main train flow rate Flow-H - [ln/min]	Split train flow rate Flow-D - [ln/min]
25,923352	22,964296	24,101399	7,101362	7,081081
26,676514	22,956378	24,067115	7,142527	7,091269
26,839194	22,911596	24,440152	7,286344	7,311521
26,894463	22,977859	24,130742	7,262274	7,286511
26,893271	23,003087	24,054448	7,268644	7,305552
26,936757	23,00201	23,759337	7,278499	7,299988
26,940796	22,996824	23,897904	7,263347	7,290132
26,931656	22,946681	23,945422	7,269583	7,296568
26,952841	23,020868	24,097209	7,244372	7,303876
26,947749	23,018373	24,072337	7,229354	7,311186
26,94385	22,995948	23,962966	7,229354	7,314874
26,945349	23,015981	24,015891	7,202066	7,307229
26,97432	22,989713	24,006818	7,18403	7,328954
26,955992	22,971215	24,062177	7,310816	7,328216
26,962769	22,992551	24,096661	7,301362	7,319433
26,962904	22,995341	24,43409	7,293786	7,314606
26,935419	23,040281	24,062579	7,278499	7,314739
26,928881	23,044271	24,235221	7,265962	7,281081
26,956622	23,0379	24,027211	7,232438	7,276722
26,955374	23,024745	24,147212	7,225532	7,237299
26,96201	23,024835	24,447688	7,195227	7,247422
26,909594	23,064464	24,226395	7,187784	7,220537
26,901833	23,083057	24,18563	7,149903	7,242997
26,957074	23,060781	24,33075	7,147489	7,226772
26,925721	23,056945	24,27686	7,169145	7,220537
26,928337	23,072801	24,25051	7,145209	7,228984
26,912629	23,038449	24,18201	7,136292	7,246685
26,924652	23,094123	24,213841	7,134683	7,246685
26,920903	23,157706	24,169244	7,136963	7,225297
26,892079	23,1366	24,037452	7,205954	7,264788
26,881579	23,133937	24,192967	7,210312	7,245612
26,917099	23,13277	24,303727	7,200859	7,246551
26,934309	23,124986	24,278889	7,240685	7,235086
26,916075	23,179271	24,190747	7,195964	7,246618
26,926552	23,137012	24,248717	7,209239	7,252585
26,917416	23,122508	24,289605	7,210245	7,253926
26,91635	23,174247	24,229193	7,206625	7,256541
26,93088	23,22323	24,189839	7,210379	7,235354
26,919131	23,206094	24,178002	7,195092	7,242931
26,942725	23,184966	24,373	7,209977	7,271224
26,895544	23,227222	24,170104	7,214134	7,28041
26,93385	23,264457	24,191455	7,202401	7,269079
26,966732	23,259351	24,170558	7,191405	7,259357

26,948384	23,280477	24,107289	7,187583	7,246551
26,951025	23,243499	24,051934	7,195227	7,272431
26,93529	23,2963	24,11782	7,20173	7,272766
26,993224	23,322986	24,132592	7,217956	7,262106
26,98028	23,360099	24,560891	7,236863	7,287785
26,98552	23,344278	24,134105	7,293518	7,263447
26,993395	23,309943	24,244788	7,270655	7,280209
26,975045	23,344278	24,297484	7,289964	7,284097
26,997391	23,356242	24,29098	7,283193	7,29154
27,046242	23,39751	24,305852	7,289897	7,306089
27,041005	23,405444	24,311116	7,278634	7,30629
27,038388	23,408082	24,150374	7,301296	7,295429
27,014801	23,439746	24,192527	7,282321	7,303005
27,020039	23,431836	24,14511	7,289696	7,302133
27,043793	23,445195	24,111001	7,290971	7,306827
27,086001	23,479795	24,17455	7,308604	7,295294
27,065062	23,487701	24,121836	7,286009	7,301262
27,093878	23,498271	24,074387	7,283528	7,312929
27,078148	23,500907	24,177184	7,297474	7,302938
27,070298	23,511453	24,356364	7,285338	7,312661
27,093914	23,527356	24,276112	7,30733	7,318226
27,112372	23,522201	24,231412	7,293987	7,295227
27,138773	23,559299	24,244778	7,29734	7,300591
27,162453	23,577888	24,283074	7,277561	7,261436
27,170308	23,577888	24,314688	7,290099	7,315813
27,172923	23,614837	24,285706	7,300022	7,328149
27,183415	23,606904	24,222478	7,304916	7,299116
27,195294	23,625508	24,288472	7,289831	7,313063
27,215018	23,649303	24,245087	7,286009	7,311521
27,204552	23,657211	24,271439	7,301229	7,330429
27,229439	23,64673	24,23852	7,291439	7,295294
27,216429	23,723264	24,217501	7,294859	7,310449
27,272944	23,726108	24,228215	7,293921	7,306626
27,267712	23,705005	24,270385	7,316316	7,316483
27,259837	23,731378	24,209784	7,291775	7,313868
27,291462	23,810676	24,148045	7,275684	7,295429
27,299313	23,821216	24,145413	7,30143	7,284031
27,296698	23,815946	24,211312	7,296133	7,310582
27,315012	23,808042	24,195491	7,285942	7,302938
27,309777	23,847583	24,179692	7,293384	7,295294
27,31765	23,844949	24,092698	7,298882	7,288657
27,356917	23,81858	24,240296	7,286881	7,306759
27,34907	23,863412	24,108523	7,301497	7,285975
27,387167	23,905788	24,175891	7,300357	7,299049
27,451615	23,91657	24,219649	7,293652	7,299854
27,441191	23,948276	24,153819	7,296804	7,303743
27,45427	23,940351	24,224982	7,299821	7,31836
27,449036	23,961444	24,19073	7,292579	7,318092

27,459528	23,942983	24,290845	7,28031	7,317086
27,472603	23,945642	24,293477	7,267101	7,306827
27,469986	23,979903	24,256598	7,255636	7,320439
27,464754	24,014165	24,227614	7,286948	7,306759
27,49885	24,014297	24,306786	7,274544	7,307296
27,48193	24,06051	24,226527	7,282254	7,299183
27,523795	24,036788	24,305573	7,267034	7,287718
27,5173	24,043409	24,554507	7,294725	7,320908
27,537007	24,061935	24,173936	7,267034	7,297507
27,596115	24,085845	24,191222	7,274611	7,287785
27,577811	24,106908	24,286095	7,275616	7,296368
27,598729	24,112197	24,325604	7,282254	7,29154
27,601368	24,156978	24,280829	7,255703	7,291607
27,603981	24,17543	24,286095	7,26328	7,27518
27,622355	24,172908	24,236153	7,251412	7,310582
27,642067	24,213842	24,31399	7,30505	7,257882
27,642067	24,229661	24,292907	7,290032	7,295093
27,642067	24,24282	24,316623	7,278432	7,283829
27,646166	24,307527	24,30493	7,289831	7,310113
27,655424	24,331317	24,328688	7,289897	7,306759
27,675139	24,291862	24,294513	7,299887	7,299384
27,693459	24,305022	24,399894	7,282187	7,302066
27,67252	24,365621	24,499987	7,278298	7,302737
27,70653	24,381408	24,397261	7,278298	7,283896
27,714512	24,37235	24,452771	7,301229	7,295294
27,721085	24,380313	24,37247	7,287484	7,288389
27,7237	24,414571	24,364548	7,270722	7,275516
27,736794	24,377683	24,433049	7,278701	7,268744
27,728928	24,440906	24,396157	7,279706	8,099864
27,771059	24,442445	24,323954	7,312426	7,331904
27,798607	24,445132	24,450452	7,293719	7,18004
27,816929	24,445132	24,397769	7,295462	7,351951
27,798607	24,503085	24,524199	7,293451	7,346922
27,834029	24,490047	24,557294	7,293451	7,352823
27,841936	24,515149	24,47308	7,286009	7,345916
27,852415	24,528327	24,430928	7,29734	7,361539
27,831486	24,544109	24,322923	7,294256	7,336932
27,870858	24,577123	24,341491	7,276756	7,340888
27,870974	24,590423	24,342915	7,270856	7,348129
27,89332	24,585214	24,382491	7,274477	7,340687
27,924702	24,573405	24,339055	7,270722	7,329423
27,89332	24,628684	24,30218	7,28212	7,340821
27,943133	24,607749	24,414298	7,263212	7,344441
27,944479	24,623628	24,428839	7,276153	7,348129
27,941864	24,628886	24,470969	7,286076	7,340821
27,944479	24,642036	24,381421	7,263146	7,336865
27,952319	24,65784	24,239156	7,286545	7,342966
27,959078	24,713311	24,236712	7,278432	7,337267

27,97752	24,725259	24,412013	7,314103	7,300122
28,00367	24,71211	24,346141	7,323489	7,327143
27,990607	24,750291	24,397555	7,308604	7,340687
28,019488	24,742534	24,528098	7,306391	7,329356
28,057455	24,742606	24,553157	7,319936	7,338743
28,046982	24,782069	24,508382	7,323691	7,299317
28,046982	24,821553	24,447812	7,327579	7,325534
28,064026	24,791337	24,446524	7,315913	7,295227
28,095717	24,831073	24,504742	7,282254	7,306693
28,095717	24,854758	24,473141	7,282187	7,296904
28,095717	24,886325	24,454699	7,259458	7,314337
28,114025	24,882411	24,495549	7,277292	7,325065
28,119395	24,90495	24,53918	7,277024	7,30448
28,146885	24,887876	24,46942	7,278366	7,298848
28,141638	24,885247	24,482602	7,285204	7,299049
28,156262	24,919645	24,493323	7,257648	7,286444
28,177309	24,963178	24,67645	7,262408	7,251379
28,185147	24,950015	24,831754	7,252284	7,253792
28,208672	24,947387	24,844926	7,239076	7,245344
28,195614	24,984203	24,602723	7,249401	7,253859
28,18783	24,981721	24,634475	7,267034	7,254529
28,223225	24,975248	24,656951	7,237936	7,230728
28,222088	25,003028	24,658459	7,240685	7,231264
28,233952	25,02678	24,647986	7,236863	7,231264
28,237984	25,058423	24,613818	7,229287	7,212558
28,27195	25,034747	24,674392	7,236863	7,223956
28,258898	25,013704	25,00335	7,286076	7,28041
28,251067	25,021587	24,708607	7,289831	7,317019
28,244549	25,053216	24,729729	7,264084	7,264922
28,269492	25,069143	24,645646	7,27032	7,257748
28,303807	25,120748	24,615681	7,263347	7,268609
28,311713	25,127359	24,588065	7,278432	7,256876
28,296046	25,137868	24,601218	7,263212	7,261234
28,296046	25,122106	24,522218	7,280511	7,268744
28,327401	25,090553	24,472176	7,276622	7,242528
28,3091	25,137868	24,746028	7,263548	7,216447
28,33001	25,1484	24,651246	7,288087	7,246283
28,377467	25,180366	24,425223	7,293585	7,223755
28,390685	25,217334	24,61496	7,245579	7,227509
28,388071	25,188415	24,638661	7,266967	7,208736
28,390685	25,185786	24,749247	7,259726	7,216246
28,401123	25,206828	24,583369	7,252016	7,199819
28,388071	25,233117	24,485923	7,259525	7,188689
28,393292	25,188415	24,638661	7,259458	7,212424
28,406369	25,213426	24,690041	7,261737	7,19003
28,403811	25,237151	24,653252	7,248261	7,197539
28,415676	25,255698	24,679744	7,254496	7,201093
28,42515	25,29016	24,653712	7,241489	7,195528

28,446133	25,286267	24,699801	7,233041	7,208669
28,451353	25,304673	24,802462	7,255502	7,174944
28,435669	25,291518	24,75245	7,246116	7,176755
28,453963	25,296792	24,639258	7,304916	7,340888
28,453963	25,304673	24,765624	7,266029	7,32426
28,477478	25,277106	24,714337	7,283394	7,314203
28,44619	25,336343	24,494584	7,263146	7,314337
28,496289	25,372241	24,601638	7,282187	7,318092
28,501562	25,37885	24,584544	7,267906	7,298982
28,504195	25,370975	24,595092	7,26328	7,309644
28,519852	25,33419	24,634576	7,240551	7,306626
28,527682	25,33419	24,621423	7,260732	7,332373
28,501562	25,352569	24,642491	7,267169	7,284164
28,506806	25,344691	24,666165	7,255636	7,305016
28,522463	25,360473	24,608245	7,251747	7,27156
28,529114	25,35535	24,741399	7,269716	7,280075
28,5318	25,38305	24,651967	7,24806	7,268878
28,537018	25,377795	24,620379	7,24806	7,283762
28,510897	25,404079	24,723054	7,244506	7,272566
28,521338	25,422485	24,575608	7,242897	7,279941
28,523972	25,380426	24,649337	7,25101	7,268744
28,530543	25,439592	24,571698	7,263212	7,280142
28,513506	25,401454	24,609832	7,270722	7,291406
28,565907	25,40289	24,678435	7,266901	7,264922
28,575228	25,477969	24,554845	7,267169	7,287651
28,580523	25,476701	24,537751	7,236796	7,267403
28,575308	25,472774	24,525935	7,258385	7,257681
28,589783	25,495235	24,584027	7,222515	7,264989
28,61859	25,478275	24,660477	7,238941	7,261301
28,613367	25,478275	24,847363	7,22513	7,261637
28,644701	25,478275	24,981559	7,247323	7,259357
28,615979	25,496652	24,73154	7,24216	7,235622
28,592472	25,538699	24,697324	7,248194	7,268677
28,6003	25,554475	24,505116	7,242562	7,271291
28,602908	25,53345	24,528819	7,233779	7,231331
28,631632	25,496652	24,61308	7,248194	7,240249
28,652529	25,512426	24,568309	7,24806	7,272431
28,636853	25,509801	24,620971	7,244439	7,272566
28,61859	25,530828	24,476149	7,252954	7,285304
28,613367	25,536075	24,412917	7,225264	7,253658
28,649922	25,520303	24,484042	7,233041	7,279672
28,65514	25,528176	24,494567	7,252217	7,285975
28,65	25,559781	24,496007	7,253826	7,269749
28,676262	25,554702	24,655503	7,251814	7,258217
28,654015	25,579618	24,619921	7,243299	7,276387
28,642321	25,607242	24,573884	7,255502	7,246484
28,660584	25,5757	24,618653	7,248127	7,245009
28,657973	25,5757	24,623914	7,244306	7,268811

28,672383	25,58233	24,670029	7,23693	7,261234
28,65276	25,615117	24,581773	7,244439	7,246283
28,676262	25,578349	24,637091	7,230695	7,250172
28,686856	25,604757	24,588477	7,23693	7,251446
28,680212	25,624347	24,435656	7,241087	7,261301
28,697293	25,644151	24,520026	7,255703	7,258619
28,702599	25,654762	24,609631	7,247993	7,251579
28,71967	25,677194	24,441155	7,234717	7,261301
28,749741	25,623386	24,458304	7,24806	7,280142
28,739304	25,647027	24,468852	7,244037	7,255669
28,723629	25,683793	24,595265	7,24806	7,257547
28,715805	25,68904	24,769004	7,229287	7,249032
28,726237	25,686416	24,674252	7,233779	7,231331
28,744524	25,644407	24,597895	7,238606	7,261167
28,728871	25,694287	24,511002	7,232572	7,257346
28,734087	25,691665	24,56367	7,231231	7,24407
28,734087	25,691665	24,508345	7,232974	7,257547
28,757588	25,678546	24,608418	7,236863	7,261234
28,726237	25,720552	24,56367	7,230293	7,252987
28,736697	25,744191	24,484639	7,255636	7,23227
28,75498	25,702184	24,45567	7,251882	7,251446
28,74713	25,725826	24,405621	7,246116	7,265056
28,749741	25,738944	24,511002	7,244439	7,242528
28,792776	25,711332	24,54387	7,259458	7,257681
28,758847	25,729724	24,567574	7,316249	7,352353
28,778315	25,723039	24,56486	7,327512	7,372467
28,775792	25,708617	24,574103	7,331334	7,362209
28,78756	25,724475	24,628129	7,312291	7,359594
28,807196	25,733699	24,537337	7,330932	7,351951
28,788912	25,741569	24,561017	7,327579	7,35946
28,77324	25,788842	24,484639	7,338911	7,319634
28,778477	25,731073	24,463589	7,319936	7,346386
28,749686	25,795299	24,892615	7,318595	7,356041
28,778477	25,786218	24,597895	7,308671	7,329289
28,778315	25,783433	24,441071	7,327244	7,353091
28,786139	25,738805	24,535895	7,324562	7,359393
28,765105	25,755759	24,531817	7,308671	7,341894
28,755932	25,737283	24,49886	7,319735	7,343167
28,757201	25,772706	24,368441	7,321813	7,348196
28,767661	25,730678	24,465909	7,316249	7,367036
28,779431	25,745179	24,480418	7,298211	7,359326
28,775483	25,743821	24,555442	7,321545	7,334854
28,775483	25,746444	24,489615	7,312224	7,346453
28,767661	25,770084	24,442202	7,316181	7,348263
28,751984	25,822599	24,429044	7,316316	7,330294
28,757201	25,801589	24,400048	7,316449	7,363416
28,757201	25,814729	24,505429	7,293451	7,348129
28,765049	25,798967	24,529109	7,304983	7,348263

28,801587	25,770084	24,518584	7,323489	7,341894
28,806807	25,749068	24,473803	7,335022	7,35537
28,788521	25,798967	24,431674	7,322886	7,344441
28,806807	25,812082	24,421124	7,316181	7,336999
28,809412	25,775329	24,479092	7,294926	7,348196
28,809412	25,819976	24,347359	7,336161	7,342833
28,814629	25,791095	24,460646	7,323691	7,340352
28,806807	25,819976	24,407967	7,316249	7,344374
28,80151	25,84353	24,415767	7,292714	7,340687
28,796198	25,810668	24,460473	7,335156	7,355706
28,751528	25,822149	24,456206	7,311219	7,351817
28,731844	25,837831	24,419247	7,316181	7,351213
28,774872	25,808868	24,402081	7,323825	7,355773
28,76183	25,853511	24,391557	7,322685	7,333177
28,769656	25,858756	24,409978	7,327579	7,340754
28,756613	25,864005	24,415265	7,302033	7,355638
28,787939	25,837749	24,460027	7,312761	7,351347
28,803589	25,821986	24,407347	7,289831	7,340151
28,80098	25,827254	24,431054	7,297474	7,349604
28,80098	25,829881	24,420529	7,335022	7,348799
28,814045	25,806245	24,465291	7,301497	7,329222
28,814045	25,837749	24,507438	7,323825	7,321779
28,803589	25,856134	24,539037	7,302301	7,349873
28,798371	25,858756	24,5127	7,327311	7,349269
28,81926	25,895505	24,444239	7,305452	7,348464
28,816651	25,848241	24,562739	7,312493	7,364287
28,81783	25,87182	24,461242	7,305922	7,355773
28,803229	25,846605	24,48862	7,319802	7,351951
28,762566	25,839847	24,460786	7,327512	7,359393
28,803013	25,821401	24,464701	7,330261	7,34062
28,787337	25,839765	24,393573	7,319936	7,331032
28,813445	25,858152	24,401471	7,327446	7,352085
28,803013	25,839765	24,401471	7,335156	7,325467
28,789944	25,847657	24,306645	7,304312	7,331971
28,795187	25,85028	24,311909	7,293987	7,321846
28,795187	25,858152	24,369862	7,32007	7,336932
28,792553	25,881782	24,340886	7,312559	7,329356
28,787337	25,876537	24,354071	7,285942	7,336999
28,792553	25,881782	24,33299	7,316249	7,363885
28,826506	25,892276	24,369862	7,316181	7,342631
28,803013	25,873914	24,440995	7,308671	7,333177
28,829115	25,873914	24,417285	7,32007	7,346051
28,821293	25,884404	24,414653	7,335022	7,35946
28,78069	25,890866	24,336816	7,320003	7,347391
28,776684	25,876319	24,413068	7,308671	7,359259
28,752888	25,861612	24,279767	7,314639	7,352018
28,75154	25,851037	24,48652	7,301899	7,339748
28,76327	25,836568	24,403519	7,316316	7,34766

28,747597	25,862821	24,40615	7,314908	7,336865
28,758055	25,881208	24,527316	7,303575	7,336999
28,771094	25,849681	24,569438	7,319467	7,348799
28,742381	25,891702	24,153193	7,315712	7,328819
28,747597	25,886453	23,823643	7,329926	7,328082
28,773703	25,862821	23,884291	7,313432	7,352018
28,784163	25,870692	23,939666	7,32007	7,337133
28,781554	25,857576	23,868459	7,312426	7,344576
28,805027	25,873315	24,002957	7,32007	7,340754
28,795857	25,874582	23,869757	7,301229	7,359929
28,795723	25,887595	23,092284	7,320003	7,358789
28,786332	25,851871	22,763024	7,320003	7,34833
28,778357	25,856988	23,29263	7,323757	7,344777
28,765294	25,859609	23,234544	7,316249	7,34833
28,78879	25,880616	23,187003	7,327579	7,340821
28,770531	25,919986	23,865254	7,357751	7,432006
28,807074	25,917361	23,841515	7,410249	7,450511
28,791399	25,946237	23,833613	7,419501	7,451449
28,809679	25,961997	23,575076	7,414071	7,458087
28,800221	25,911823	23,508792	7,425334	7,465663
28,790848	25,873521	23,34221	7,392884	7,454466
28,785632	25,927293	23,352786	7,39932	7,424094
28,803891	25,93254	23,307895	7,395096	7,427647
28,822169	25,893174	23,326384	7,417825	7,439179
28,861309	25,890548	23,091346	7,392012	7,465931
28,863942	25,929918	22,848244	7,410383	7,442934
28,825703	25,907294	23,134599	7,410316	7,450644
28,862234	25,909917	23,393378	7,420641	7,439246
28,829497	25,933398	23,28362	7,421647	7,449907
28,860766	25,90574	23,228097	7,404282	7,439113
28,865981	25,942481	23,230735	7,411992	7,441996
28,886868	25,945104	23,01151	7,406427	7,450577
28,898508	25,945054	22,962535	7,420507	7,448768
28,876158	25,961927	23,017852	7,429156	7,465797
28,869595	25,947467	23,314965	7,417892	7,446622
28,889058	25,940795	23,627618	7,391409	7,438039
28,860203	25,96292	23,36484	7,411791	7,453394
28,899369	25,93667	23,560149	7,394157	7,435425
28,907193	25,970813	23,752766	7,372635	7,431469
28,920254	25,941938	23,721116	7,403075	7,465864
28,933293	25,957675	23,187922	7,402807	7,439113
28,927945	25,96152	22,981744	7,40227	7,465998
28,902962	25,962665	23,097846	7,399052	7,444946
28,91721	25,921876	23,28658	7,404147	7,443001
28,883217	25,974305	23,340585	7,380279	7,450443
28,906666	25,993877	23,541129	7,391409	7,449438
28,919701	25,97812	23,469865	7,405622	7,427714
28,917092	25,996503	23,282433	7,391476	7,455807

28,945799	25,959764	23,282433	7,380144	7,453527
28,950955	25,989906	23,42229	7,402739	7,450577
28,945666	25,997726	23,438063	7,409109	7,461976
28,925858	25,971271	23,370576	7,400728	7,439113
28,932331	25,968578	23,45233	7,391341	7,435089
28,953101	25,932965	23,627669	7,42158	7,458154
28,953101	25,972352	23,524752	7,393152	7,457617
28,963532	25,914581	23,704184	7,395297	7,451248
28,963532	25,943479	23,648783	7,398046	7,463384
28,950493	25,993356	23,453486	7,410316	7,434888
28,950493	25,995979	23,524752	7,413199	7,454399
28,941256	26,001153	23,372889	7,397443	7,473709
28,940987	25,931339	23,422816	7,410316	7,473441
28,914887	25,989106	23,507298	7,402739	7,464456
28,944861	26,002174	23,277556	7,420037	7,442398
28,925192	25,987617	23,266848	7,402807	7,422686
28,944744	25,953429	23,254948	7,400125	7,444275
28,968233	25,942937	23,320971	7,429089	7,462042
28,95517	25,948182	23,489905	7,40636	7,448499
28,957779	25,990192	23,373771	7,397376	7,447561
28,970843	25,990192	23,254948	7,402739	7,472167
28,952299	25,925637	23,123978	7,414004	7,442934

NS-Røgtemp - [°C]	Ovf-Top - [°C]	Ovf-Bag - [°C]	Ovf-Side-1 - [°C]	Ovf-Side-2 - [°C]
24	27	28	29	30
EPA Flue gas temperature	Surface temperature Top	Surface temperature Rear	Surface temperature Right side	Surface temperature Left side
203,347183	189,816266	260,689215	171,516266	184,106143
229,570816	188,016629	257,069159	171,28862	184,229301
289,400055	188,86987	256,151526	171,18396	184,26221
343,348511	191,534924	257,20658	171,050049	184,211791
304,97168	193,358243	258,769934	170,881241	184,118903
301,621002	195,137158	261,071234	170,752731	184,079147
292,871063	196,54884	263,880591	170,498413	184,00232
230,342194	196,529706	264,91889	170,294632	184,097471
216,228226	195,491635	264,71076	170,171341	184,10916
212,035004	194,788403	264,445227	170,120499	184,028336
208,738998	194,107922	264,196692	170,160614	184,015095
206,842117	193,638684	264,303656	170,085358	184,073144
205,058777	193,071912	264,12171	169,739883	184,05571
203,294815	192,604291	263,931952	169,509674	184,006664
201,274323	192,491589	264,236609	169,41452	183,990662
202,891571	192,266324	264,392126	169,107895	184,072647
201,719696	192,086728	264,53324	168,91243	184,023465
200,7603	192,059888	265,16358	168,733032	183,963801
202,867126	191,924298	266,624792	168,647156	183,96362
202,891068	192,327466	268,636359	168,623016	183,966199
202,55806	192,070111	270,424323	168,309738	184,037461
202,10054	192,330029	271,960852	168,028763	184,071893
201,183517	192,572232	273,063483	167,715439	184,161795
200,06192	192,46362	273,761969	167,405014	184,164389
199,170593	192,736844	274,556525	167,091888	184,205306
197,115616	192,372388	274,991522	166,982117	184,180029
196,473694	192,428387	275,380591	166,817352	184,215592
193,409317	192,500653	275,379279	166,626038	184,155959
192,009506	192,152249	275,044501	166,252792	184,055197
189,67569	192,717587	274,873816	166,30217	184,012666
188,150558	192,470883	274,327917	165,942276	183,988732
186,318451	192,090192	273,985114	165,983582	183,898528
186,098663	191,765973	273,543402	165,840454	183,780618
185,296112	191,385327	272,877264	165,756058	183,67577
184,144928	191,279462	272,119818	165,51796	183,55786
182,970566	190,932111	271,351477	165,421463	183,474217
181,075867	190,591794	270,589667	165,426788	183,291425
179,620834	190,472455	269,909674	165,250122	183,186607
179,386398	190,294217	269,258398	165,23941	182,952145
178,722702	189,74989	268,491705	164,962387	182,66716
177,985809	189,607785	267,879218	164,894165	182,44861
176,52298	189,254071	267,151526	164,874084	182,169114
175,78775	188,991284	266,386938	164,586472	181,910642

174,85939	188,699063	265,633917	164,305603	181,657585
174,650101	188,615735	264,880591	164,233231	181,380653
174,259094	188,32095	264,169043	164,03006	181,060105
174,155853	187,92825	263,368262	163,673126	180,803126
173,744446	187,205579	262,934698	163,961456	180,457075
173,401581	187,009869	262,702979	164,034943	180,095504
172,464355	186,790112	262,014349	163,810364	179,748517
172,215347	186,599835	261,537726	163,69809	179,412133
172,073441	186,42294	261,101538	163,678009	179,161806
171,657181	186,302228	260,686133	163,593658	178,911342
171,871368	185,900204	260,335028	163,342377	178,630565
171,21402	185,357465	259,919531	163,433212	178,441198
171,670273	185,669553	259,55509	163,167145	178,087545
170,257919	184,838559	259,17478	163,014603	177,853008
170,800064	184,792905	259,018591	163,317871	177,647564
170,130844	184,696393	258,622626	163,192215	177,411866
169,742767	184,599911	258,223944	162,919586	177,231789
170,047867	184,313168	257,94068	163,007782	177,038471
168,93988	184,567761	257,536627	162,74855	176,794855
168,819473	183,771786	257,167944	162,763214	176,724619
168,8423	183,768994	256,930304	162,677505	176,599998
168,641617	183,710034	256,696722	162,658798	176,380211
167,871002	183,466168	256,531378	162,557236	176,213362
167,523193	183,685925	256,250494	162,527832	176,01478
168,020767	183,70065	256,03385	162,411575	175,891637
167,366302	183,354642	255,992896	162,698608	175,776186
166,594498	183,634549	255,81156	162,896225	175,633029
167,059921	183,479108	255,858801	162,805328	175,466195
165,907135	183,347791	255,606757	162,837433	175,325874
166,252136	182,972592	255,457068	163,176849	175,21997
166,527618	182,755536	255,27323	163,190216	174,960487
165,399033	182,642987	254,994788	163,235672	174,844011
164,833206	182,670743	254,75672	163,367615	174,697989
165,537689	182,562161	254,645056	163,58139	174,402748
164,914597	182,85957	254,49787	163,670929	174,234631
164,673965	182,484387	254,256155	163,823303	174,041358
163,976196	182,428113	253,925055	163,580048	173,871929
164,077789	182,578198	253,783148	163,964996	173,604559
164,65126	182,57681	253,455923	163,947601	173,390051
164,932053	182,158704	253,075995	164,142654	173,284071
164,811691	181,896039	252,700003	164,086426	173,074887
165,578812	181,847607	252,413229	164,106354	172,901371
165,122665	181,492413	252,179083	164,17041	172,839098
165,440872	181,436139	251,781927	164,263992	172,735863
164,104065	181,492413	251,461005	164,411041	172,569104
164,622681	180,996701	251,339987	164,600861	172,330887
164,220367	181,145383	251,02027	164,591492	172,3176
164,23111	180,967099	250,786017	164,598038	172,286999

164,509155	181,098401	250,572836	164,803925	172,252613
164,212402	181,168042	250,299109	164,814636	172,157311
163,482681	180,838483	250,183325	164,948349	172,175862
164,093307	181,021954	250,031866	164,901428	172,151987
163,373917	180,894467	249,91326	164,949402	172,180929
163,328476	180,787289	249,850089	165,12056	172,13594
163,770828	180,968076	249,701239	165,243515	172,139831
163,770859	180,831342	249,902579	165,497452	172,065599
164,356308	180,746899	250,169714	165,897278	172,093349
164,276093	181,025616	250,296072	165,916016	172,101312
163,808304	180,704053	250,177588	166,121964	172,095988
163,287079	180,982709	250,064429	166,0979	172,212465
163,720062	180,706738	250,001212	166,119263	172,268057
164,123734	180,395901	250,027533	166,282455	172,336875
164,310867	180,513776	250,006491	166,38678	172,453306
164,497971	180,556607	249,874854	166,413452	172,551172
164,265457	180,580716	249,902441	166,583313	172,649098
164,214432	180,5939	249,910147	166,754288	172,823534
164,247665	180,54823	250,052161	167,043076	172,962422
164,679337	180,516003	249,979758	167,175491	173,072263
163,484406	180,834882	250,1061	167,330673	173,209914
164,470795	181,236813	250,153479	167,595551	173,313149
163,730316	180,891156	250,277167	167,753403	173,482578
164,11792	181,134991	250,277167	167,69722	173,620214
163,425629	181,239484	250,369299	167,782837	173,787019
163,869324	180,489209	250,569312	168,002243	173,996158
163,814575	180,501248	250,679816	168,420944	174,296557
163,738464	180,775815	250,703375	168,523895	174,516163
163,527298	180,700772	250,7797	168,909271	174,786217
163,481873	180,912473	250,998053	169,241119	174,955661
163,57132	180,718198	251,091483	169,4552	175,295876
163,496414	180,790479	251,071707	169,785721	175,564588
162,827988	180,878751	250,99523	169,840439	175,843813
162,96814	180,708508	250,874121	169,835052	176,278017
162,949417	181,072934	250,755713	169,939438	176,656706
162,829178	180,799603	250,726767	170,161606	176,945356
162,149155	180,902737	250,587256	170,352921	177,206105
162,373627	180,757977	250,593741	170,817322	177,480126
161,81926	180,6414	250,552954	171,03685	177,76214
163,299637	180,895932	250,471365	171,03685	178,045527
162,642212	180,922742	250,460806	171,309937	178,474574
161,354446	181,067456	250,50556	171,615158	178,747343
161,865875	181,363477	250,518652	171,839996	179,095627
161,387634	181,331265	250,506705	171,925598	179,418618
161,432877	181,534756	250,580252	172,193176	179,749558
161,153641	181,321576	250,681418	172,541183	179,930841
161,917694	181,31088	250,978796	172,983032	180,084464
161,332596	181,726208	251,12348	173,371368	180,248705

160,913254	181,672604	251,270834	173,869522	180,45531
161,378021	182,074567	251,531287	174,190918	180,720162
161,257812	182,288983	251,528647	174,134689	181,019505
161,062805	182,29968	251,547064	174,303406	181,260557
160,947968	182,361325	251,562842	174,48288	181,496285
160,825104	182,564984	251,725928	174,555206	181,742631
160,820663	182,804623	251,888815	174,852295	181,990123
161,607193	182,942517	252,022879	175,203156	182,204647
161,320053	183,560223	252,17272	175,334366	182,456241
161,302719	183,296216	252,239767	175,448181	182,657492
160,820618	183,863019	252,339636	175,703934	182,795189
160,41069	183,770505	252,417181	175,86734	182,955403
160,968872	183,765164	252,582861	176,175415	183,164678
161,353546	183,821439	252,745856	176,711227	183,249453
160,792618	184,145703	252,9746	176,928238	183,426935
160,90863	184,248837	253,205893	177,443924	183,63351
160,344833	184,706921	253,410773	177,522812	183,777722
160,85347	185,051221	253,66825	177,833572	183,873054
160,757294	185,354092	254,086096	178,026489	183,992246
161,350296	185,31387	254,427664	178,412323	184,20416
160,626434	186,115231	254,614203	178,514145	184,368416
160,685211	185,798978	254,8664	178,835678	184,519399
161,334259	186,085721	255,15531	179,151886	184,649193
160,30864	186,613705	255,281378	179,422546	184,757812
160,340637	187,046521	255,734351	179,673065	184,886249
160,536499	186,798383	255,94422	180,222183	185,011895
160,469696	186,956448	256,385199	180,52095	185,145656
159,775391	187,417401	256,700201	180,747391	185,133681
160,40564	187,626385	256,870764	180,875946	185,266084
160,280151	187,814008	257,15943	181,119827	185,374688
158,363281	187,850156	257,429663	181,28862	185,483261
158,249878	187,910428	257,449316	181,753555	185,536183
157,977661	188,245419	257,869086	181,992081	185,639479
157,745453	188,469174	258,292731	182,459717	185,669929
157,298096	189,169797	258,560034	182,7677	185,75318
156,700455	188,81593	258,541602	182,683258	185,720045
156,086975	189,185818	258,790717	183,43364	185,807459
156,455048	189,400204	258,934943	183,656082	185,759786
154,75383	189,110715	258,84577	183,652039	185,779634
154,803207	189,551556	258,601813	184,083435	185,746378
155,141785	189,201794	258,343451	183,894455	185,877454
154,875198	188,94447	258,19657	184,312546	185,925128
154,304749	188,955182	257,981451	184,561798	185,903953
154,530945	188,784772	257,899939	184,683533	185,905069
154,366867	188,794064	257,620459	184,834885	185,886503
153,905807	188,748502	257,347571	184,92601	185,955382
154,618851	188,363828	257,040442	184,849518	185,944613
153,648727	188,035519	256,873755	184,786499	185,998893

153,694016	188,456296	256,519446	184,475616	186,067771
153,824585	187,971188	256,361945	184,534576	186,139289
153,12915	187,973859	256,16767	184,606934	186,237305
153,432831	188,253918	256,113806	184,667206	186,273019
152,589554	187,837094	255,965399	184,789078	186,333904
152,879562	187,641232	255,811621	184,735306	186,497964
152,514618	187,394681	255,64353	184,739304	186,581381
152,617249	187,716168	255,460913	184,619904	186,610384
151,581284	187,1078	255,127386	184,555573	186,718988
151,613235	187,365094	254,657217	184,35994	186,81168
151,642517	187,150677	254,286749	184,233978	186,975936
150,082672	186,770123	253,897833	184,18306	187,100406
149,215317	186,636121	253,435278	183,794449	187,174578
149,026413	186,334576	252,9345	183,530457	187,178515
147,6008	186,275403	252,341391	183,235474	187,257875
147,571442	185,792874	251,802145	183,246063	187,302804
145,873459	185,681577	251,223288	182,837234	187,343736
144,800568	185,035687	250,4681	182,815811	187,298701
144,049316	184,545224	249,860068	182,54512	187,272218
143,46019	184,872205	249,167624	182,282471	187,245689
142,799591	183,920804	248,388037	182,108307	187,182119
141,691055	183,776074	247,708319	181,987671	187,057604
141,444519	182,86221	246,880804	181,708984	186,964926
140,265213	182,205655	246,074103	181,242676	186,787429
140,124802	181,720609	245,304053	181,049713	186,617925
139,140793	181,660199	244,530951	180,55777	186,34885
139,143173	180,841321	243,70603	180,581696	186,115565
138,236389	180,549176	243,076422	180,293579	185,738068
137,236191	179,954343	242,249945	179,604889	185,552623
136,842087	179,683713	241,52088	179,251175	185,221517
136,286758	178,606641	240,677969	178,715225	185,014896
134,74321	178,121732	239,750113	178,214172	184,747346
133,837265	176,991238	238,597174	178,155228	184,432121
132,815613	176,380505	237,634161	177,552383	184,098346
132,046524	175,728284	236,609885	177,244202	183,854594
131,566483	174,632886	235,448737	176,595749	183,547212
130,178482	173,798718	234,263251	176,116165	183,397495
129,569824	172,941922	233,31713	176,102783	183,042546
129,561646	172,382245	232,170325	175,589645	182,807979
128,155182	171,640591	231,150305	175,339066	182,399956
126,789497	171,075818	230,05712	174,875626	181,994663
126,231979	170,09364	228,899695	174,33725	181,674145
125,595757	169,52905	227,816199	173,873871	181,242399
124,515785	168,507047	226,665762	173,431976	180,773551
123,943237	167,87576	225,522849	172,936523	180,312637
123,235695	166,987836	224,428671	172,421005	179,884857
122,622894	166,231046	223,440451	171,991165	179,442417
121,799232	165,6134	222,4186	171,372589	179,010641

121,321938	164,840878	221,356528	170,960281	178,592167
120,800247	164,284955	220,331366	170,430206	178,210809
119,126129	163,341672	219,327185	169,921616	177,919489
118,614182	162,600308	218,369299	169,554871	177,377872
118,339287	162,12753	217,340475	168,805481	176,90913
117,781601	161,502377	216,403174	168,120255	176,442921
117,400787	161,039014	215,400366	167,852615	175,987421
116,7286	160,08595	214,60813	167,646591	175,553156
116,174332	159,325299	213,676855	166,985764	175,071278
115,092407	158,647519	212,852179	166,488174	174,576173
114,986633	158,05528	211,895132	165,959885	174,130069
114,191391	157,887173	210,959113	165,642883	173,730191
113,491814	156,958981	210,04032	164,936813	173,330387
113,243874	156,356412	209,118658	164,327133	172,853939
112,424614	155,471432	208,178061	163,781754	172,419825
111,689178	154,639996	207,306784	163,033295	171,96989
110,969696	153,944699	206,459402	162,554871	171,564989
110,732536	153,318799	205,51293	162,113937	171,10979
109,961319	152,637128	204,609	161,654327	170,68376
109,260757	151,960995	203,715704	161,266937	170,231291
108,655411	151,166577	202,788718	160,858154	169,761629
107,916321	150,653104	201,9298	160,233124	169,290716
107,92009	150,045224	201,08277	159,773727	168,895136
107,516541	149,467953	200,319846	159,405075	168,531318
106,99897	148,776746	199,463293	159,114029	168,09752
106,403503	148,338162	198,58248	158,662827	167,687582
105,790092	147,857175	197,712302	158,195679	167,235355
104,958626	147,41348	196,879507	157,667221	166,809626
104,239197	146,632565	195,966284	157,24559	166,413005
103,769295	146,061627	195,016699	156,686523	165,955499
103,578484	145,343579	194,126059	156,190338	165,613203
103,113922	145,080792	193,262061	155,842163	165,281343
102,330307	144,406827	192,482413	155,396759	164,805573
102,326439	144,095105	191,62905	154,855469	164,37345
101,42907	143,148328	190,825186	154,535507	163,990252
101,066078	142,639325	190,074911	154,077011	163,56217
100,617638	142,35307	189,185233	153,706512	163,20814
99,904961	141,473309	188,413443	153,362717	162,838275
99,860909	141,038907	187,614783	152,696579	162,420886
99,161453	140,583356	186,80274	152,462128	161,979774
98,457062	140,241788	186,017477	151,921387	161,546655
98,358665	139,836743	185,283163	151,500595	161,036997
98,125648	139,220059	184,599738	151,037277	160,585508
97,657104	138,653867	183,846655	150,699158	160,107657
96,601318	138,190945	183,125693	150,297195	159,698518
96,350365	137,971448	182,375296	149,727615	159,32636
95,74514	137,42674	181,616904	149,240677	158,824951
95,926178	136,784344	180,810248	148,666031	158,392224

95,390862	136,586148	180,121542	148,439926	157,964806
95,288643	135,95065	179,450293	148,05423	157,596811
95,01078	135,518811	178,803168	147,639465	157,244711
94,625603	135,370892	178,069022	147,227341	156,814805
94,134521	134,652722	177,364355	146,796722	156,41927
93,865746	134,486386	176,80979	146,374146	155,978942
93,465225	133,863522	176,177542	145,911774	155,541344
93,266312	133,583859	175,566779	145,52124	155,095889
92,953705	133,06152	174,969443	145,316696	154,676856
92,530106	132,91908	174,436438	144,897049	154,265787
92,377731	132,676465	173,764182	144,347366	153,865335
91,357788	131,88551	173,258047	144,050018	153,438596
91,298416	131,57977	172,6341	143,718216	153,101443
90,998962	131,192395	172,04769	143,251099	152,72746
91,166763	130,82356	171,442618	142,800003	152,366734
90,42598	130,399472	170,826865	142,439194	151,929694
90,467262	129,978101	170,286154	142,290634	151,584864
90,098228	129,662152	169,721411	142,009476	151,166344
89,58992	129,322583	169,247687	141,479095	150,774233
89,360306	128,940976	168,680334	141,245773	150,369045
89,264839	128,601544	168,171942	140,816315	150,008636
89,053314	128,23058	167,655569	140,413452	149,616705
88,470375	127,943875	167,171317	140,143127	149,29848
88,903694	127,688779	166,665747	139,875504	148,909309
88,153145	127,265446	166,240469	139,570831	148,614807
88,155746	126,815945	165,836615	139,221191	148,307229
87,866913	126,555753	165,293738	138,94043	147,968161
87,673531	126,469052	164,860571	138,551208	147,647507
87,343506	126,132703	164,387335	138,130234	147,321665
87,005745	125,767552	163,972968	137,899963	146,974829
86,941307	125,570538	163,483817	137,72525	146,67535
86,768593	125,113583	163,131018	137,389145	146,39427
86,320091	124,969189	162,730124	137,174835	145,968813
85,742767	124,709264	162,460211	136,918198	145,672064
86,023682	124,310262	162,099524	136,558411	145,309754
85,737617	124,047826	161,696066	136,180206	144,955377
85,79174	123,769719	161,38082	135,995102	144,598407
85,255775	123,525769	160,97753	135,761108	144,303226
85,29702	123,231961	160,563544	135,324844	143,969964
85,102631	123,074704	160,201743	135,191452	143,617186
85,061424	122,825551	159,90798	134,789703	143,326017
84,895309	122,521458	159,558264	134,681427	143,00212
84,380081	122,356396	159,237967	134,427856	142,661332
84,109642	122,231885	158,937674	133,914047	142,376874
83,796616	122,007787	158,549307	133,775406	142,10952
83,419319	121,570134	158,255713	133,476959	141,825092
83,581535	121,177167	158,038275	133,268463	141,556561
83,4244	121,004269	157,712698	133,036118	141,255167

83,862305	121,074994	157,387183	132,798508	141,006272
83,67939	120,813069	157,09101	132,407852	140,718089
83,674248	120,543309	156,821555	132,513428	140,471849
83,51712	120,380933	156,549475	132,072678	140,251851
83,34198	120,066731	156,256064	131,851044	140,02401
83,128212	119,836362	156,005347	131,684814	139,751648
82,507538	119,412343	155,760001	131,423645	139,463646
82,620857	119,443745	155,640005	131,391998	139,201887
82,672371	119,451611	155,453345	131,217926	138,953218
82,507538	119,273656	155,336005	131,078125	138,725514
82,628578	119,153271	155,152045	130,772217	138,482139
82,268066	119,087842	154,898749	130,542831	138,249261
82,257774	118,988438	154,746817	130,28447	138,013789
82,314415	118,868077	154,520239	130,10257	137,707749
82,080093	118,881139	154,410941	129,978668	137,480195
82,082672	118,494008	154,08576	129,435776	137,284026
81,866364	118,470471	153,931174	129,180206	137,08267
82,092957	118,133076	153,635352	129,177567	136,883967
81,480141	118,140904	153,411536	129,019501	136,700965
81,459549	117,84805	153,219687	128,777176	136,52318
81,722183	117,597058	152,921301	128,684967	136,22521
81,274284	117,354024	152,748251	128,350601	135,948278
81,519058	117,464047	152,508719	128,13092	135,688404
81,405907	117,296834	152,359641	128,019135	135,423326
80,921883	116,878682	152,165228	127,837479	135,154252
81,011971	116,789815	152,045386	127,67952	134,945279
80,862648	116,815938	151,95217	127,71376	134,67628
80,381241	116,823781	151,872275	127,7164	134,527423
79,691376	116,742772	151,701865	127,463699	134,342037
80,018295	116,575558	151,576697	127,295242	134,148809
80,22937	116,233327	151,446234	127,232086	133,955642
79,735146	116,204564	151,414297	127,055771	133,765053
79,853561	116,123601	151,241217	126,947876	133,561495
79,580704	115,969495	151,185309	126,842636	133,373575
79,727516	115,726727	150,913855	126,59671	133,215775
79,416435	115,47234	150,621268	126,717941	133,008521
79,282555	115,45152	150,351218	126,679871	132,789458
79,086929	115,022061	150,089087	126,440521	132,651233
78,870743	114,826276	149,753806	126,156448	132,515558
78,852722	114,787137	149,522314	126,035469	132,364302
78,749771	114,560078	149,296194	125,788277	132,176504
78,883598	114,617482	149,176459	125,722519	131,973096
78,896484	114,494839	149,003546	125,562141	131,801013
78,379158	114,327824	148,870551	125,533234	131,535045
78,160416	114,267819	148,72692	125,570045	131,318682
78,329208	113,962704	148,419882	125,391357	131,151968
78,220001	113,956303	148,233862	125,223213	130,989145
78,234184	113,755544	148,136923	125,045914	130,773008

78,070755	113,472554	147,950858	124,897484	130,526828
77,731033	113,503873	147,855109	124,810776	130,289742
77,525162	113,433453	147,642447	124,647858	130,154247
77,677002	113,326535	147,512183	124,571648	129,912019
77,445396	113,243092	147,318137	124,55587	129,789585
77,32444	112,974484	147,102835	124,49807	129,570839
77,360481	113,024037	146,807822	124,306244	129,409358
76,879265	112,724194	146,608527	123,938461	129,300015
76,59877	112,635564	146,313589	123,951607	129,091705
76,538307	112,597852	146,164908	123,782272	128,865343
76,538536	112,293065	146,01763	123,665558	128,614306
76,540001	112,195462	145,849066	123,521286	128,443958
76,300674	112,033902	145,702979	123,424118	128,240987
76,079399	111,958333	145,53298	123,279678	128,038046
76,087112	111,736859	145,254141	123,056519	127,933967
75,961021	111,768124	145,116019	122,917366	127,741418
75,78862	111,520596	144,983252	122,799248	127,548944
75,685692	111,421597	144,736319	122,591896	127,392863
75,724304	111,374738	144,526572	122,418655	127,265422
75,593079	111,145497	144,36463	122,185089	127,080775
75,324104	110,998402	144,186896	121,973953	126,898859
75,306099	111,062245	143,967932	122,031738	126,706498

Ovf-Bund - [°C]	Kanal-EPA - [°C]	Røgtræk - [Pa]	Pd Kanal - [Pa]	Ps Kanal - [Pa]
31	36	38	39	40
Surface temperature Bottom	EPA Duct temperature	Flue draft Pascals	Duct dynamic pressure	Duct static pressure
116,587946	47,702906	13,436537	30,061733	141,012563
117,55975	54,030181	17,710572	29,460921	138,856547
117,992007	57,806288	20,063616	29,630806	139,324876
118,22113	59,973931	21,243115	29,63495	139,292522
118,656045	59,410062	19,814977	29,604703	135,229126
119,132744	56,403656	19,851081	30,046816	134,791452
119,700329	54,096556	19,701727	30,141702	136,518303
120,204416	50,825306	17,952229	30,064634	133,829252
120,779849	47,409913	17,684005	29,337032	134,890226
121,258428	44,757506	17,090849	29,424873	135,106507
121,683977	42,697144	17,256382	28,104326	134,062567
122,250974	41,120856	17,191668	29,609674	136,027829
122,788127	39,871756	17,038056	30,5602	138,716911
123,236109	38,947844	16,697965	28,952508	136,720963
123,703669	38,071531	16,685703	30,04599	136,027829
124,214213	37,524425	16,935534	29,499871	137,519698
124,584406	37,034306	16,675486	30,795137	139,915823
125,026262	36,878087	16,535668	30,691966	136,64262
125,382436	36,770144	16,713462	29,969334	135,94439
125,651591	36,687675	16,586078	30,030242	135,268289
126,045402	36,47245	16,8027	29,095873	135,700851
126,302985	36,260581	16,693707	30,410617	137,271063
126,568311	36,178112	16,941665	29,637438	136,22198
126,923571	36,011162	16,695069	29,734394	139,229515
127,151161	35,917969	16,551337	30,202614	139,624612
127,382762	35,718169	16,49684	29,460508	137,521396
127,601379	35,629669	16,460056	29,828454	139,522424
127,751104	35,530437	16,003651	30,673318	140,341574
127,968421	35,555913	16,175995	30,665446	138,834418
128,033378	35,362144	16,030046	29,777488	134,830616
128,262554	35,276994	15,82807	29,711605	136,070406
128,373177	35,106694	16,095783	29,608017	137,87733
128,491685	34,82845	15,691831	30,858119	139,791505
128,642536	34,765425	15,718057	29,807322	135,424976
128,755847	34,704412	15,626094	30,143359	136,203248
128,945974	34,58775	15,244278	30,498462	138,3729
128,935551	34,174069	15,499221	29,934112	138,209419
128,976957	34,014494	15,525277	30,648041	141,956014
129,061627	33,94745	15,575004	30,407717	137,620171
128,959887	33,900513	15,483894	29,877345	137,153525
128,953346	33,767088	15,408451	30,363796	137,424321
128,923345	33,679256	15,090667	29,255402	137,664446
128,982999	33,671213	15,147717	29,549179	137,126268

128,889114	33,671881	15,330624	30,07665	137,724057
128,846031	33,646406	15,183652	29,969748	138,740755
128,85644	33,593438	15,130347	30,125959	137,424321
128,783477	33,574663	14,839644	30,187697	141,252672
128,714003	33,519013	14,861102	29,905109	136,824833
128,618849	33,37285	14,816142	29,974306	139,020044
128,689214	33,221994	14,928712	29,536333	136,015907
128,569361	33,231381	14,966177	31,121232	141,506434
128,55501	33,059737	14,575168	30,156619	140,065683
128,570358	32,864631	14,864678	30,247778	138,10893
128,455702	32,85055	15,093902	29,571968	136,748205
128,282434	32,75065	14,422749	29,625421	138,064655
128,24204	32,697681	14,569548	31,380619	140,120182
128,059572	32,640694	14,868595	30,131343	138,676033
127,889975	32,463687	14,966177	30,887126	139,629723
127,853524	32,427481	14,745808	30,432166	139,203972
127,75195	32,504587	14,864678	29,352362	138,187273
127,621749	32,419438	14,737294	29,319214	135,712773
127,574867	32,29875	14,549793	30,127616	136,193024
127,362602	32,275287	14,910319	30,387002	140,285377
127,380579	32,431506	14,268456	29,656495	137,030906
127,25559	32,5247	14,567675	29,807735	137,962483
127,190482	32,461675	14,977588	30,133417	137,32896
127,133215	32,517994	14,626769	30,731742	142,327283
127,038167	32,560906	14,452381	30,031073	137,020683
126,89999	32,555544	14,444377	29,88232	136,300307
126,718874	32,605156	14,875748	29,777075	137,914795
126,757931	32,56225	14,464303	29,53592	137,07007
126,747531	32,625275	14,467197	29,733981	137,826244
126,526285	32,437537	14,654357	29,768786	137,717246
126,437808	32,322219	14,419513	31,772597	142,708743
126,286875	32,227681	14,606503	29,796132	138,463165
126,300765	32,299425	14,749385	30,033556	138,764599
126,294239	32,181419	14,553028	30,148334	137,737677
126,114702	32,092919	14,58726	30,580919	141,487702
126,010635	32,072131	14,27544	30,803426	140,000976
125,966404	32,082187	14,533274	29,630392	136,468916
125,862338	32,083531	14,533104	29,530535	140,646406
125,863546	32,050006	14,561033	29,288136	135,549293
125,695573	32,032575	14,320739	29,801107	138,097008
125,666886	31,997706	14,587599	30,406477	140,081018
125,679862	32,026538	14,555754	29,883564	138,899124
125,588764	32,064087	14,334193	29,89682	137,439656
125,474305	32,005756	14,338791	30,557713	139,680809
125,375465	31,946081	14,403675	30,792236	135,842202
125,258452	31,92865	14,573464	30,332722	136,480838
125,283075	31,9957	14,386135	30,320706	138,604516
125,230845	32,054031	14,243763	29,649454	138,083387

125,184031	32,115713	14,015731	30,608679	141,181155
125,142436	32,18075	13,988653	30,808397	139,249946
125,072223	32,1251	14,023054	31,45686	143,241794
125,02275	32,162644	14,131025	30,062977	141,736336
124,990173	32,268581	14,219411	29,835499	140,224067
124,83677	32,191475	14,579937	29,395456	138,844625
124,814587	32,141188	14,03157	30,232448	139,120517
124,761118	32,235725	13,951698	30,457442	139,372564
124,525794	32,302106	14,381366	30,331061	138,827607
124,551792	32,4838	13,99785	29,956488	136,172593
124,608999	32,559569	13,636642	30,552742	138,587482
124,585607	32,567612	14,12779	30,457442	138,291159
124,528384	32,468381	14,143968	32,056015	144,583755
124,416644	32,343675	14,176154	30,010768	137,500965
124,432241	32,300094	14,292129	30,512135	139,898789
124,398373	32,249806	14,058987	30,481475	139,931142
124,385291	32,232375	14,27033	30,223746	139,35553
124,426644	32,212931	14,165424	30,378713	138,679446
124,330425	32,231706	14,136133	30,208416	137,351105
124,262855	32,192144	13,877447	30,313661	141,543899
124,265453	32,016481	14,187054	29,409129	138,541492
124,125102	32,027881	14,187905	31,142364	142,322171
124,112118	32,097612	14,348328	30,452468	140,998926
124,049737	32,083531	14,195228	31,579093	141,698871
124,023739	31,998381	14,235078	31,463902	142,753018
123,92502	31,851544	14,298941	30,426778	141,499608
123,902784	31,922619	14,090663	30,974967	141,467255
124,092321	31,788519	13,935689	30,927733	145,079325
123,840267	31,710744	14,257387	30,294599	138,45464
123,76491	31,644369	14,11723	30,193912	140,876324
123,9065	31,698675	13,903674	28,642156	136,543846
123,928563	31,79925	14,062223	29,021705	137,369838
123,990876	31,898481	14,260963	29,228886	137,739376
123,968768	31,927306	14,061372	28,609008	135,220617
123,976555	31,998381	13,899417	30,222502	140,620863
123,984335	32,090231	14,086916	30,043089	139,248247
123,954349	32,084869	13,951869	29,993367	136,92702
123,955497	32,0252	13,8846	29,52349	137,247188
123,995747	31,990331	14,001766	30,082452	137,732566
124,071112	31,950106	14,052175	28,797541	135,694041
124,091913	31,974244	13,94693	29,106236	137,182465
124,081513	32,050006	13,934497	30,446666	138,742454
124,051595	32,086881	14,193355	29,796963	136,106172
124,243806	32,083531	13,758407	29,326672	135,13205
124,152701	32,140519	13,730989	29,866159	139,178429
124,081082	32,084869	13,883067	29,652768	137,494155
124,044714	32,006425	14,073803	31,134906	143,309914
124,112262	32,131131	13,89584	31,170541	140,72305

124,156455	32,231706	13,763857	30,474016	139,13074
124,221442	32,248469	14,010453	30,236592	137,732566
124,398184	32,1023	13,70306	30,71144	141,026184
124,595713	32,014469	13,588103	29,194081	136,548957
124,613931	32,042631	13,707147	29,329573	136,683482
124,764721	32,08085	13,402647	30,266009	137,967579
124,785401	32,104987	13,956636	29,279434	136,548957
124,836083	32,062744	13,763006	29,841296	137,780254
125,037509	32,006425	13,721282	30,768621	138,071465
125,090751	31,952787	13,965833	28,282913	139,004709
125,106234	32,02855	14,180752	30,153305	141,092605
125,169907	32,065425	13,908272	30,230374	137,710436
125,201124	32,060731	13,804217	30,341421	142,218285
125,149113	31,976925	13,886644	30,060907	138,338848
125,312955	31,968881	13,83913	30,875523	139,466227
125,234864	31,876356	13,625058	29,992537	138,950226
125,44808	31,899819	13,946249	29,116182	136,07893
125,644438	32,005756	13,672064	31,110047	142,862016
125,761489	31,8958	13,522709	29,719064	135,786005
125,77451	31,891775	13,817332	30,55813	137,942036
125,860344	31,821375	14,044852	30,08908	138,337133
126,024261	31,735556	13,671555	29,617963	137,581007
126,091899	31,606825	13,564773	30,24115	137,294908
126,258437	31,547819	13,612287	30,03563	138,519362
126,31436	31,52905	13,793319	29,4141	139,164792
126,397505	31,530387	13,922918	30,785195	141,847032
126,426131	31,648394	13,601729	30,776906	142,386877
126,532789	31,706725	13,820056	30,004553	136,593233
126,605555	31,792544	13,643796	29,970574	143,320121
126,70185	31,831431	13,545358	31,160182	141,920264
126,770741	31,851544	13,593724	30,849834	140,344972
126,783725	31,666494	13,586912	30,418076	141,194776
126,991979	31,668506	13,579929	31,003557	141,324205
126,907324	31,748294	13,719239	29,462578	140,757102
127,137663	31,72885	13,536843	30,645971	139,064319
127,404499	31,836794	13,384254	29,685916	141,283327
127,355019	31,760363	13,448117	29,712849	138,519362
127,589377	31,763044	13,204928	30,066291	138,337133
127,745575	31,832775	13,204077	29,422802	139,445796
127,841726	31,800587	13,388	31,161426	139,089862
127,970627	31,836125	13,215145	29,975132	137,453277
128,147762	31,807963	13,365351	29,292694	136,051673
128,186842	31,502231	13,494098	31,637931	144,788114
128,314384	31,291031	13,447095	30,904114	139,457718
128,503257	31,244769	13,484901	30,231204	137,741091
128,597051	31,225325	13,151283	29,890605	138,107232
128,71145	31,22465	13,222468	30,43548	136,877633
128,790909	31,109331	12,914225	30,036044	137,674669

128,978543	31,185094	12,918483	29,270736	137,928415
129,087987	31,238062	13,175126	30,416832	138,834418
129,137521	31,231356	13,273218	30,551085	138,975769
129,175271	31,134806	13,053871	29,68716	137,31364
129,33295	31,177719	13,441817	29,500284	137,042829
129,448875	31,061056	13,300296	28,634698	138,718609
129,472289	30,933669	13,224172	30,987814	141,046615
129,679335	30,917575	13,183981	30,170293	138,059543
129,851409	30,8807	12,99069	30,660888	140,237688
130,052216	30,985294	12,826179	30,979525	140,857591
130,258235	31,046975	12,877611	29,747241	139,655266
130,331273	31,144194	12,644469	29,575282	138,745851
130,652083	31,295725	12,762998	29,886461	136,954262
130,713384	31,307794	13,130166	29,189936	139,605879
130,957244	31,240744	12,693856	29,989223	137,897761
131,061492	30,987306	12,79723	29,663954	138,940002
131,191768	30,931656	12,541098	31,134906	141,933884
131,366622	30,815663	12,606152	30,527879	138,895727
131,546703	30,652069	12,537351	31,148583	143,483618
131,779006	30,62525	12,544844	30,556469	138,999613
131,977381	30,664138	12,207138	30,167392	139,282299
132,034845	30,692294	12,15724	30,070435	137,761522
132,235848	30,599769	12,311874	30,496805	138,504027
132,442123	30,486463	12,248691	29,734811	138,054447
132,580541	30,497188	12,205265	29,648623	136,627285
132,787934	30,526019	11,849165	29,252918	137,73428
132,796922	30,457631	12,257037	29,566167	134,871494
132,864794	30,532725	12,120285	30,218358	140,12188
133,157386	30,304094	12,154345	29,941984	138,047621
133,348087	30,220956	11,955774	30,507991	138,856547
133,483937	30,274594	11,909452	30,379544	138,366089
133,617174	30,130437	11,705773	30,836987	140,983607
133,651163	30,066744	11,814083	29,835499	137,516285
133,800095	29,985619	11,69266	30,696937	141,858954
134,002563	29,842806	11,412345	30,134661	136,382063
134,042897	29,935331	11,597121	29,848342	138,194084
134,177478	29,887056	11,649913	30,440451	141,819775
134,180107	29,840794	11,498005	31,306034	138,367788
134,275427	29,845487	11,080429	30,878424	141,908342
134,429601	29,8951	11,039046	29,4949	136,135128
134,547248	30,016456	11,213094	29,504015	133,587428
134,753795	30,057356	11,143952	29,99378	139,49177
134,709337	30,039925	10,98404	29,604703	136,293497
134,871427	29,970194	11,079578	30,790579	136,383762
134,87407	29,827387	10,970246	29,784533	138,277538
135,017821	29,684575	10,66132	30,474843	141,366782
135,212525	29,549137	10,784618	29,670586	138,679446
135,366744	29,402975	10,880157	29,847098	139,05581

135,293509	29,327212	10,736423	30,157037	140,728162
135,473968	29,345312	10,637137	30,298744	141,067046
135,547218	29,319169	10,621299	30,066291	137,414113
135,504014	29,344644	10,466156	29,963533	139,970321
135,577264	29,413031	10,336728	29,970992	137,005364
135,829613	29,4955	10,474671	30,579675	138,619835
135,841381	29,409681	10,396503	30,54694	136,463804
135,799521	29,435156	10,339453	30,626083	139,81535
136,061131	29,435156	10,112269	28,812041	137,236964
136,168415	29,457281	10,159101	29,018391	134,626257
136,215471	29,401631	10,151097	30,701908	142,744509
136,232359	29,421075	10,196057	31,472604	142,616779
136,446822	29,430462	10,134067	30,836574	138,667524
136,525329	29,2662	9,898372	29,743096	136,509778
136,561992	29,219938	9,922213	30,176925	138,623248
136,711181	29,124056	9,822758	30,706466	140,564666
136,716392	29,062375	9,825484	30,504264	138,641981
136,813223	28,934312	9,685836	29,888535	137,352804
136,889177	28,908838	9,723303	31,053693	139,536045
137,035783	28,851844	9,675108	30,326504	139,358944
136,942819	28,777425	9,446905	30,268497	136,783971
137,071101	28,731162	9,475516	29,535093	136,588121
137,158777	28,819662	9,26264	29,17792	137,068371
137,220214	28,892744	9,532396	31,184631	140,128691
137,220214	28,872631	9,459508	29,439376	137,415812
137,301395	28,823013	9,339786	30,09198	137,473708
137,372062	28,761331	9,332633	30,541556	138,633456
137,445372	28,684225	9,3248	30,298331	142,773465
137,571071	28,710375	9,165739	30,854392	138,795238
137,625922	28,769375	9,060834	29,882733	139,134138
137,595815	28,792844	9,039206	29,680528	134,57687
137,743659	28,690263	9,078376	30,150405	139,321478
137,680802	28,696969	8,953716	29,949029	139,243135
137,823511	28,627906	9,035459	29,285236	137,521396
137,823511	28,534712	8,997993	29,680114	139,660378
137,909918	28,39525	8,694518	29,979694	137,000252
137,985872	28,33625	8,932258	29,834255	138,338848
138,025163	28,38855	9,026263	29,911737	138,618137
138,033019	28,446206	9,072585	29,015073	134,488319
138,103746	28,452912	8,625716	30,169053	136,639207
138,114214	28,457606	8,651262	29,744753	137,305115
138,166588	28,438162	8,696903	29,011346	135,82347
138,205894	28,365081	8,286137	30,005796	136,259445
138,127327	28,419387	8,438898	29,320458	136,220265
138,085407	28,466325	8,532222	30,845689	142,712156
138,098519	28,509231	8,416247	29,60719	137,848374
138,182328	28,493813	8,321219	29,872787	136,480838
138,08018	28,489787	8,252758	30,39363	140,782645

138,166588	28,471019	8,130143	31,437386	139,54457
138,180999	28,385194	8,140532	29,937426	138,29797
138,072325	28,240375	8,144959	30,534098	138,670921
138,135182	28,232325	8,224318	30,400675	138,054447
138,103746	28,188075	8,196901	29,975963	138,621534
137,993743	28,226963	8,113624	30,397775	138,388235
138,072325	28,135106	8,197071	30,60122	139,321478
137,993743	28,072756	8,032731	29,915881	137,972691
138,048759	28,047275	7,991518	29,528048	139,917521
137,993743	28,023137	7,879801	30,235349	141,276517
137,917789	28,094213	7,996968	30,727597	142,666166
137,909918	28,137119	8,058958	30,574287	137,955673
137,815656	28,093538	7,68651	30,529123	138,626646
137,888981	28,082812	7,77149	29,753455	136,710739
137,868044	28,039231	7,728574	31,168471	139,137551
137,836623	28,096894	7,807423	29,839226	138,984278
137,794703	28,134438	7,736919	28,755273	138,595991
137,820897	28,214894	7,722614	29,336201	137,221645
137,729218	28,230319	7,722614	31,600642	143,897447
137,737088	28,214225	7,621286	29,830937	134,977078
137,763282	28,157238	7,639337	30,859776	138,876994
137,697797	28,122369	7,546864	30,106897	137,587817
137,674231	28,0399	7,666585	30,398188	139,522424
137,587839	27,961456	7,791587	30,862263	137,83134
137,637584	27,970844	7,610897	30,621525	138,890615
137,587839	27,9286	7,437361	30,536168	138,439321
137,530224	27,956762	7,543117	30,33645	138,977467
137,551191	27,929275	7,411815	30,41932	138,79354
137,561645	27,931287	7,384228	31,843864	142,654244
137,566871	27,924581	7,231978	31,043751	140,464193
137,456913	27,899775	7,308102	30,070022	139,398107
137,435946	27,847475	7,416244	30,437551	137,964182
137,441188	27,776406	7,308444	29,582327	138,774807
137,378361	27,800544	7,375712	31,452303	140,515279
137,226499	27,845463	7,137122	31,956568	143,958756
137,302437	27,894406	7,263825	30,052618	138,791841
137,27363	27,932625	7,24986	30,850247	142,703631
137,161043	27,882338	7,238451	29,371837	135,494794
137,108685	27,878988	7,002924	30,249022	139,030268
137,140167	27,87765	7,325133	29,288136	137,04794
137,111359	27,933294	7,385079	30,798868	143,08171
137,023698	27,90715	7,347272	30,587547	138,430796
137,049952	27,84345	7,193831	29,893506	136,548957
137,031659	27,824006	7,035452	28,812458	136,181102
136,959738	27,891056	7,256161	28,940905	135,505017
136,961007	27,826694	7,131672	28,421306	134,725031
136,88395	27,860213	6,989301	29,477495	138,362676
136,81061	27,875638	6,936505	29,866573	136,938943

136,807996	27,819319	7,129118	32,5868	148,76123
136,828949	27,871612	7,271999	33,45239	150,966617
136,661436	27,926594	7,00599	31,541801	144,117125
136,695455	27,890387	6,879114	30,53078	141,373592
136,588156	27,846138	6,97193	30,754117	141,176044
136,603851	27,804562	6,937697	31,19209	142,809232
136,645726	27,773725	7,062189	30,542796	142,145054
136,598624	27,708019	7,040561	29,988392	142,851793
136,514876	27,736175	6,921178	31,68807	143,744174
136,493938	27,793838	6,844543	30,690309	143,967266
136,431142	27,796519	7,015356	30,776493	142,892671
136,389252	27,783781	6,935483	31,497054	144,113728
136,399721	27,780431	6,990323	31,59608	144,576945
136,399721	27,838088	7,012462	31,390565	143,045944
136,347378	27,818644	6,844032	30,761576	141,416169
136,253191	27,853512	6,846927	31,088915	144,568436
136,344765	27,850831	6,803671	32,155046	146,203307
136,208703	27,881	6,929693	30,564345	141,657993
136,187766	27,854181	6,953364	30,844032	143,965567
136,208703	27,824681	6,879114	31,440287	144,04391
136,182524	27,834737	7,004458	31,066953	143,447851
136,138142	27,820656	6,926456	32,210569	145,339882
136,065043	27,73685	6,834494	30,788096	144,432181
136,02332	27,7221	6,824788	31,587795	143,630081
135,960538	27,712713	6,85476	31,972728	142,873938
135,921293	27,720087	6,943998	31,877012	147,717274
135,853284	27,703994	6,959835	32,703648	146,031301
135,761711	27,6812	6,732314	32,104907	148,594336
135,766937	27,668456	6,64461	30,661301	143,624969
135,72248	27,697288	6,615317	31,286146	146,467276
135,65707	27,707344	6,780851	31,584481	141,773801
135,628293	27,729475	6,642737	31,353272	145,673685
135,539378	27,7583	6,953364	30,975381	142,531642
135,392893	27,762325	6,749174	30,687821	142,788785
135,419087	27,6993	6,621448	31,533516	142,12802
135,263599	27,732825	6,743895	30,868065	143,623254
135,17485	27,678519	6,715284	31,459761	142,753018
135,152674	27,645663	6,81491	31,985158	143,868491
135,029755	27,634937	6,902955	32,003806	144,353853
134,969632	27,560513	6,623663	30,853974	142,81944
134,987941	27,628231	6,616	30,883395	143,597711
134,854583	27,574594	6,855612	31,284902	143,854871
134,768282	27,581969	6,494064	31,558375	145,649841
134,577445	27,616831	6,474139	31,873698	144,416861
134,472865	27,615494	6,456258	31,157698	141,070459
134,347438	27,614819	6,500536	31,574122	142,529927
134,303041	27,512238	6,739296	30,369184	145,09466
134,155544	27,50285	6,747642	31,806988	145,939353

134,057656	27,498831	6,353737	31,188359	143,660735
133,911307	27,457931	6,634391	30,616968	141,906627
133,830277	27,417687	6,821551	31,022619	141,099415
133,720531	27,353325	6,474309	31,805745	143,275846
133,555918	27,346619	6,674923	31,388077	145,149159
133,404373	27,276219	6,727887	31,990133	143,842948
133,255456	27,193081	6,628432	30,715168	142,771767
133,229322	27,212525	6,205576	30,600394	142,981222
133,135301	27,253425	6,556224	32,015409	147,09399
133,004769	27,266831	6,50241	30,762406	142,454997
132,776393	27,285606	6,309289	31,998418	143,541514
132,644637	27,27555	6,554351	31,146095	141,596683
132,48794	27,209175	6,490659	31,556304	142,718967
132,378284	27,259456	6,442634	31,156041	143,199217
132,25816	27,233981	6,407552	31,585725	142,977824
132,070193	27,233981	6,467156	31,371503	144,806847
132,023198	27,203806	6,560652	31,672736	140,426728
131,89268	27,150844	6,205234	31,05618	143,65221
131,715167	27,179669	6,381325	32,000905	147,271091
131,629047	27,134081	6,281699	31,479236	144,316389
131,456927	27,198444	6,32734	31,079799	144,122237
131,304324	27,2085	6,369574	31,241395	143,531306

Vægt - [Kg]	CO-Lav - [100ppm]	CO-Høj - [%]	CO2 - [%]
43	44	45	46
Platform scale reading	CO low range	CO high range	CO2 - [%]
3,455042	14,45382	0,146833	2,851522
4,426829	18,914758	0,185211	1,774473
4,297628	22,440783	0,26418	3,172815
4,198801	22,44038	0,266613	5,56279
4,073422	22,440246	0,381083	8,182469
4,107884	22,44038	0,523774	11,862032
3,541199	22,439979	0,400775	11,616238
4,111907	22,440113	0,728215	13,729976
4,082674	22,439844	1,132471	14,042015
4,054916	22,439844	0,79248	13,002779
4,029371	22,439844	0,739036	12,750011
4,001948	22,439979	0,653169	12,850447
3,97352	22,439844	0,545759	12,89537
3,948713	22,439576	0,413146	13,046093
3,924977	22,43971	0,37867	13,003181
3,894874	22,43971	0,438088	13,414317
3,869261	22,439844	0,48952	13,737887
3,839828	22,439576	0,441245	14,048988
3,808181	22,43971	0,418234	14,886144
3,777541	22,43971	0,625773	15,869864
3,746632	22,439441	0,581783	15,814214
3,720751	22,43971	0,4615	15,33858
3,689641	22,43971	0,348398	14,839747
3,665839	22,439307	0,254706	14,336085
3,638418	22,439307	0,258467	14,141379
3,613677	22,439307	0,256033	13,975639
3,589741	22,391034	0,232701	13,555654
3,566944	20,459532	0,202168	13,011897
3,543076	19,638199	0,197099	12,37763
3,523632	20,808447	0,230468	11,946244
3,499898	21,67765	0,214377	11,629646
3,479716	22,439441	0,245534	11,327665
3,462284	22,439441	0,242034	11,138591
3,441298	22,439576	0,232701	10,998596
3,423128	22,439441	0,229322	10,922699
3,401941	21,69468	0,226546	10,871876
3,382699	20,895877	0,208021	10,753338
3,361579	22,439576	0,231072	10,738184
3,344146	22,439441	0,270073	10,660541
3,325038	22,439174	0,251105	10,550315
3,306734	22,439576	0,245011	10,509819
3,284743	20,746495	0,216288	10,490106
3,26731	20,34287	0,221256	10,56292

3,249073	20,552192	0,207759	10,5947
3,230501	18,184075	0,193317	10,675694
3,211526	18,324473	0,195248	10,553668
3,193223	17,987224	0,208463	10,653702
3,178405	15,144813	0,164574	10,844254
3,155609	13,895315	0,163347	10,805098
3,136366	13,627126	0,144943	10,900171
3,119873	13,264399	0,143997	10,973252
3,099759	14,494049	0,143897	11,086965
3,080382	12,419735	0,155241	11,08321
3,060334	10,965475	0,116762	11,082271
3,042232	11,644129	0,124969	11,250024
3,022721	11,9268	0,129857	11,264506
3,005356	11,066985	0,1198	11,37366
2,983633	9,588051	0,114067	11,343756
2,962446	10,292987	0,107248	11,465916
2,946957	10,04518	0,118955	11,539133
2,926106	10,25705	0,120202	11,483617
2,907467	9,884535	0,109018	11,530014
2,886279	10,0897	0,124949	11,541949
2,868042	9,648125	0,100188	11,54624
2,847929	9,769079	0,119599	11,566354
2,828686	9,685672	0,120122	11,58097
2,809578	11,646676	0,114731	11,499709
2,791944	13,821429	0,147497	11,382241
2,772634	13,677814	0,157735	11,401418
2,753526	12,208267	0,13738	11,312379
2,733544	11,829984	0,12511	11,32686
2,716179	15,099758	0,155382	11,217171
2,697875	14,995431	0,171232	11,191022
2,678364	15,319806	0,155462	11,180965
2,661334	16,113647	0,170709	11,212478
2,641757	14,910549	0,147598	11,097424
2,622581	17,139875	0,162884	10,969095
2,606221	17,408605	0,183884	11,054514
2,588655	15,572978	0,165258	11,039228
2,567535	16,781171	0,184306	11,014687
2,549097	15,877239	0,160893	11,079054
2,53086	15,892927	0,175054	11,232994
2,512758	15,364729	0,148201	11,499038
2,493314	17,066927	0,189878	11,763339
2,474943	17,327209	0,192915	11,841248
2,455029	18,506439	0,206673	11,85868
2,436391	18,43282	0,202188	11,919425
2,417148	17,262169	0,183984	11,88161
2,396296	17,410348	0,182496	11,874235
2,377858	15,824002	0,171493	11,915
2,360493	13,150284	0,14627	11,942087

2,342256	13,200838	0,139049	11,811747
2,324689	13,086052	0,129555	11,79646
2,306386	12,265795	0,135308	11,773128
2,286137	12,212559	0,142851	11,861765
2,268034	11,330749	0,129716	11,863641
2,250669	11,408926	0,13571	11,837225
2,233304	10,787934	0,106283	11,867799
2,21515	10,24887	0,107208	11,876649
2,195623	8,541843	0,094214	12,127275
2,175509	10,102706	0,095281	12,228919
2,159083	9,418824	0,108415	12,315946
2,138968	8,427996	0,072049	12,209072
2,119524	8,688274	0,090795	12,311789
2,100416	9,406217	0,107812	12,378703
2,082849	8,513146	0,08643	12,431268
2,063741	8,082699	0,099022	12,465461
2,044699	9,424455	0,094194	12,514004
2,026127	9,677626	0,088321	12,574346
2,005879	10,35923	0,110205	12,683768
1,98791	10,908887	0,1093	12,592986
1,968533	10,630235	0,11095	12,528486
1,949089	12,392246	0,143011	12,610284
1,930987	11,469805	0,123843	12,633349
1,91275	10,676499	0,105398	12,669554
1,892501	11,348718	0,132069	12,631605
1,875136	10,307737	0,107168	12,650379
1,855826	10,066501	0,11286	12,535325
1,835578	10,799197	0,10576	12,438776
1,818146	10,300363	0,113927	12,465194
1,801786	11,192765	0,120926	12,514273
1,782812	10,192819	0,100732	12,42416
1,764374	9,98001	0,114228	12,360197
1,746874	10,565065	0,111714	12,342095
1,726492	9,020293	0,098438	12,343971
1,709127	9,991408	0,109964	12,314739
1,692767	8,855087	0,090493	12,362879
1,673524	9,962444	0,113725	12,328149
1,656964	8,800511	0,085324	12,404985
1,638861	8,7926	0,095582	12,383395
1,621295	8,636647	0,089427	12,436497
1,601114	6,467125	0,07229	12,390905
1,585424	6,75315	0,086511	12,509042
1,570137	7,239645	0,061167	12,424562
1,549018	6,583386	0,064345	12,473507
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1,306171	7,100857	0,088321	12,634152
1,289945	6,684627	0,079732	12,71756
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1,100335	6,434004	0,068569	12,784071
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1,034361	5,46919	0,064305	12,767309
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1,002111	6,511243	0,07762	12,732846
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0,969258	5,629435	0,065491	12,569519
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0,913408	5,257454	0,069253	12,064116
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0,884778	4,630159	0,050969	11,644934
0,871301	4,570084	0,047006	11,391629
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0,847499	3,769805	0,034817	11,121964
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0,799829	4,294654	0,057385	10,886895
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0,774753	5,34542	0,076574	10,985321
0,760137	5,615624	0,072189	11,036278
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0,738346	8,330241	0,089488	11,008117

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0,713539	7,856481	0,08645	11,151196
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0,678808	8,794477	0,096789	11,227899
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0,60928	10,915457	0,122857	10,82615
0,597212	10,904461	0,121489	10,643645
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0,281284	22,439441	0,802215	5,990821
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0,268546	22,439307	0,785179	6,0694
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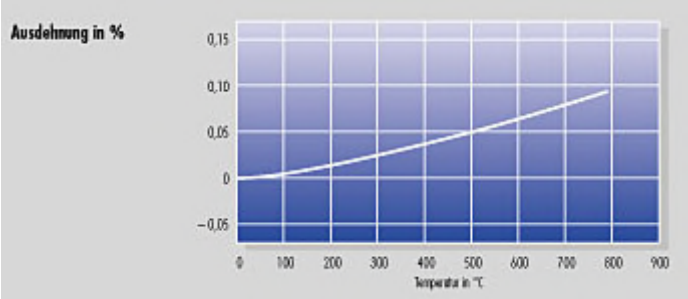
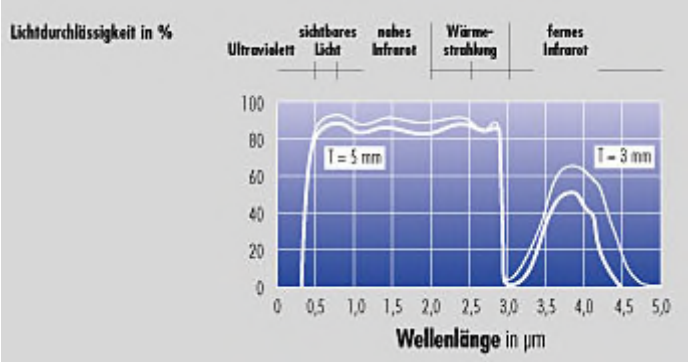
Glaskeramik NEOCERAM N-0
Technische Daten
Wärmeausdehnung
Lichtdurchlässigkeit

Oberflächenbeschaffenheit
Flache Scheiben/Beschichtete Glaskeramik/Einbaurichtlinien

Technische Daten

Ausdehnungs-koeffizient	· 10-7/K	(30 - 380° C) – 6 (30 - 750° C) – 3
Temperatur-wechselbeständigkeit	°C	800
Maximale Betriebstemperatur	°C	kontinuierlich 700 kurzzeitig 800
Wärmeleitfähigkeit	W/m · K (25° C)	1,51
Spezifische Wärme	J/kg · K	712
Dichte	g/cm3	2,51
Biege- und Schlagfestigkeit	entsprechen den Eigenschaften von Gussglas	





ROBAX® Glass Ceramic Panels

Technical Delivery Specification TL 1 00 05 51 - 00

SCHOTT ROBAX®

ROBAX® Glass Ceramic Panels

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SCHOTT
glass made of ideas

Table of Contents:

1. Description, Range of Application and Validity

1.1 Description

ROBAX® glass ceramic panels consist of a transparent glass ceramic material. Because of its material characteristics the product is designed for the use as thermal window in fireplaces. Other technical applications and shapes have to be proved separately.

1.2 Range of Application

This technical delivery specification applies to ROBAX® glass ceramic panels (delivery form: flat stock-size sheets, cut-to-size-panels and bent panels) for applications which require a low thermal expansion and transparency:

- electric, oil or gas stoves
- conventional heated fireplaces and room heaters (wood, coal, pellets, …)
- baking ovens
- special applications on request

1.3 Range of Validity

This technical delivery specification applies to the commercial relationship between the Business Unit Home Tech and its customers.

2. Technical Features

2.1 General Remarks

All data stated in this technical delivery specification are to be seen as guideline values.

Those values, for which no generally valid measuring method exist or which are not generally defined (e.g. by a technical standard), are specified and explained.

2.2 Appearance

- Transparent, slightly coloured due to the material composition and production process
- Surface appearance: plane, slightly textured due to the production process

2.3 Mechanical Characteristics

2.3.1 Density

ρ	approx. 2.6 g / cm^3

2.3.2 Modulus of Elasticity

E	approx. 93×10^3 MPa

2.3.3 Poisson's Ratio

μ	approx. 0.25

2.3.4 Bending Strength

The bending strength testing is to be accomplished according to DIN EN 1288 part 5 (R45).

$\overline{\sigma}_{bB}$	approx. 35 MPa

2.3.5 Impact Resistance

The impact resistance of ROBAX® depends on the kind of installation, the size and thickness of the panel, the kind of impact, the geometry of the panel and especially here on the drilled holes and their position on the ROBAX® panel.

Therefore information regarding the impact resistance can only be given with knowledge of the respective application (especially in combination with the technical standards regarding impact resistance that have to be met for single applications). Corresponding guideline values on request.

2.4 Thermal Characteristics

2.4.1 Coefficient of Mean Linear Expansion

$\alpha_{(20 - 700°C)}$ $(0 \pm 0.5) \times 10^{-6}$ /K

2.4.2 Mean Specific Thermal Capacity

$c_{p(20 - 100°C)}$ approx. 0.8×10^{3} J / (kg · K)

2.4.3 Thermal Conductivity

$\lambda_{(90°C)}$ approx. 1.6 W / (m · K)

2.4.4 Resistance to Temperature Differences (RTD)

Resistance of the panel to temperature differences between heated zone and cold panel edge (room temperature).

No cracking due to thermal stress at $T_{es, max}$ [1)] ≤ 700°C

2.4.5 Thermal Shock Resistance

Resistance of the panel to thermal shock when the hot panel is quenched with cold water (room temperature).

No cracking due to thermal stress at $T_{es, max}$ [1)] ≤ 700°C

2.4.6 Temperature / Time Load Capacity (under consideration of items 2.4.4 and 2.4.5)

The temperature / time load capacity specifies the maximum permissible temperature for given load times for the fireplace panels, below which no cracking due to thermal stress occurs.

The value pairs specified in the following table 2.1 are relevant to the practical use of the glass ceramic material as fireplace panel. The temperature values refer to the hottest point on the exterior side of the panel ($T_{es, max}$) because this temperature can be measured more easily and more reliably.

[1)] $T_{es, max}$: Maximum temperature on the exterior side of the panel, that means the reverse side of the heat source, at the hottest point

Load temperature $T_{es, max}$ [1)]	Load time
560°C (1040°F)	5000 hr
610°C (1130°F)	1000 hr
660°C (1220°F)	100 hr
710°C (1310°F)	10 hr
760°C (1400°F)	5 hr

Table 2.1: Temperature / time load capacity for ROBAX® panels

Note:

For ROBAX® fireplace panels the temperature / time load capacity specified in table 2.1 must be maintained. It must be ensured that this temperature / time load capacity is not exceeded during use, to prevent cracking due to thermal stress.

The temperature / time load data for even temperature distributions within an entire glass ceramic panel (e.g. homogeneous heating conditions in a testing furnace) are given in table 2.2. This data is to be seen purely as characteristic data for the glass ceramic material itself. It is not typical for use of the glass ceramic material as fireplace panels, which have a temperature distribution totally different from evenness. The temperatures refer to the homogeneous heating of the ROBAX® panel (T_{hom}).

Load temperature T_{hom} [2)]	Load time
700°C (1292°F)	6000 hr
750°C (1382°F)	750 hr
775°C (1427°F)	275 hr
800°C (1472°F)	100 hr
825°C (1517°F)	35 hr

Table 2.2: Temperature / time load capacity for uniformly heated ROBAX® panels

[1)] $T_{es, max}$: Maximum temperature on the exterior side of the panel, that means the reverse side of the heat source, at the hottest point

[2)] T_{hom}: Homogenous temperature, i.e. material temperature under homogeneous heating conditions

2.5 Chemical Characteristics of Base Material

2.5.1 Acid Resistance

DIN 12116	at least class S3

2.5.2 Alkaline Resistance

based on ISO 695	at least class A2

2.5.3 Hydrolytic Class

DIN ISO 719	class HGB 1

2.5.4 Change of Surface due to Use

ROBAX® has a good resistance against chemical surface attack. In isolated cases and under special critical conditions, e.g. aggressive exhaust gases (acidification at high temperatures) changes of the surface may occur. For such applications practice tests have to be carried out before being used.

3. General Dimensional Tolerances and Material Characteristics

The following describes characteristics which are valid for all four product groups (stock-size sheets, cut-to-size panels, round bent and angular bent panels). With regard to stock-size sheets all of the following characteristics (with exception of flatness, see item 4.1) refer to the net-size as agreed on with the customer.

3.1 Dimensional Tolerances

Characteristics / Areas / Location	Tolerance
Thickness *t* ***t*** = 3.0 / 4.0 / 5.0 mm	± 0.2 mm

Table 3.1: Dimensional tolerances

3.2 Material Characteristics

Visual inspection in the normal installation position without visual aids and illumination of approx. 800 Lux when viewed from a minimum distance of 1 m.

The inspection shall be executed with a background in the colour of fireclay bricks:

Light ivory RAL-1015.

3.2.1 Bubbles

Bubbles are gaseous inclusions within the glass ceramic material. Closed bubbles can appear as low-spots on the surface depending on their size and position within the glass. Open bubbles are open towards the panel surface and are not permissible if bigger than 1 mm. The production of material totally free of bubbles is not possible due to the production process. Table 3.2 contains the permissible number of closed bubbles in dependence of their length and the panel size.

Characteristic's Length *L* [mm]	Panel Size *A*			
	A ≤ 20 dm²	20 dm² < *A* ≤ 40 dm²	40 dm² < *A* ≤ 80 dm²	80 dm² < *A* ≤ 150 dm²
L ≤ 1.0	unconsidered	unconsidered	unconsidered	unconsidered
1.0 < *L* ≤ 2.0	2[1)]	6[1)]	12[1)]	33
2.0 < *L* ≤ 4.0	1[1)]	2[1)]	4[1)]	20
4.0 < *L* ≤ 8.0	0	0	0	13
8.0 < *L*	0	0	0	0

[1)] The distance between two adjacent characteristics must be minimum 200 mm.

Table 3.2: Permissible number of closed bubbles per panel

3.2.2 Solid Inclusions and Stains

Solid inclusions are inhomogeneities within the glass ceramic material. Stains are deviations of the surface which are easily visible under normal inspection conditions. Both characteristics cannot be completely avoided due to the production process. Table 3.3 contains the permissible number of solid inclusions and stains in dependence of their length and the panel size.

Characteristic's Length *L* [mm]	Panel Size *A*			
	A ≤ 20 dm²	20 dm² < *A* ≤ 40 dm²	40 dm² < *A* ≤ 80 dm²	80 dm² < *A* ≤ 150 dm²
L ≤ 0.5	unconsidered	unconsidered	unconsidered	unconsidered
0.5 < *L* ≤ 2.0	0	3[1)]	6[1)]	30
2.0 < *L* ≤ 4.0	0	0	1[1)]	3
4.0 < *L*	0	0	0	0

[1)] The distance between two adjacent characteristics must be minimum 200 mm.

Table 3.3: Permissible number of solid inclusions and stains per panel

3.2.3 Scratches

The delivery of ROBAX® panels totally free of scratches is not possible due to technical reasons. It has to be distinguished between slight scratches (scratches not detectable with finger nail) and strong scratches (scratches detectable with finger nail). Table 3.4 contains the permissible number of scratches in dependence of their length and the panel size.

Characteristic's Length *L* [mm]	Panel Size *A*			
	$A \leq 20$ dm²	20 dm² < $A \leq 40$ dm²	40 dm² < $A \leq 80$ dm²	80 dm² < $A \leq 150$ dm²
Slight Scratches:				
$L \leq 10$	unconsidered	unconsidered	unconsidered	unconsidered
$10 < L$	1[1)]	2[1)]	4[1)]	20
Strong Scratches:				
$L \leq 10$	1[1)]	2[1)]	4[1)]	20
$10 < L$	0	0	0	0

[1)] The distance between two adjacent characteristics must be minimum 200 mm.

Table 3.4: Permissible number of scratches per panel

3.2.4 Pits

ROBAX® panels may show pits. These pits must not be recognizable during a visual inspection according to the conditions for visual inspections as described in item 3.2.

3.2.5 Other Characteristics

If the panel - when inspected according to the conditions for visual inspections as described in item 3.2 - shows a number of defects which impair the aesthetic appearance SCHOTT and the customer will agree on limit values for the respective characteristics and, if necessary, limit samples will be defined.

4. Stock-Size Sheets

Stock-size sheets are large-size glass ceramic panels without any further processing, especially without edge processing. They serve as base material for cut-to-size panels.

4.1 Dimensional Tolerances

Characteristics / Areas / Location	Tolerance
Edge length of stock-size sheet	
Usable length: Usable width:	at least 1580 mm at least 840 mm
Flatness of stock-size sheet	
Flatness	≤ 0.3 % × measuring length (Measuring length at least 500 mm)

Table 4.1: Dimensional tolerances for stock-size sheets

4.2 Material Characteristics

The material characteristics comply with the specifications of item 3.2, incl. subitems.

5. Cut-to-Size Panels

5.1 Dimensional Tolerances

Characteristics / Areas / Location	Tolerance
Edge length *l*	
l ≤ 500 mm	± 1.0 mm
l > 500 mm	± 1.5 mm
Special designs (contour shapes)	as per separate agreement
Corner radius *r*	
r ≤ 20 mm	± 1.5 mm
r > 20 mm	± 2.0 mm
Squareness of cut-to-size panels *a* (according to fig. 5.1)	
Edge length ≤ 500 mm	*a* ≤ 1.0 mm
Edge length > 500 mm	*a* ≤ 1.5 mm
Flatness of cut-to-size panels	
Flatness	≤ 0.3% × *D* *D*: diagonal of cut-to-size panel
Drilled hole diameter d_H	
4 mm ≤ d_H ≤ 20 mm	± 0.2 mm
20 mm < d_H ≤ 60 mm	± 0.5 mm
Position of drilled hole	
• Deviation between drilled hole centre axis and panel centre axis	± 1.5 mm
• Deviation between drilled hole centre axis of adjacent drilled holes (max. distance 500 mm)	± 1.0 mm

Table 5.1: Dimensional tolerances for cut-to-size panels

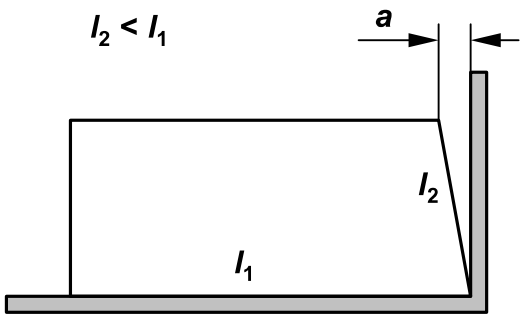

Fig. 5.1: Squareness measurement

5.2 Edge Finish

The edges of flat cut-to-size panels are processed according to DIN 1249, e.g. either arrissed or round ground to size.

ROBAX® panels may show small chippings at the edges. The maximum permissible size of these chippings is 1.5 mm when measured from the outer edge of the panel.

ROBAX® panels with V-shaped edge defects are not permissible.

5.3 Material Characteristics

The material characteristics comply with the specifications of item 3.2, incl. subitems.

6. Round Bent Panels

6.1 Dimensional and Form Tolerances

Characteristics / Areas / Location	Tolerance
Panel height *h*	
$h \leq 500$ mm	± 1.0 mm
500 mm < $h \leq 600$ mm	± 1.5 mm
600 mm < h	Determination according to initial sample
Arc length l_A	
$l_A \leq 500$ mm	± 1.5 mm
$l_A > 500$ mm	± 2.0 mm
Corner radius *r*	
$r \leq 20$ mm	± 1.5 mm
$r > 20$ mm	± 2.0 mm
Sagging at panel edge s_h	
$h \leq 500$ mm	$s_h \leq 1.5$ mm
500 mm < $h \leq 600$ mm	$s_h \leq 2.0$ mm
600 mm < h	Determination according to initial sample
Drilled hole diameter d_H	
4 mm $\leq d_H \leq$ 20 mm	± 0.2 mm
20 mm < $d_H \leq$ 60 mm	± 0.5 mm
Position of drilled hole	
• Deviation between drilled hole centre axis and panel centre axis	± 1.5 mm
• Deviation between drilled hole centre axis of adjacent drilled holes (max. distance 500 mm)	± 1.0 mm

Table 6.1: Dimensional and form tolerances for round bent panels (see also fig. 6.1)

Table 6.2 contains the permissible overall torsion values of round bent panels.

	Panel Size *A*		
	A ≤ 20 dm²	20 dm² < ***A*** ≤ 40 dm²	40 dm² < ***A***
Permissible overall torsion s_T [mm]	2.5	4	5

Table 6.2: Permissible overall torsion of round bent panels (see also fig. 6.1)

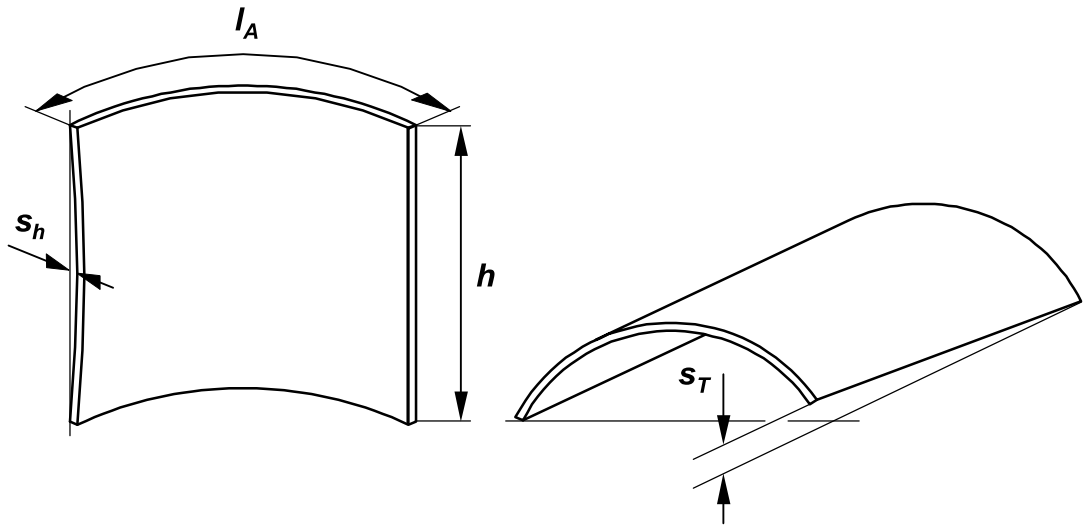

Fig. 6.1: Round bent ROBAX® panels

All geometric tolerances are specified by means of a two-dimensional enveloping contour. For testing the geometric tolerances a flat plastic gauge with a defined contour slot is used. The geometry of the contour slot is determined by the radius of curvature of the panel R_{soll}, by the arc length l_A and by the tolerance of the contour slot widths s_i, s_a (see fig. 6.2). If required the drawing of the contour slot gauge can be provided for the customer.

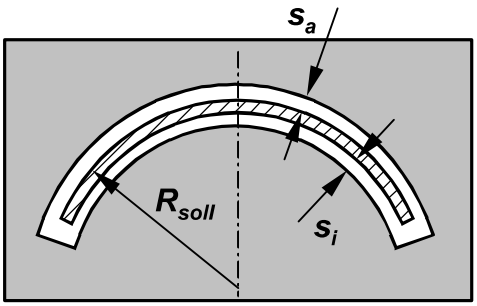

Fig. 6.2: Contour slot gauge geometry for round bent ROBAX® panels

The tolerances of the contour slot widths for round bent panels are given in table 6.3.

Aperture angle α_B	Arc length l_A					
	185 mm < l_A ≤ 400 mm		400 mm < l_A ≤ 600 mm		600 mm < l_A ≤ 1100 mm	
	s_i	s_a	s_i	s_a	s_i	s_a
α_B ≤ 130°	1.0 mm	1.0 mm	1.25 mm	1.25 mm	1.25 mm	1.25 mm
130° < α_B ≤ 180°	1.25 mm	1.25 mm	1.5 mm	1.5 mm	1.5 mm	1.5 mm

Table 6.3: Tolerances of the contour slot widths s_i , s_a for round bent panels

The glass ceramic panel must easily fit into the contour slot gauge.

6.2 Material Characteristics

The material characteristics comply with the specifications of item 3.2, incl. subitems.

7. Angular Bent Panels

7.1 Dimension and Form Tolerances

Characteristics / Areas / Location	Tolerance
Leg length l_1, l_3	± 2.0 mm
Middle section length l_2	± 1.0 mm
Panel height h $h \leq 500$ mm 500 mm < $h \leq$ 600 mm 600 mm < h	 ± 1.0 mm ± 1.5 mm Determination according to initial sample
Corner radius r $r \leq 20$ mm $r > 20$ mm	 ± 1.5 mm ± 2.0 mm
Sagging at leg edge s_{l1}, s_{l3}	s_{l1}, s_{l3} ≤ 2.0 mm
Sagging at middle section edge s_{l2}	s_{l2} ≤ 2.0 mm
Sagging at panel edge s_h $h \leq 500$ mm 500 mm < $h \leq$ 600 mm 600 mm < h	 s_h ≤ 1.5 mm s_h ≤ 2.0 mm Determination according to initial sample
Drilled hole diameter d_H 4 mm ≤d_H≤ 20 mm 20 mm <d_H≤ 60 mm	 ± 0.2 mm ± 0.5 mm
Position of drilled hole • Deviation between drilled hole centre axis and panel centre axis • Deviation between drilled hole centre axis of adjacent drilled holes (max. distance 500 mm)	 ± 1.5 mm ± 1.0 mm

Table 7.1: Dimension and form tolerances for angular bent panels (see also fig. 7.1)

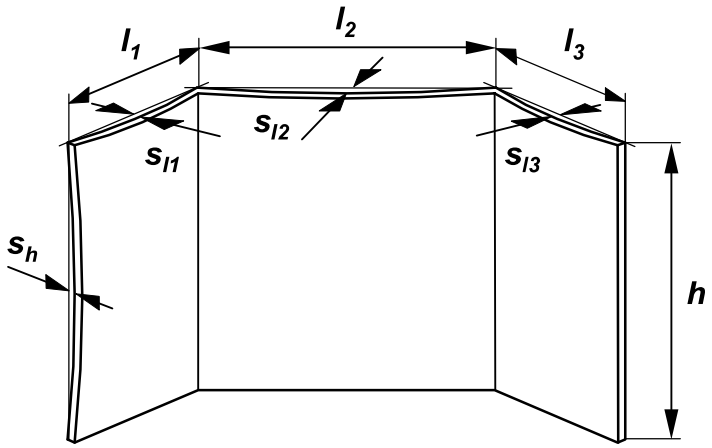

Fig. 7.1: Angular bent ROBAX® panels

Table 7.2 contains the permissible overall torsion values of angular bent panels.

	Panel Size A		
	$A \leq 20$ dm²	20 dm² < $A \leq 40$ dm²	40 dm² < A
Permissible overall torsion s_T [mm]	2.5	4	5

Table 7.2: Permissible overall torsion of angular bent panels (see also fig. 7.2)

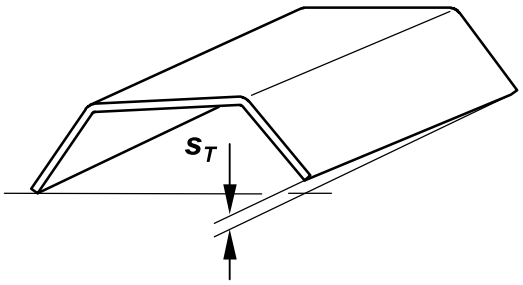

Fig. 7.2: Overall torsion of an angular bent ROBAX® panel

All geometric tolerances are specified by means of a two-dimensional enveloping contour. For testing the geometric tolerances a flat plastic gauge with a defined contour slot is used. The geometry of the slot is determined by the edge lengths l_1, l_2, and l_3, by the bending angle α_W and by the tolerances of the contour slot widths s_i, s_a (see fig. 7.1, 7.2, 7.3 and 7.4). If required the drawing of the contour slot gauge can be provided for the customer.

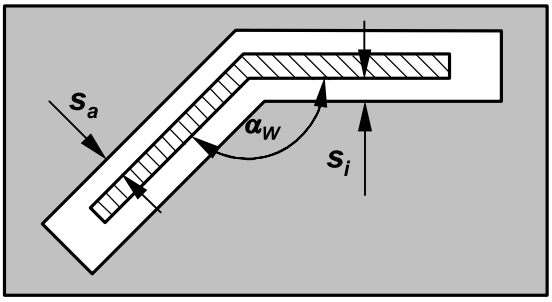

Fig. 7.3: Contour slot gauge geometry for single angular bent ROBAX® panels

The tolerances of the contour slot widths for single angular bent panels are given in table 7.3.

Bending angle α_W	Sum of leg lengths L					
	180 mm < L ≤ 440 mm		440 mm < L ≤ 900 mm		900 mm < L ≤ 1300 mm	
	s_i	s_a	s_i	s_a	s_i	s_a
90° < α_W ≤ 160°	1.0 mm	1.0 mm	1.5 mm	1.5 mm	2.0 mm	2.0 mm

Table 7.3: Tolerances of the contour slot widths s_i , s_a for single angular bent panels

The glass ceramic panel must easily fit into the slot gauge.

The contour slot gauge geometry as shown in fig. 7.4 is valid for double angular bent panels.

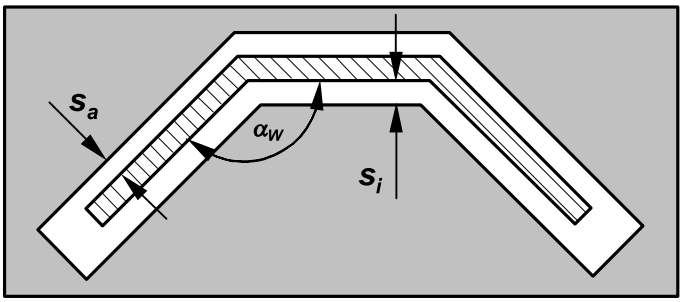

Abb. 7.4: Slot gauge geometry for double angular bent ROBAX® panels

The tolerances of the contour slot widths for double angular bent panels are given in table 7.4:

Bending angle α_W	Longest leg length $l_{,max}$					
	30 mm < l ≤ 100 mm		100 mm < l ≤ 200 mm		200 mm < l ≤ 340 mm	
	s_i	s_a	s_i	s_a	s_i	s_a
110° < α_W	1.0 mm	1.0 mm	1.25 mm	1.25 mm	1.5 mm	1.5 mm

Table 7.4: Tolerances of the contour slot widths s_i , s_a for double angular bent panels

The glass ceramic panel must easily fit into the slot gauge.

7.2 Material Characteristics

The material characteristics comply with the specifications of item 3.2, incl. subitems.

8. Transport, Storage and Handling

To avoid damage, it is necessary for the panels to be handled properly as well as transported and stored only vertically secured, and protected against touching each other by suitable intermediate layers (paper, cardboard, cork or PE foamfoils).

9. Installation Guidelines

The same conditions apply to the installation and the handling of ROBAX® panels as are generally valid for handling glass and glass ceramic parts.

- The **different thermal expansion** between the various frame materials and the ROBAX® panel has to be taken into account for the complete construction. Furthermore the possible production tolerances of frame and panel have to be considered.
- For installation it is necessary to use a sufficiently **low distortion frame construction**. As a minimal distortion of the frame construction cannot be excluded a **temperature stable, permanently resilient gasket** (e.g. fibre glass cloth or mineral fibre cloth) is required in order to prevent any transfer of distortions from the frame construction onto the ROBAX® panel. Any direct contact between glass ceramics and metal has to be avoided.
- If for constructive reasons a pressing of the panel in the frame is required the **contact pressure must be applied uniformly (never at points only)** over the entire edge area of the panel.

10. Procedures if Deviations Occur

10.1 Basic Action

Deviations should be handled in the most cost-effective manner for both partners. Deviations are estimated according to the state of the products at time of delivery. Changes in the material which occur during further processing of ROBAX® glass ceramic panels exclude warranty claims of the recipient against SCHOTT.

10.2 Obligation of Recipient to Provide Information

SCHOTT requires the following data for reporting, testing and evaluating deviations:

- SCHOTT order number
- Pallet voucher with production order number
- Warehouse unit number
- Delivery quantity affected
- Complaint quantity with article number
- Reasons for complaint
- Results of random sample tests

10.3 Recipient's Storage Obligation

All parts with characteristic values deviating from the specifications and complained about by the recipient must be stored by the recipient until final clarification of the facts and made available to SCHOTT upon request. If such parts are scrapped by the recipient without written authorization from SCHOTT or if they are no longer available for other reasons, all warranty rights regarding such parts shall be null and void.

GLASFIBERPRODUKTER
TEKNISKE DATA

Basismaterialet i STEFFCA glasfiberprodukter består af 6 - 9 mikron "E" glasfibertråde som kan volumineres, tekstureres, tvindes, forstærkes med ståltråde osv.
Produkterne er uorganiske, sterile, ildfaste, helt asbestfri, indeholder ingen giftstoffer eller tungmetaller, og forårsager ikke hudirritation.

"E" GLASFIBER - SAMMENSÆTNING

SiO_2 ..... 53-55 %
Al_2O_3 ..... 14-15,5 %
CaO - MgO ..... 20-24 %
B_2O_3 ..... 6,5-9 %
Fe_2O_3 - TiO_2 ..... < 1 %
Na_2O-H_2O ..... < 1 %

"E" GLASFIBER - GENERELLE EGENSKABER

Farve: ..... HVID
Max. temperatur ..... 550 °C
Smeltepunkt ..... 1200 °C
Fiberdiameter ..... 6-9 mikron
Trækstyrke - nyt filament ..... 3400 MPa
Young's modul ..... 74000 MPa
Varmeledningsevne ..... 1,0 W/m °K
Reaktion på ild ..... ildfast
Glødetab ..... < 1,5%
Dielektrisk stivhed ..... 60-100 kV/mm
Opløsningsmiddelægthed ..... god
Basefasthed ..... god
Syrefasthed ..... god - bortset fra fluorbrintesyre

"E" GLASFIBERPRODUKTER - GENERELLE EGENSKABER

- stor mekanisk styrke
- gode elektriske egenskaber
- ildfaste
- lav varmeledningsevne
- god modstandsevne over for kemiske stoffer
- høj termisk modstand
- god fleksibilitet

MAX TEMPERATUR ..... 550 °C

STEFFCA GLASFIBERPRODUKTER - SORTIMENT

Snoede pakning - omflettede pakning - isolerende bånd - flettede pakninger i runde, firkantede og rektangulære dimensioner - vævet bændel - selvklæbende bændel - bånd - selvklæbende bånd - stigebånd - dielektrisk tape - lodde puder - rå, silikonecoatede, HT-behandlede, aluminiserede, grafitiserede, karamelliserede, teflonbelagte, - glasklæder - afdækninger

VETRO-REF:
GLASFIBERPRODUKTER MED SPECIEL HT-IMPRÆGNERING

Glasfiberprodukter kan imprægneres med speciel ildfast vermiculit for at øge deres resistens over for høje temperaturer og alle slags termisk chok op til 1000°C og for at reducere spild af glasfiber og pulver under håndteringen.
STEFFCA's "VETRO-REF" produkter er meget fleksible og modstandsdygtige over for gnister, svejsesprøjt og smeltet metal.
VETRO-REF produkternes farve ..... guld
Imprægneringens max termiske fasthed ved kontinuerlig anvendelse ..... 700° C
Imprægneringens max termiske fasthed ved kortvarige påvirkninger ..... 1000 °C

INSULFRAX LTX BLANKET

LEADER IN HIGH TEMPERATURE SOLUTIONS

TECHNICAL DATASHEET

Description

Insulfrax® LTX™ Blankets are the latest addition to the Insulfrax product family. Insulfrax LTX offers the same benefits as previous Insulfrax blankets, now with physical properties enhanced to improve both thermal performance and handling. These lightweight needled blankets combine innovative proprietary technology with Insulfrax proven performance to create the best low-biopersistent Insulfrax blanket available from Insulcon today. Insulfrax LTX blankets are manufactured from alkaline earth silicate (AES) wool, and provide effective solutions to a variety of thermal management challenges.
The new Insulfrax LTX products can help customers reduce costs. The enhanced LTX fibre performance helps companies reduce their energy costs and meet increasingly strict carbon emission targets, without increasing the amount of insulation required. Alternatively, customers can save on material costs by using less insulation to achieve the same performance as standard AES blankets. Customers can save money by reducing their lining thickness up to 25%, freeing up valuable space in furnaces and ovens.
Insulfrax LTX Blankets are completely inorganic and binder free with an improved, smoother surface finish. Insulfrax LTX Blankets retain their strength, flexibility and thermal properties in many working environments without the generation of smoke or fumes. These new blankets are less dusty, which makes handling and cutting the material easier, resulting in faster installation of the product onsite and, in some cases, reduced waste of material. Insulfrax LTX Blankets are also printed on the surface of the blanket, which makes installation tracking and inspection on the job site or in the fabrication shop easier.
Available in a range of density and thickness combinations, Insulfrax LTX Blankets can be used in a wide variety of applications and are especially suited for use as high-temperature gaskets, wraps and heat shields.

General Characteristics

Insulfrax LTX Blanket products have the following outstanding characteristics:

- Exceptional insulating properties
- High temperature stability (up to 1200°C)
- Resistance to thermal shock
- High tensile strength & resiliency
- Lightweight
- Excellent flexibility
- Good acoustic properties

Typical Applications

Insulfrax LTX Blankets are the next generation of low biopersistent Insulfrax fiber and the product of choice for a wide range of applications in a number of industries including:

Appliances

- Residential self-cleaning ovens
- High-temperature commercial cooking appliances

Hearth Products

- Chimney Insulation

Insulcon B.V.- The Netherlands **-** Tel: +31 (0) 167 565 750
Insulcon GmbH - Germany **-** Tel: +49 (0) 2131 408548-0
Keramab N.V. - Belgium **-** Tel: +32 (0) 3 711 02 78
Insulcon Projects S.A. - Switzerland **-** Tel: +41 (0) 919117390

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www.insulcon.com / www.keramab.com

Form: A1-049
Effective: 22012018/AJ/an
supersedes: ss None

INSULFRAX LTX BLANKET

Primary Metals
- Expansion joint seals
- Aluminium transfer ladle covers
- Backup insulation for dense refractory linings
- Backup insulation for Fiberfrax® or Isofrax® linings
- Maintenance blanket
- Heat shields

Metals Processing
- Stress relieving blankets
- Seals and gaskets

Petrochemical/Power
- Reusable insulating pads
- External boiler and duct insulation

Ceramic and Glass
- Glass tank crown insulation
- Expansion joints
- Carbon baking furnace covers

Passive fire protection

Exhaust Insulation and Heat Shields

Typical Product Parameters

	Insulfrax LTX Blanket			
Typical Chemical Analysis (wt. %)				
SiO_2	61.0 – 67.0			
CaO	27.0 – 33.0			
MgO	2.5 – 6.5			
Al_2O_3	<1.0			
Fe_2O_3	<0.6			
Physical Properties				
Colour	White			
Classification Temperature (C°)*	1200			
Use Limit (C°)*	1100			
Melting Point (C°)	>1330			
Mean Fibre Diameter (microns)	4.0			
Permanent Linear Shrinkage (%) 24 hour soak EN 1094-1				
1200°C	1.0			
Density (kg/m³)	**64**	**96**	**128**	**160**
Thermal Conductivity (W/mK) – ASTM C201				
Mean Temp.				
200°C	0.06	0.06	0.05	0.05
400°C	0.11	0.09	0.08	0.08
600°C	0.17	0.14	0.12	0.11
800°C	0.26	0.20	0.18	0.15
1000°C	0.38	0.29	0.25	0.21
Tensile Strength (kPa)				
	45	65	85	100

LEADER IN HIGH TEMPERATURE SOLUTIONS

TECHNICAL DATASHEET

Insulcon B.V.- The Netherlands **-** Tel: +31 (0) 167 565 750
Insulcon GmbH - Germany **-** Tel: +49 (0) 2131 408548-0
Keramab N.V. - Belgium **-** Tel: +32 (0) 3 711 02 78
Insulcon Projects S.A. - Switzerland **-** Tel: +41 (0) 919117390

INSULCON LEADER IN HIGH TEMPERATURE SOLUTIONS | KERAMAB LEADER IN HIGH TEMPERATURE SOLUTIONS

www.insulcon.com / www.keramab.com

Form: A1-049
Effective: 22012018/AJ/an
supersedes: ss None

* The maximum continuous use limit temperature for these products depends upon operating and application conditions, and also the engineered design of the insulation lining. For additional information and support regarding product performance or to identify the recommended product for your application, please contact your nearest Insulfrax Application Engineering office.
Data shown is based on average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

Availability

Thickness (mm)	Density (kg/m³)				Roll Length (m)
	64	96	128	160	
6		*	✓		22.00
10		*	*		18.30
13		✓	✓	*	14.64
19	*	✓	✓	*	10.00
25	✓	✓	✓	✓	7.32
38	*	✓	✓	*	5.00
50	✓	✓	✓	✓	3.66

Standard roll width is 610mm.
Products in the table above listed with a checkmark are standard items.
Products marked with an asterisk (*) are not standard items but are available on request and may be subject to minimum order requirements. Other thicknesses, sizes and densities (e.g. 80 kg/m3) are available on request subject to minimum order requirements. Versions with aluminium foil and other coverings are also available.

Insulcon B.V.- The Netherlands **-** Tel: +31 (0) 167 565 750
Insulcon GmbH - Germany **-** Tel: +49 (0) 2131 408548-0
Keramab N.V. - Belgium **-** Tel: +32 (0) 3 711 02 78
Insulcon Projects S.A. - Switzerland **-** Tel: +41 (0) 919117390

Form: A1-049
Effective: 22012018/AJ/an
supersedes: ss None

V-1100 (600) Vermiculite insulating slabs

for hot-face and back-up insulation - up to 1100°C (2012°F)

Maximum service temperature		
	°C	1100
	°F	2012
Bulk density, dry		
	kg/m^3	600
	lbs/cu.ft.	37.5
Compressive strength (EN 1094-5: 1995)		
@ room temperature	MPa	4.2
	lbs/sq.in.	609
Modulus of rupture (EN 993-6: 1995)		
	MPa	1.6
	lbs/sq.in.	232
Total porosity (EN 1094-4: 1995)		
	%	76
Specific heat		
	kJ/(kg×K)	0.94
	BTU/(lb×°F)	0.224
Coefficent of reversible thermal expansion (BS 1902: section 5.3: 1990)		
@ 20°C-750°C (68°F-1382°F)	K^{-1}	11×10^{-6}
	$°F^{-1}$	6.1×10^{-6}
Resistance to thermal shock (EN 993-11: 1998)		
heating to 950°C (1742°F)	cycles	>10
Linear reheat shrinkage (EN 1094-6: 1999)		
@ 1000°C	%	1.0
@ 1100°C	%	
Pyrometric cone equivalent (ASTM C24-89 ORTON cones)		
	°C	1300
	°F	2372
Thermal conductivity (ASTM C-182)		
mean temp. @ 200°C	W/(m×K)	0.15
mean temp. @ 400°C	W/(m×K)	0.16
mean temp. @ 600°C	W/(m×K)	0.19
mean temp. @ 800°C	W/(m×K)	-
mean temp. @ 392°F	BTU/(sq.ft.×h×°F/in.)	1.04
mean temp. @ 752°F	BTU/(sq.ft.×h×°F/in.)	1.11
mean temp. @ 1112°F	BTU/(sq.ft.×h×°F/in.)	1.32
mean temp. @ 1472°F	BTU/(sq.ft.×h×°F/in.)	-
Chemical analysis, typical	%	
Silica	SiO_2	47
Titanium dioxide	TiO_2	0.5
Ferric oxide	Fe_2O_3	4
Alumina	Al_2O_3	7
Magnesium oxide	MgO	21
Calcium oxide	CaO	2
Sodium oxide	Na_2O	0.5
Potassium oxide	K_2O	11
Loss on ignition 1025°C (1877°F)	LOI	7
Colour		sand

Data are average results of tests conducted under standard procedures and are subject to variation. Data contained in this data sheet are supplied in good faith as a technical service and are subject to change without notice. Misprint and errors excepted.

Skamol A/S
Østergade 58-60
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Tel: 45 9772 1533
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Skamol Americas, Inc.
8318 Pineville-Matthews Road
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USA
Tel: +1 (704) 544-1015
Fax: +1 (704) 544-1239

www.skamol.com

Skamol A/S is DS/EN ISO 9001 certified.

March 2004

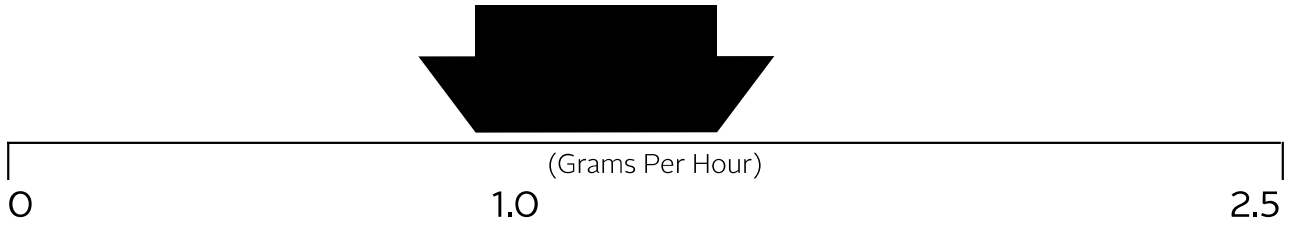
Manufactured by: Morsø
Model: 7110 B

U.S. ENVIRONMENTAL PROTECTION AGENCY

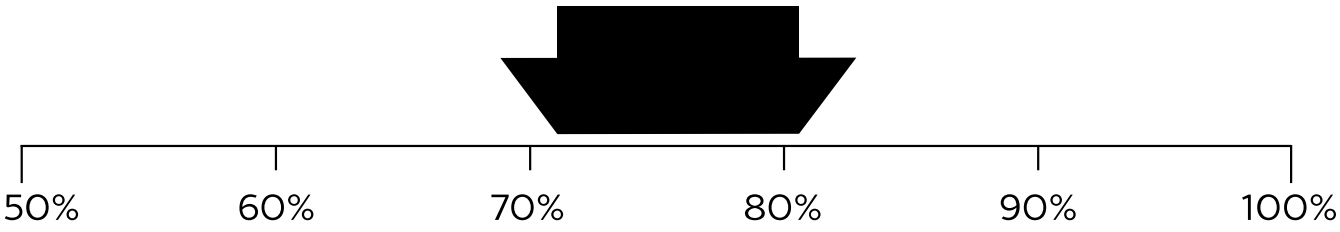
Certified to comply with 2020 particulate emission standards using cord wood.

SMOKE

THIS MODEL



EFFICIENCY



Particulate emission using ASTM E3053-17 cordwood test method:

Emission
1.1 g/h

Wood heaters with higher efficiencies cost less to operate.

HEAT OUTPUT
16,457 to 36,554 Btu/Hr

Use this to choose the right size appliance for your needs.
ASK DEALER FOR HELP

This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PREVENT HOUSE FIRES:
Install and use only in accordance with manufacturer's installation and operating instructions and local codes. Contact local building or fire officials about restrictions and installation inspection in your area. In absence of any local codes, installation must meet minimum requirements of NFPA 211 in USA, and B365 in Canada. Refer to manufacturer's instructions and local codes for precautions required for passing chimney through a combustible wall or ceilling. Inspect and clean chimney system frequently in accordance with manufacturer's instructions.
For use with solid wood fuel only. Do not connect this unit to a chimney flue serving another appliance.
Do not use grate or elevate fire. Build wood fire directly on hearth.
Use a residential type masonry or listed type HT factory-built chimney.
High Temperature (H.T.) Chimney Standard UL-103-1985 (2100º F.) for the USA, and High Temperature (650ºC) Standard ULC S-629 for Canada.
NOTE: Replace glass only with factory supplied ceramic. Operate only with door closed. Do not operate with start device open or ajar.
Do not obstruct beneath the heater

PREVENT CREOSOTE FIRES: Inspect and clean chimney frequently. Under certain conditions of use creosote buildup may occur rapidly.

CAUTION: Fully open combustion air control before opening the fuel feed door.

PRÉVENTION DES FEUX DE MAISON:
Installez et utilisez seulement en accord avec les instructions d'installation et d'opération du manufacturier et des codes locaux. Contactez les autorités locales en charge des constructions et de la prévention contre le feu au sujet des restrictions et l'inspection des installations dans votre région. Dans l'absence des codes locaux, l'Installation doit être conforme aux exigences de NFPA 211 aux États-Unis, et B365 au Canada. Référez-vous aux instructions du manufacturier et des codes locaux pour les précautions exigées pour passer une cheminée à travers un mur ou un plafond combustibles. Inspectez et nettoyez le système de la cheminée frequemment en accord avec les instructions du manufacturier.
Pour une utilisation avec des combustibles solides uniquement. Ne pas brancher cette unité à une cheminée utilisée pour une autre installation.
N'utilisez pas un âtre et n'élevez pas la feu. Édifiez le bois de feu directement sur le foyer.
Utilisez une cheminée maçonnée de type résidentiel ou une cheminée préfabriquée répertoriée de type HT. Cheminée Haute Température (HT), norme UL-103-1985 (2100 °F) pour les États-Unis et Haute Température (650 °C), norme ULC S-629 pour le Canada.
NOTE: Remplacez la vitre seulement avec de la céramique fournie par l'usine.
Opérer seulement avec la porte fermée. Ne pas opérer si le démarreur d'opération est ouvert ou entrouvert.
Ne pas obstruer sous le poêle.

PRÉVENEZ LES FEUX DE CRÉOSOTE: Inspectez et nettoyez la cheminée fréquemment. Sous certaines conditions d'usage, le résidu de créosote peut se faire rapidement.

AVIS: Ouvrez complétement le contrôle d'air de combustion avant d'ouvrir la porte du foyer.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Certified to comply with 2020 particulate emission standards using cord wood.
This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual. Test results using EPA Method 28R test method:

Certifié conforme aux normes EPA de 2020 les émissions de particules solides utilisant le bois de corde.
Ce poêle doit être revisé et reparé périodiquement pour une utilisation correcte.
Il est contre la loi fédérale d'utiliser ce poêle contredit les instructions de ce manuel.
Résultats des tests utilisant la méthode d'essai EPA Méthode 28R:

PARTICULATE EMISSION / EMISSION DE PARTICULATE :	**1,1 g/h**
HEAT OUTPUT / PUISSANCE CALORIFIQUE:	**16,457 - 36,554 BTU/Hr**

OMNI-Test Laboratories, Inc.

Portland
Oregon USA

Solid Fuel Room Heater
Fournaise de Pièce Au Gas Solide
Tested to/Testé à:
UL 1482-2011(R2015), ULC -S627-00

morsø
DK-7900
Nykøbing Mors
Denmark

Report No./Rapport Nu: 0192WS004E & 0192WS004S

Model/Modèle: 7110 B

Serial No./
Nu.de Série ☐

DATE OF MAUFACTURE / DATE DU MANUFACTURE

2019	2020	2021	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

DO NOT REMOVE THESE LABELS / NE PAS ENLEVER CES ÉTIQUETTES

MADE IN DENMARK / FABRIQUÉ AU DANEMARK

CAUTION

HOT WHILE IN OPERATION - DO NOT TOUCH, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS - SEE NAMEPLATE AND INSTRUCTIONS.

KEEP FURNISHINGS AND COMBUSTIBLE MATERIAL A CONSIDERABLE DISTANCE AWAY FROM THE APPLIANCE. DO NOT OVERFIRE. IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING.

ATTENTION

TRÈS CHAUD LORSQU'IL FONCTIONNE - NE PAS TOUCHER, ÉLOIGNEZ LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES. TOUT CONTACT PEUT CAUSER DES BRÜLURES - VOIR PLAQUE SIGNLÉTIQUE ET INSTRUCTIONS.

LES MEUBLES ET LES MATÉRIAUX COMBUSTIBLES DOIVENT ÊTRE DISPOSÉS À UNE DISTANCE SUFFISANTE DE L'INSTALLATION. NE PAS SURCHAUFFER. SI LE POÊLE OU LE TUYAU DE CHEMINÉE ROUGISSENT, IL Y A SURCHAUFFE

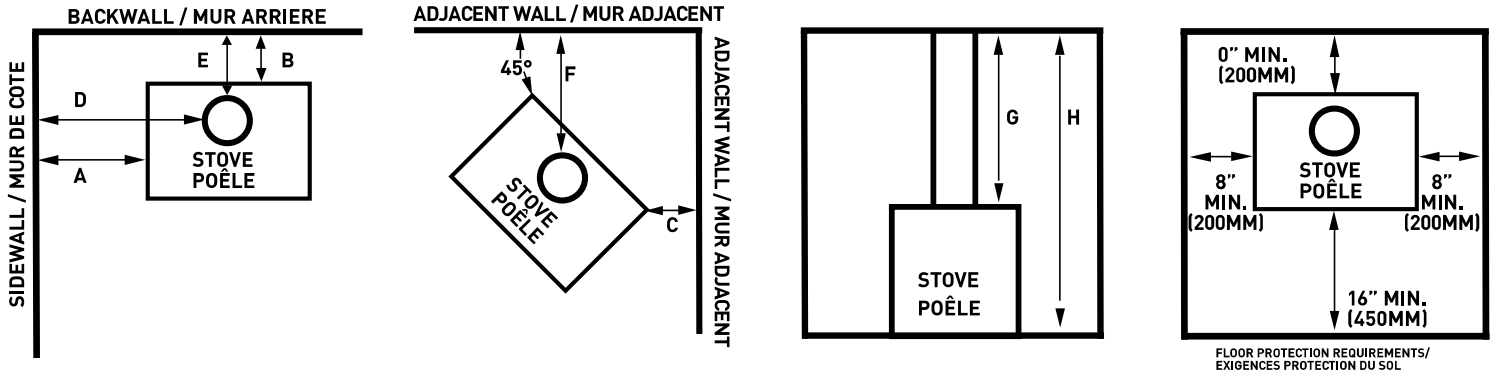
FREESTANDING INSTALLATION

STANDARD RESIDENTIAL FREESTANDING INSTALLATIONS REQUIRE: 6" diameter, minimum 24 MSG black or 26 MSG blued steel connector, with listed (type UL103 HT or ULC S629) factory-built chimney, suitable for use with solid fuel or masonry chimney.

POUR LES INSTALLATIONS RÉSIDENTIELLES: Utiliser un connecteur de cheminée de 6" de diamètre, en acier noir de minimum 24 MSG ou en acier bleu de minimum 26 MSG vers une cheminée préfabriquée homologuée (type UL103 HT ou ULC S629) ou vers une cheminée maconnée.

CLEARANCE REQUIREMENTS DÉGAGEMENT MINIMAUX DES MATÉRIAUX COMBUSTIBLES:	STANDARD RESIDENTIAL FREESTANDING INSTALLATIONS (SINGLEWALL & DOUBLEWALL CONNECTOR): INSTALLATION RÉSIDETIELLE STANDARD (TUYAU DE RACCORDEMENT À SIMPLE PAROI ET À DOUBLE PAROI):	
	USA	CANADA
A. SIDEWALL TO UNIT / DU MUR DE CÔTÉ AU POÊLE	16.0" (406mm)	18.0" (457mm)
B. BACKWALL TO UNIT / DU MUR ARRIÈRE AU POÊLE	6.5" (165mm)	9.5" (241mm)
C. CORNERWALL TO UNIT / DU MUR DU COIN AU POÊLE	8.5" (216mm)	8.5"(216mm)
D. SIDEWALL TO CONNECTOR / DU MUR DE CÔTÉ AU RACCORD DE CHEMINÉE	23.0" (584mm)	25.0"(635mm)
E. BACKWALL TO CONNECTOR / DU MUR ARRIÈRE AU RACCORD DE CHEMINÉE	10.0" (254mm)	13.0" (330mm)
F. CORNERWALL TO CONNECTOR / DU MUR DE COIN AU RACCORD DE CHEMINÉE	17.5"(445mm)	17.5" (445mm)
G. UNIT TO CEILING / DU POÊLE AU PLAFOND	56.5"(1435mm)	56.5"(1435mm)
H. FLOOR TO CEILING / DU SOL AU PLAFOND	84.0" (2134mm)	84.0" (2134mm)

CLEARANCE REQUIREMENTS DÉGAGEMENT MINIMAUX DES MATÉRIAUX COMBUSTIBLES:	ALCOVE INSTALLATION WITH DOUBLEWALL CONNECTOR: INSTALLATION DANS UN ALCÔVE TUYAU DE RACCORDEMENT À DOUBLE PAROI
A. SIDEWALL TO UNIT / DU MUR DE CÔTÉ AU POÊLE	19.0"(483mm)
B. BACKWALL TO UNIT / DU MUR ARRIÈRE AU POÊLE	9.5" (241mm)
C. CORNERWALL TO UNIT / DU MUR DU COIN AU POÊLE	N/A
D. SIDEWALL TO CONNECTOR / DU MUR DE CÔTÉ AU RACCORD DE CHEMINÉE	26.0" (660mm)
E. BACKWALL TO CONNECTOR / DU MUR ARRIÈRE AU RACCORD DE CHEMINÉE	14.0" (356mm)
F. CORNERWALL TO CONNECTOR / DU MUR DE COIN AU RACCORD DE CHEMINÉE	N/A
G. UNIT TO CEILING / DU POÊLE AU PLAFOND	20.5" (521mm)
H. FLOOR TO CEILING / DU SOL AU PLAFOND	48.0 (1219mm)



FLOOR PROTECTION REQUIREMENTS/
EXIGENCES PROTECTION DU SOL

FLOOR PROTECTOR MUST BE NON-COMBUSTIBLE MATERIAL. IT MUST EXTEND BENEATH HEATER, AND TO THE FRONT / SIDES / REAR AS INDICATED

LE PROTECTEUR DE PLANCHER DOIT ÊTRE D'UN MATÉRIAL INCOMBUSTIBLE. IL DOIT S'ÉTENDRE EN DESSEUS DE L'APPAREIL ET AU DEVANT, AUX CÔTÉS ET À L'ARRIÈRE DE L'APPAREIL COMME INDIQUÉ

FLOOR PROTECTION REQUIREMENTS/ EXIGENCES PROTECTION DU SOL	NON -COMBUSTIBLE MATERIAL BENEATH STOVE / MATÉRIEUX NON COMBUSTIBLES AU-DESSOUS DU POÊLE	
	USA	CANADA
A EXTENDING DISTANCE, BACK DISTANCE, ARRIÈRE	-	8" (200mm)
B EXTENDING DISTANCE, RIGHT SIDE DISTANCE, CÔTÉ DROIT	6"	8" (200mm)
C EXTENDING DISTANCE, LEFT SIDE DISTANCE, CÔTÉ GAUCHE	6"	8" (200mm)
D EXTENDING DISTANCE, FRONT DISTANCE, AVANT	16"	18" (450mm)

Installation and Operating Instructions

Morsø 7110 B

For use in North America

Save these instructions

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
E-Mail: stoves@morsoe.com · Website: www.morsoe.com

Congratulations on the purchase of your new Morsø stove!

Morsø, which is the largest supplier for the Danish market, has manufactured stoves of the highest quality since 1853. By following the instructions overleaf, we are sure that you will enjoy the use and the benefits of your stove for many years to come.

Contents

Read this entire manual before you install and use your new room heater. If this room heater is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Failure to follow instructions may result in property damage, bodily injury, or even death.

Contact local building officials about restrictions and installation inspectionrequirements in your area.

Save these instructions

Optional Accessories
A wide range of accessories (such as handling gloves, fireside tools, glass cleaner and heat-proof paint) are available for use with your Morsø stove. They help with day-to-day running and maintenance. Contact your Morsø dealer for more information.

The Morsø 7110 B have been tested by OMNI-Test Laboratories, Inc. The test standards are ANSI/UL-1482-2012 (R2015) for the United States and ULC S627-00 for Canada.

Tested & Listed By O-TL Portland Oregon USA

OMNI-Test Laboratories, inc.
Report Number: 0192WS004E

The stove is listed for burning wood only. Do not burn other fuels.

U.S. ENVIRONMENTAL PROTECTION AGENCY. Certified to comply with 2020 particulate emission standards using cord wood.

Average particulate emission using ASTM E3053-17 cord wood test method is 1.1 g/h
Under specific test conditions this heater has been shown to deliver heat at rates ranging from 16,457 to 36,554 Btu/hr.
This appliance was determined to have an average higher heating efficiency value of 75 % when tested in accordance with B415.1."

This wood heater needs periodic inspection and repair for proper operation. It is against federal regulations to operate this wood heater in a manner inconsistent with operating instructions in this manual.

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

We suggest that our woodburning hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Woodburning Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).

Wood Energy Technical Training

Cast iron
Cast iron is a live material. There are no two ovens that are identical. This is partly due to the tolerances of the casting process, partly because the ovens are a work of craftsmanship. Minor unevennesses may also occur in the cast iron surface.

1.0 Installation of your Morsø stove

Installation of woodburning stoves must be safe and legal.

The installation must conform standard CAN/CSA-B365, Installation Code For Solid-Fuel-Burning Appliances and Equipment
Make-shift compromises during installation can have consequences, the Installation of the woodburning stoves must be safe and legal.
If your Morsø stove is not installed correctly, it may cause a house fire. To reduce the risk of fire, the installation instructions must be followed carefully. Contact the local building officials about restrictions and installation inspection in your area.

If your Morsø stove is not installed correctly, it may cause a house fire. To reduce the risk of fire, the installation instructions must be followed carefully. Contact the local building officials about restrictions and installation inspection in your area.

Before you start installing your stove, make sure that:
- The stove and chimney connection are placed far enough from combustible materials to meet all clearance requirements.
- The floor protection must be adequate and must be made correctly according to the requirements.

All neccessary approvals are needed from the local building officials.

The data plate, which is located on the back of the stove, provides information regarding safety testing information, name of certified testing laboratory, and installation requirements.

Installation requirements vary in different districts, and the local building officials have the final authorization to approve your installation. You should discuss the installation with them before beginning. Please ask your dealer for further information.

Do not connect to any air distribution duct or system.

Important: If the installation instructions are not followed carefully, it may cause dangerous situations like chimney - and house fires. Follow the instructions carefully and do not deviate from them as it may cause injuries to people or property.

1.1 Checking loose parts in the stove

After unpacking, check that the fire bricks are firmly in position and have not shifted in transit. Check also that the air control works freely.
See separate Assembly Instructions for Legs, Fitting for handle, and Baffles Before starting the initial fire, place the two cast iron baffles above the three stainless pipes that supplies the secondary air. The baffles are enclosed in the stove on delivery. Afterwards, place the carbowool blanket carefully above the two cast iron baffles.
Make sure that the upper heating shield, the cast iron baffles, and the carbowool blanket are placed correctly before the fire is started.

Standard Accessories

A Morsø glove and ceramic flue connection gasket are standard accessories that usually can be found in the ashpan or firebox area.

1.2 The chimney / flue system

Note that the flue system must be independently secured and must not rely on the stove for support.

The stove must not be connected to a chimney flue serving any other appliance. (Several flues may run up a single chimney stack; use one flueway per appliance).

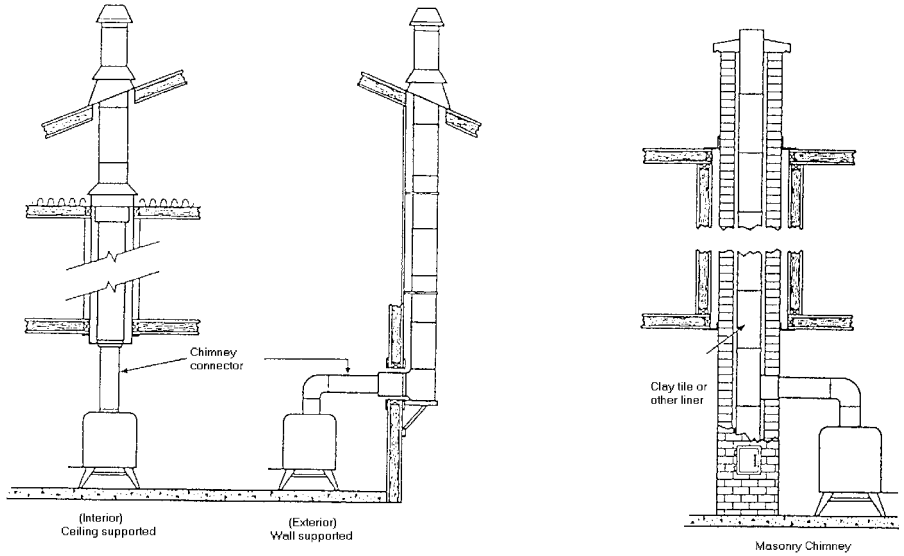
Use a code-approved masonry chimney with a flue liner or listed type HT factory-built chimney.

High Temperature (H.T.) Chimney Standard UL-103-1985 (2100° F.) or a code-approved masonry chimney with flue liner for the USA, and High Temperature (650°C) Standard ULC S-629 for Canada.

The internal dimensions of the chimney connector and chimney must not be less than 6 inches diameter (or equivalent cross section), and should not be significantly larger than this. Too large a section will tend to allow the flue gases to cool excessively, causing sluggishness or unpredictability in the stove's performance.

We recommend the length of the chimney system should be at least 16 feet (not required) above the stove in normal domestic situations, measured from the flue collar to the top of the chimney.
Local conditions like for example - roof constructions, large trees nearby and high altitude, may influence the chimney draft and height. Therefore, contact the local professional chimney sweep or your Morsø dealer.

Typical factory-built or masonry chimney installations



1.3 Flue Connection

The stove is supplied from the factory with a flue collar fitted to the top plate and a round blanking plate blocking off the rear flue exit (behind the rear shield plate).

Use a 24 MSG black or blue chimney connector or listed double wall chimney connector. Refer to local codes and the chimney manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling. Remember to secure the chimney connector with a minimum of three screws to the product and to each adjoining section. The collar can be fitted to the rear outlet. Simply knock out the round panel on the rear heat shield plate to reveal the cast iron plate. Untwist the blanking plate and the flue collar and swap their positions. Re-secure by pushing down and tighten the enclosed screws. Position the stove and connect to the flue system.

Wear gloves and protective eyewear when drilling, cutting or joining sections of chimney connector.

1.4 Connection to the existing chimney

A chimney connector is the double-wall or single-wall pipe that connects the stove to the chimney. The chimney itself is the masonry or prefabricated structure that encloses the flue. Chimney connectors are used only to connect the stove to the chimney.

Double-wall connectors must be tested and listed for use with solid-fuel burning appliances. Single-wall connectors should be made of 24 gauge or heavier gauge steel. Do not use galvanized connector; it cannot withstand the high-temperatures that smoke and exhaust gases can reach, and may release toxic fumes under high heat. The connector must be 6 inches (150mm) in diameter.

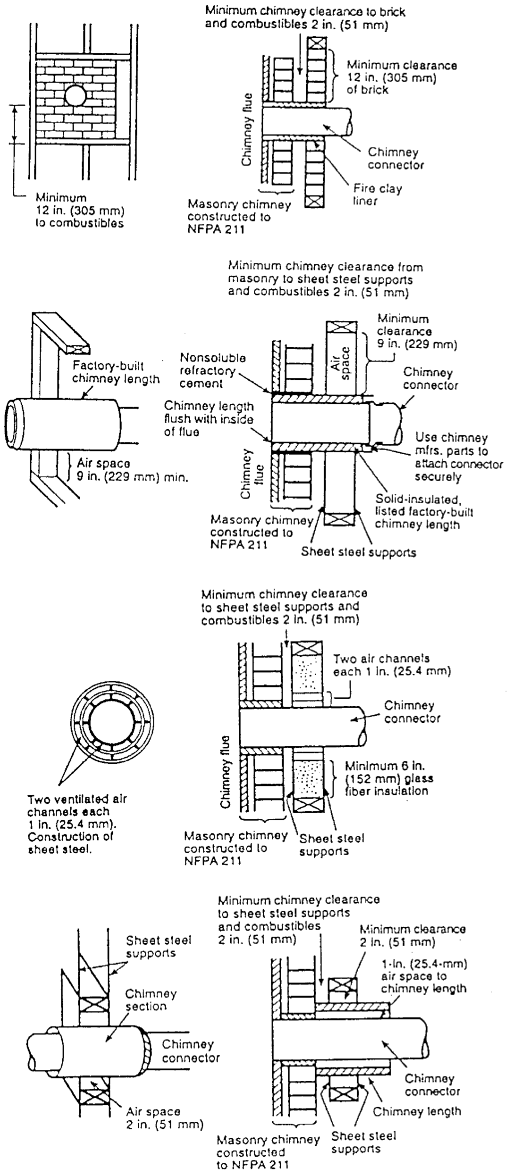
If possible, do not pass the chimney connector through a combustible wall or ceiling. If passage through a combustible wall is unavoidable, refer to the sections on Wall Pass-Throughs. Do not pass the connector through an attic, a closet or similar concealed space when installing the chimney connectors.

It is important to keep the flue gases moving smoothly in the right direction. Do not vent into a large void at this location; rather form one continuous section all the way up. Use mild bends (e.g. 45° vs. 90°) rather than sharp angles where a change of direction is required. All parts of the venting must be accessible for cleaning purposes.
In horizontal runs of chimney, maintain a distance of 18 inches from the ceiling. Keep it as short and direct as possible, with no more than two 90 degree turns. Slope horizontal runs of connector upward 1/4 inch per foot (20 mm per metre) going from the stove toward the chimney. The recommended maximum length of a horizontal run is 3 feet (1 metre), and the total length should be no longer than 8 feet (2.5 metres).
Information on assembling and installing connectors is provided by the manufacturer's instructions exactly as you assemble the connector and attach it to the stove and chimney.

Be sure the installed stove and chimney connector are correct distances from near by combustible materials. See the clearance paragraph page 8.

Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365.

Chimney Connector Systems and Clearances from Combustible Walls for Residential Heating Appliances



A Minimum 3.5-in thick brick masonry all framed into combustible wall with a minimum of 12-in brick separation from clay liner to combustibles. The fireclay liner shall run from outer surface of brick wall to, but not beyond, the inner surface of chimney flue liner and shall be firmly cemented in place.

B Solid-insulated, listed factory-built chimney length of the same inside diameter as the chimney connector and having 1-in. or more of insulation with a minimum 9-in. air space between the outer wall of the chimney length and combustibles.

C Sheet steel chimney connector, minimum 24 gauge in thickness, with a ventilated thimble, minimum 24 gauge in thickness, having two 1-in. air channels, separated from combustibles by a minimum of 6-in. of glass fiber insulation. Opening shall be covered, and thimble supported with a sheet steel support, minimum 24 gauge in thickness.

D Solid insulated, listed factory-built chimney length with an inside diameter 2-in. larger than the chimney connector and having 1-in. or more of insulation, serving as a pass-through for a single wall sheet steel chimney connector of minimum 24 gauge thickness, with a minimum 2-in. air space between the outer wall of chimney section and combustibles. Minimum length of chimney section shall be 12-in. chimney section spaced 1-in. away from connector using sheet steel support plates on both ends of chimney section. Opening shall be covered, and chimney section supported on both sides with sheet steel supports securely fastened to wall surfaces of minimum 24 gauge thickness. Fasteners used to secure chimney section shall not penetrate chimney flue liner.

1.5 Positioning the stove

Distance to walls and lintel

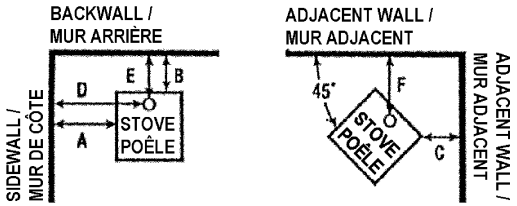
When the stove is positioned near combustible materials, observe all current local and national building regulations with regards to clearances. Whatever regulations apply to your area, do not in any case install the stove within 8 inches of combustible materials around the sides or 16 inches above the top of the stove (fireplace installations require greater clearances above the stove - see below in the clearance chart). These distances may need to be increased if the materials are sensitive to heat. Note also that wall paper and other decorative materials may become detached with the effects of heat and care should be taken to ensure that they do not fall towards the stove in such an event.

When the stove is positioned near non-combustible materials, a gap of 4 inches or more is recommended for cleaning purposes and to ensure that heat circulates around the stove and out into the room.

If using rear exit, the floor protection must extend beneath the chimney connector and 2-in beyond each side.

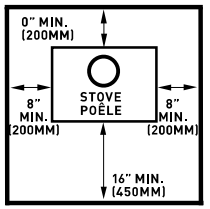
CLEARANCE REQUIREMENTS		STANDARD RESIDENTIAL INSTALLATION SINGLEWALL & DOUBLEWALL CONNECTOR	
		USA	CANADA
A.	Sidewall to unit	16"	18" - 457 mm
B.	Backwall to unit	6.5"	9.5" - 241 mm
C.	Cornerwall to unit	8.5"	8.5" - 216 mm
D.	Sidewall to connector	23"	25" - 635 mm
E.	Backwall to connector	10"	13" - 330 mm
F.	Cornerwall to connector	17.5"	17.5" - 445 mm
G.	Unit to ceiling	56.5"	56.5" - 1435 mm
H.	Floor to ceiling	84"	84" - 2134 mm

MINIMUM CLEARANCES TO COMBUSTIBLES:
DEGAGEMENTS MINIMAUX AUX MATERIAUX COMBUSTIBLES:



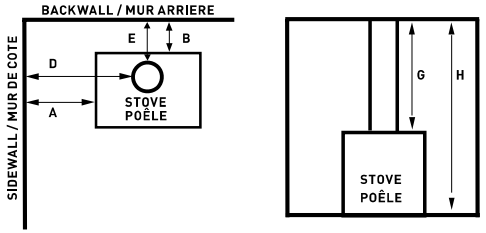
CLEARANCE REQUIREMENTS		ALCOVE INSTALLATION WITH DOUBLE WALL CONNECTOR
A.	Sidewall to unit	19" (483 mm)
B.	Backwall to unit	9.5" (241 mm)
C.	Cornerwall to unit	N/A
D.	Sidewall to connector	26" (660 mm)
E.	Backwall to connector	14" (356 mm)
F.	Cornerwall to connector	N/A
G.	Unit to ceiling	20.5" (521 mm)
H.	Floor to ceiling	48" (1219 mm)

POÊLE FLOOR PROTECTION REQUIREMENTS



FLOOR PROTECTOR MUST BE NON-COMBUSTIBLE MATERIAL. IT MUST EXTEND BENEATH HEATER, AND TO THE FRONT / SIDES / REAR AS INDICATED

ALCOVE INSTALLATION



Maximum alcove depth must be no more than 32" (813mm)

Distance to furniture

The recommended minimum distance from stove to furniture is 30 inches. Note that some furniture is more easily affected by heat and may need to be moved to a greater distance. This is your responsibility.

In addition other combustible materials, away from the stove. In general, a distance of 30 inches must be maintained between the stove and moveable combustible item such as drying clothes, newspapers, firewood etc.

1.6 Mobile Home Installation

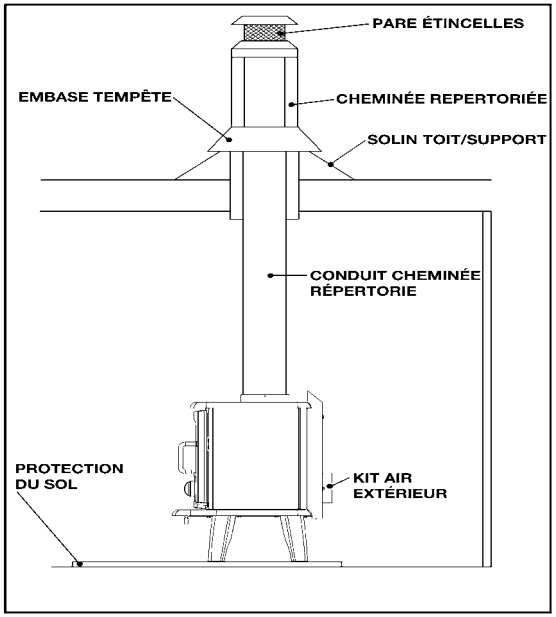
(Mobile home installation is only applicable for USA)

The Morsø 7110 B can be installed in a mobile home if equipped with an outside combustion air kit, a terminal cap with a spark arrestor, and if it meets the following installation requirements:

- The stove must be secured to the mobile home structure by bolting through the hearth pad and into flooring.
- The stove must be installed with a listed Type HT chimney connector, HT Chimney, and terminal cap with spark arrestor. Never use a single wall connector (stovepipe) in a mobile home installation.
- Floor protection requirements in section 1.5 must be followed precisely.
- In Canada, this appliance must be connected to a 6" (152 mm) factory-built chimney conforming to CAN/ULC-629M, STANDARD FOR FACTORY BUILT CHIMNEYS. Floor protection as referenced in section 1.5 must be followed, as well as use of Canadian Floor Protector.
- Follow the chimney and chimney connector manufacturer's instructions when installing the flue system for use in a mobile home.
- Outside air kit should be installed according to installation guide in the kit.
- Intake air piping can be installed through the floor into a vented crawl space or through the wall of the residence to obtain outside air.
- Install in accordance with 24 CFR, Part 3280 (HUD).
- NOTE: Top sections of chimney must be removable to allow maximum clearance of 13.5' from ground level for transportation purposes.

WARNING:
NEVER DRAW COMBUSTION AIR FROM A WALL, FLOOR OR CEILING CAVITY OR FROM ANY ENCLOSED SPACE SUCH AS AN ATTIC OR GARAGE.
DO NOT INSTALL IN A SLEEPING ROOM.

CAUTION:
THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED (I.E., DO NOT CUT THROUGH FLOOR JOIST, WALL STUD, CEILING TRUSS, ETC.)
DO NOT USE A GRATE TO ELEVATE FIRE - BUILD FIRE DIRECTLY ON HEARTH.



Note:
Acid Protection
If acid-washing the masonry around the stove, protect the stove surface with an acid-proof cover.

Fresh Air Inlet
Unless there is deemed to be sufficient ambient leakage of air into the room via doorways, windows and the like, a dedicated fresh air inlet will be needed. This inlet should have 2 square inches (1250 square mm) of free air space. This is particularly important where the room is well sealed, or where an extractor hood or ventilation system disturbs the natural air pressure. Such an inlet should not be on a wall that is usually subject to negative pressure from normal wind pattern. Avoid placing the inlet directly across the room from the stove, thus causing a cold air draft.

2.0 Operation

2.1 Before you start firing

For Use with Solid Wood Fuel Only. Do Not Overfire, If Heater or Chimney Connector Glows You Are Overfiring. Inspect and Clean Chimney Frequently. Under Certain Conditions of use creosote buildup may occur rapidly. Because of risk of smoke and flame spillage, operate only with door fully closed.

Caution:
Hot while in operation. Keep children, clothing and furniture away. Contact may cause skin burns.
Do not use chemicals or fluids to start the fire.
Do not burn garbage or flammable fluids.
Do not use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter or fluid or similar liquids to start or freshen up a fire in this heater. Keep all such liquids away from the heater while it is in use.

Choosing your fuel
All types of natural wood can be burned on your stove, but they must be well-seasoned and dry. Once the wood is cut to length, it should be split down middle - to suit the dimensions given below - to allow moisture to evaporate.
Cut the wood to a length of max 18 inches (45 cm) and approx. 3 to 3.5 inches (7-8 cm) in section. If you can weigh your wood, aim for around 2 lbs. For correct combustion and heat output, wood fuel should contain no more than 20% moisture; this can easily be checked by using the Morsø Moisture Meter (part # 62929900).
To naturally season wood fuel, stack and store it under cover in an airy location where fresh air can move through each piece. Some soft woods may take as little as one good summer to season whereas harder woods such as oak, maple, and elm may require seasoning up to 18 months. Avoid overly dry wood that is gray in color as under certain conditions it can cause performance problems, such as back-puffing and sluggishness. Well seasoned wood will be light to hold and will show signs of cracking from the center-out in the ends. If your wood spits or sizzles when burnt, and your stove's door glass persistently mists up, your wood is not properly seasoned. Never use drift wood (from the sea), whose salt content may cause corrosion, nor construction wood that may have been impregnated with chemicals.

Caution: Do not place fuel within the installation clearances for the stove or within the space required for loading fuel and ash removal.

To optimize efficiency:
Burning wet wood has a negative impact on efficiency

Starting the First Fire
The initial fire should be small, so that the stove paint can cure and the main plates of the stove can settle into position. Some fumes will be given off by the paint. Ventilate the room during this phase.
The setting of the air control, lighting techniques and loading intervals will depend on chimney draft, the fuel used, the heat required and so on. Some basic techniques are outlined below.
In principle
Your stove is fitted wih Primary and Secondary air inlets.
Primary Air is controlled using the lever situated under the ash lip of the stove. Moving the control lever to right position will open the air inlet and will allow a supply of preheated air to enter the firebox via the 'airwash' system situated inside the stove and the above glass.

Secondary Air is left to the firebox using the specially designed baffle at the back of the fire-box. The secondary air is injected into the flue gases above the fire resulting in a cleaner, more efficient combustion process. The supply of secondary air is fixed open and is not adjustable. For extra safety, your stove has been fitted with a removable handle.

2.2 Lighting and loading intervals

When first lighting the stove, a large volume of air is needed. When the stove is cold, you should leave the door open an inch or two for the first few minutes and open the primary air supply completely. While the door is open, do not leave the stove unattended.
The ash door should never be open while the stove is in operation.
To form a reasonable bed of ash on the floor of the stove, you should use 5-6 inches thickness (2-4 pound) of dry kindling at the initial lighting. Always maintain a 1-1.5 inch (2-3 cm) layer of ash on the floor of the combustion chamber at all other times.

1. We recommend using the "top-down" method to light your wood-burning stove. It is the most environmentally-friendly method of lighting. Use two firelighters and approx. 2-4 lbs of dry kindling sticks to quickly create a glowing layer of wood. Place the firelighters directly under the top layer of kindling sticks.This minimizes soot formation on the glass. Soot formation on the glass is often caused by too vigorous burning in contact with cold surfaces. If you avoid the formation of soot when lighting the fire and build up a layer of hot embers, you will have minimal soot formation when getting the fire burning again later.

2. Fully open the secondary air supply that is controlled by lever beneath the ash lip.

3. Light the fire.

4. After the paper/fire lighters have caught fire, leave the fire door ajar about 1", so that the chimney draws well.

5. After 5-10 minutes the chimney draft should be established, at this point close the fire door. If all the necessary conditions are met, a nice layer of embers will start to accumulate after another 15 - 20 minutes.

6. Refuelling of your stove should be done while there are still glowing embers in the bed. Spread the embers across the bottom, but concentrated mostly towards the front of the stove.
We recommend using fuel load with a weight of 4 lbs (2 pieces) and up to 10 lbs (5 pieces).

Always keep the fuel load beneath the lowest secondary air tube. The space in front of and above the lowest air tube is reserved for volatile gas combustion only.

When refuelling your stove, it is recommended that you open the stove door gently for the first 1-2", then wait for a few seconds for the pressure in the flue to equalise; you are now safe to proceed and open it all the way. By using this technique smoke spillage can be eliminated particularly in poor chimney draft conditions. The stove door should not be opened when the stove is being fired vigorously.

7. Place two pieces of fuel weighing roughly 2-4 pound and measuring about 10" in length across the embers in one layer, with spacing of roughly 1/2" between the pieces of wood.

8. When the primary air supply is opened all the way and the door is closed, the new fuel will ignite in a few minutes.

9. Once the new fuel has taken, adjust the secondary air amount to the desired setting; optimal combustion will continue until glowing embers are produced.
Under normal chimney draft conditions, expect to refuel your stove every 60 - 70 minutes.

10. A new charge of wood can be added by repeating steps 6 & 7.
We recommend using fuel load with a weight of 4 lbs (2 pieces) and up to 10 lbs (5 pieces).
Always keep the fuel load beneath the lowest secondary air tube. The space in front of and above the lowest air tube is reserved for volatile gas combustion only.

Do not for any reason attempt to increase the firing of your heater by altering the air control adjustment range outlined in these directions.

This wood heater has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual.

Warning: Fireplace stoves must never be left unattended with doors open.

If doors are left partly open, gas and flame may be drawn out of the fireplace stove opening, creating risks from both fire and smoke. We recommend you to fit a smoke detector in the room where the stove is installed.

DO NOT OVERFIRE THIS HEATER. Overfiring may cause a house fire, or can result in permanent damage to the stove. If any part of the stove glows, you are overfiring.

The maximum recommended weight of wood fuel per load is 10 lbs (5 split logs).

Under normal firing, the average flue temperature in the stove pipe, measured 20 cm above the stove, is approx. 300° C (550°F). The maximum flue temperature in the stove pipe must not exceed 450° C (750°F). If the flue temperature exceeds 450°C (750°F), it is considered as over firing and may cause premature wear and tear of the stove.

To help gauge the correct running temperature of your stove, we recommend you use the Morsø Flue Gas Thermometer (part # 62901200). The Flue Gas Thermometer magnetically attaches onto the stove pipe approx 20 cm (8") above the stove's top plate and measures the surface temperature of the stove pipe. Please see your authorized Morsø Dealer for availability.

Draft conditions
If smoke or fumes come out of your stove when lightning up and reloading, or if the fire simply will not respond, a poor draft is almost certainly to blame. (In a very few cases, there may be insufficient fresh air getting into the room - see installation advice above). Take advice from your stove supplier on how best to upgrade your flue system to improve draft.

Rules of woodburning
If you want less heat, put fewer logs on the stove and reduce the amount of air. It is still important to maintain a good layer of embers.
Less heat - less wood - less air
Greater heat - more wood - more air
Soot deposits will settle on the glass if the stove is run too slowly or if your wood is not well seasoned.

Carbon monoxide detectors
It is required in some jurisdictions to install smoke and carbon monoxide detectors where heaters are installed. Install at least one smoke detector on each floor of your home to ensure your safety. It should be located away from the wood appliance and close to the sleeping areas. Locating a smoke detector too close to a wood appliance can cause the smoke detector alarm to sound if a puff of smoke is emitted while the wood appliance door is open during reloading. Follow the smoke detector manufacturers placement, installation, and maintenance instructions

3.0 Maintenance

When perfoming maintenance on your stove, always protect yourself, using safety goggles and gloves

3.1 Exterior Maintenance

The stove surface is painted with heat-resistant Senotherm paint. It is best kept clean by vacuuming with a soft brush attachment or by wiping with a lint-free cloth.
Over a period of time, the painted surface may become slightly grey. A can of Morsø touch-up spray paint should be available from your stove supplier. This can be applied - in accordance with the instructions - in just a few minutes. When first firing after touching up, the stove will give off a slight smell as the paint cures. Make sure to ventilate the room well during this phase.

3.2 Internal maintenance

Glass

If the stove is generally run at the correct temperatures, there should be little or no dirt on the glass. If dirt does settle during lighting, most will burn off as temperatures increase.For heavier deposits that will not burn off, use morsø glass cleaner, applied when the glass is cold, in accordance with the instructions. Never use abrasive cleaners on the glass surface.

Reasons for dirty glass

- Fuel too wet
- Logs too large or not split
- Combustion temperatures too low

Do not clean the glass while hot
Replace broken glass immediately.
Do not operate your stove if the glass in the door is damaged.

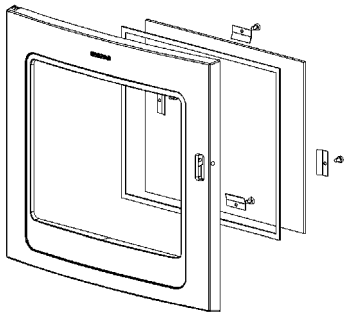
If you need to replace the glass, it should be replaced with the high temperature ceramic class supplied by Morsø, contact your Morsø dealer.

Installing the glass

Never install the glass when the stove is in function.

Ceramic glass replacement

Ceramic glass cannot be recycled because it has a higher melting point that ordinary glass. If ceramic glass is mixed with ordinary glass, the raw material is spoiled, and the reclaiming process may be halted. Take care that the ovenproof glass does not end up among ordinary recycled waste. That will be a great benefit to the environment.
Note: Should be handed in to a recycling station as ceramic glass.



1. When you open the door, you will find two small M4 unbraco screws, one in each hinge. Unscrew the two screws, lift the door off the hinges and place it face down on a sheet of cardboard or other nonabrasive fabric.

2. Unscrew the 4 bolts that secure the glass. (In the event that a bolt sheers off when being unscrewed, remove the remaining body of the bolt by drilling down its centre with 1/8 inch high speed steel drill bit. Smaller drill bits may be successful, but do not use a lager bit. Make sure the bit stays away from the edges of the bolt - this may damage the thread in the cast iron).

3. Remove the old ceramic gaskets and clean up the surface underneath with wire wool or emery paper to remove loose particles.

4. Place the new gasket material in position around the perimeter of the window area, making sure to pinch them to the length in such a way that they make a continuous seal. Leave no gaps.

5. Place the new glass in position on the strips and screw home the fresh bolts and fitting by hand.

6. Finally, give each of the bolts an extra half turn or so. The glass should held tight enough by that cleaning will not dislodge it. Do not over-tighten the bolts as this may put excessive pressure on the glass, resulting in cracking - important!

To reduce the risk of breaking the glass, avoid striking the glass or slamming the door.

Internal service parts

The flame-path equipment - consisting of the ashpan, grate, firebricks, Cast iron fire plates, glass, baffle and flue collar - are subject to the extremes of heat produced by the fire. From time to time, one or other of these parts may need replacing as a matter of routine maintenance.

NOTE: The flame-path equipment, the ceramic rope and the paint finish are not covered by guarantee.

All of these service parts can be bought from your morsø dealer, and we recommend that damaged parts are replaced as soon as possible to avoid collateral damage.
Should the baffle be distorted by an overfire, the stove will still function, although its efficiency may be compromised. Replace it as soon as possible.

Reasons for fast internal wear and tear

Persistent heavy firing
Soot and ashes left to accumulate

Gasket
The gasket around the perimeter of the doors may harden over a period of time. It should be replaced if it becomes difficult to close the doors or if air starts to leak in around the perimeter of the doors, causing the fire to become a little less controllable. A morsø rope gasket kit is available from your stove supplier.

3.3 Cleaning the Stove and the Flue

Check for soot above the baffle plate and around the flue outlet every month or so to start with. If the stove suddenly becomes sluggish, check for a soot fall around the flue collar or in the flue/chimney.
The chimney and chimney connector should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.
Clean the flue/chimney - all the way from the stove to the flue terminal point above the house.

A good routine is to clean the flue after each heating season in any case, and inspect prior to the season to ensure that bird's nests or other blockages have not occurred during the off season.

Ash disposal
Empty the ashpan on a daily basis or as needed. Ash allowed to build up towards the underside of the grate will trap heat and could cause premature failure of the grate.

Empty the ashpan according to this procedure:
Open the front door, and use a shovel or poker to stir excess ash through the ash slots in the grate down into the ash pan. Then, open the ash door and take out the ash pan, making sure to keep it level to avoid spilling ash.

Dispose the ash in a metal container with a tight fitting lid.
The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally disperded, they should be retained in the closed container until all cinders have thoroughly cooled.
Return the ash pan to its original position in the stove, and close the ash door.

Caution:
Never empty a stove in operation.
Never use your household or shop vacuum cleaner to remove ash from the stove; always remove and dispose of the ash properly.

Creosote - formation and need for removal
When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire. When burning wood, the chimney and chimney connector should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.

Chimney sweeping
Inspect the system regularly during the heating season as part of a regular maintenance schedule. To inspect the chimney, let the stove cool completely. Then, using a mirror, sight up through the flue collar into the chimney flue. If you cannot inspect the flue system in this fashion, the stove must be disconnected to provide better viewing access.
Clean the chimney using a brush the same size and shape as the flue liner. Run the brush up and down the liner, causing any deposits to fall to the bottom of the chimney where they can be removed through the clean-out door.
Clean the chimney connector disconnecting the sections, taking them outside, and removing any deposits with a stiff wire brush. Reinstall the connector sections after cleaning, being sure to secure the joints between individual sections with sheet metal screws.
If you cannot inspect or clean the chimney yourself, contact your local Morsø Dealer or a professional chimney sweep.

If you do experience a chimney fire, act promptly and:
1. Close the air control.
2. Get everyone out of the house.
3. Call the Fire Department.

Annual maintenance
Before the heating season, perform a thorough cleaning, inspection and repair:
Thoroughly clean the chimney and chimney connector.
Inspect the chimney for damage and deterioration. Replace weak sections of prefabricated chimney. Have a mason make repairs to a masonry chimney.
Inspect the chimney connector and replace any damaged sections.
Check gasketing for wear or compression, and replace if necessary.
Check the glass for cracking; replace if needed.
Check door and handles for tightness. Adjust if needed.

ALWAYS USE ORIGINAL MORSØ SPAREPARTS

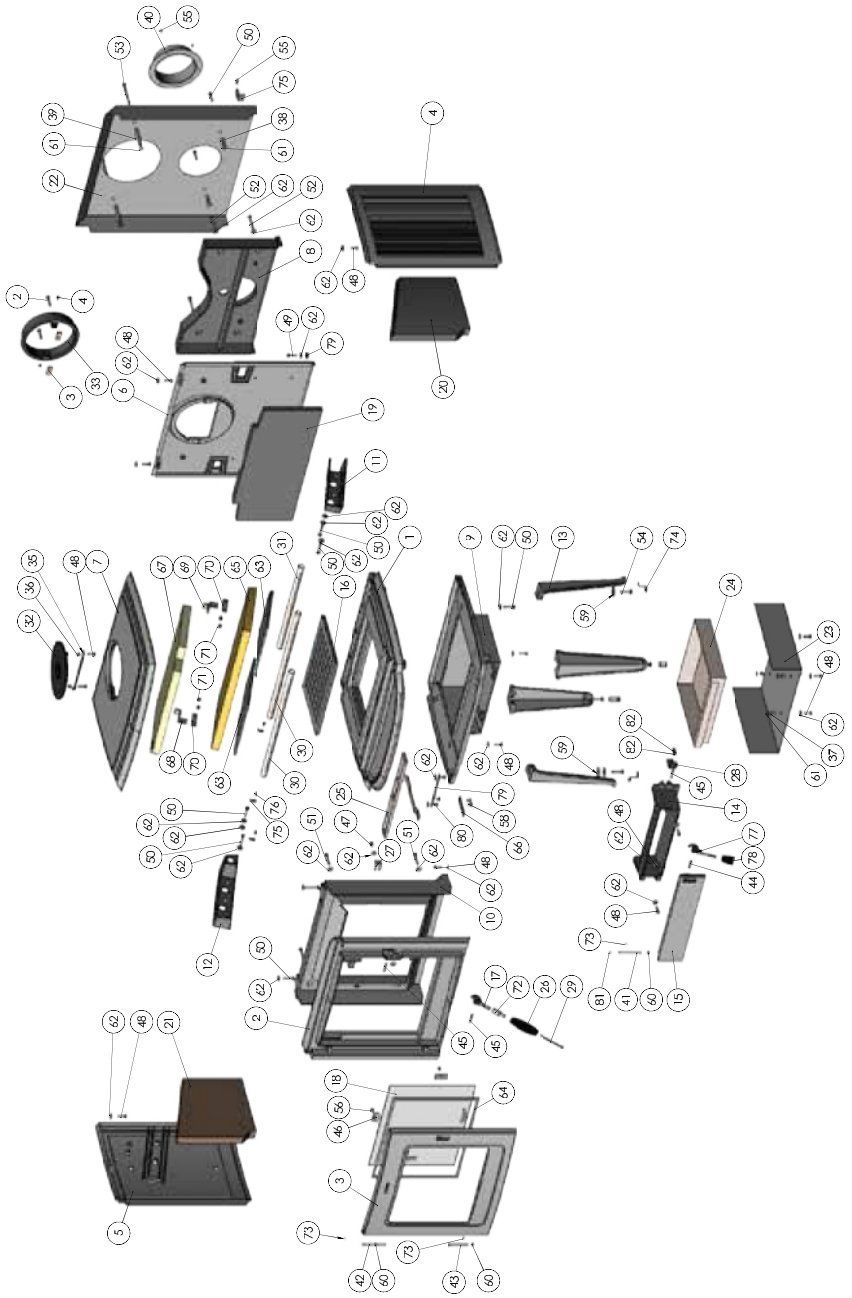
3.4 Leaving the stove for extended periods

Important:
If the stove is to be left unused for any period of time, clean it out thoroughly and leave the air control slightly open to allow airflow. Make sure that the flue does not allow rainwater to come anywhere near the stove; install a chimney cap, but do not block off the flue completely.
These measures should ensure there is a slight movement of air through the stove, and that the body of the stove remains dry, right into the corners.
Any ash left within an unfired stove can attract moisture like blotting paper. If moisture is allowed to settle within the stove, rust will form. Rust expands as it takes a grip. This can lead to undue pressure on the stove joints, and this in turn may result in damage to the stove.

NOTE: It is best to thoroughly clean the stove after the heating season has concluded. Adding a dessicant, such as kitter litter, into the ash pan helps absorb moisture during the summer months. Be sure to remove this prior to the heating season.

Thank you for buying a morsø stove.
We hope you have many years of carefree warmth in its company. Some initial experimentation with loading and running techniques will decide your normal routine. If you have any problems after this short learning phase, please refer to your stove dealer. Should they be unable to help for any reason, please contact us in writing at the address on the front of this publication.

3.5 Parts diagram for model Morsø 7110 B



3.6 Parts list for model Morsø 7110 B

Pos. No.	Parts	SKU number
1	Base plate	44710100
2	Front frame	44710200
3	Door	44710300
4	Side plate, right	44711900
5	Side plate, left	44712000
6	Rear plate	44710600
7	Top plate	44710700
8	Rear air duct	44710800
9	Button air duct	44710900
10	Front air duct	44711000
11	Secondary air duct, right	34711100
12	Secondary air duct, left	34711200
13	Leg	44711300
14	Frame for ash door	44711400
15	Ash door	44711500
16	Grate	34711600
17	Locking device, door	79711700
18	Ceramic glass	79710000
19	Brick, back	79710100
20	Brick, side, right	79710200
21	Brick, side, left	79710300
22	Radiant shielding, rear	71710100
23	Radiant shielding, bottom	54710200
24	Ash tray	71710300
25	Primary damper	71710400
26	Handle	71710500
27	Brick fitting	71710600
28	Fitting for pin at ach tray	71710700
29	Screw M5x80 DIN 912	73984200
30	Secondary tube, large	71710900
31	Secondary tube, short	71711000
32	Cover	44261000
33	Flue collar	44344100
34	Fitting w. thread for flue collar	44256700
35	Stop bar	544541
36	Distance tube Ø10x1 L = 8.5	545007
37	Distance tube Ø10x1 L = 10	541439
38	Distance tube Ø10x1 L = 20	542635
39	Distance tube Ø10x1 L = 67	54710100
40	Air adaptor	71360600
41	Hinge pin Ø5x75	545008
42	Hinge pin Ø5x75	54503000
43	Hinge pin Ø5x60 DIN 660	74701000
44	Cotter pin Ø6x30mm DIN 1481	791870
45	Cotter pin Ø6x35mm DIN 1481	79187200
46	Glass fitting	54146361
47	Screw M6X10 Din933	731610
48	Screw M6X20Din933	731620
49	Screw M6x25 DIN933	731625
50	Screw M6x35 DIN933	731635
51	Screw M6x40 DIN 933	731640
52	Screw M6x50 DIN 933	731650

3.6 Parts list for model Morsø 7110 B

Pos. No.	Parts	SKU number
53	Screw M6x80 Din931	73168000
54	Screw M8x30 DIN 933	731830
55	Screw Ø3.5X9.5 DIN 7981 fzb	791835
56	Screw M5x08 ISO7380	73850800
57	Screw M6x35 Din7991	74241900
58	Screw M6x10 Buttonhead	73861000
59	Washer 30x8.4x1.25 art9021	79189500
60	Washer 6mm DIN 125A brass	746006
61	Vistop terminal washer 6mm	746206
62	Washer M6x25 DIN 933	791891
63	Baffle plate, cast iron	34711800
64	Tightening tape for glass 8x3mm	79074500
65	Insulation blanket	79710500
66	Primary handle	71711161
67	Baffle plate, upper	79710400
68	Stop fitting, left, for baffle plate	71711200
69	Stop fitting, right, for baffle plate	71711300
70	Fitting for baffle plate	71711400
71	Screw M6x6 DIN 933	731606
72	Adaptor for handle	71710800
73	Screw M4x05 Din916-45H	739405
74	Fitting for leg	71711800
75	Locking fitting for sek. pipe	71712061
76	Screw M5x08 Din933	74150804
77	Locking device, ashdoor	79127000
78	Bakelite handle 36mm	79118200
79	Guide for primary damper	71711500
80	Screw M6x8 Buttonhead	73860800
81	Retaining Ring Washer 4mm DIN 6799	791824
82	Screw M5x10 Buttonhead	73851000

Guarantee
Product Registration

MORSØ 10 YEAR GUARANTEE CERTIFICATE

Behind every Morsø stove is more than 160 years of dedicated stove design and manufacturing experience. Quality control has always been at the heart of the production process and detailed measures have been put into place at all key stages of the build. Accordingly, provided that the stove has been supplied by an authorised Morsø dealer, Morsø will offer a 10-Year Manufacturers Guarantee against manufacturing defect to any of the main exterior body parts of its stoves.

Read more about "Morsø 10 years guarantee/product registration card" and REGISTER your new Morsø stove online:
http://international.morsoe.com/warranty-registration

Morsø Jernstøberi A/S - 12.07.2019 71711000

IMPORTANT!

How to heat safely for the environment and yourself!

- **Use only dry wood**
  Use only dry (max. 20% moisture content) and untreated wood. The fuel must be split and 3-5" thick.

- **Light**
  Light with dry kindling (use 2-4 lbs). Leave the door ajar and stay close to the stove during the lighting phase.

- **Good layer of embers**
  Be certain to have a good layer of embers before refilling. The wood should light within 2 minutes. If the logs do not ignite it may, in an extreme case, cause the flue gases to ignite which may pose a risk to material damage or personal injury.

- **Refuelling**
  When refuelling use 2-5 pieces of wood - no more than 10 lbs

- **Ensure adequate air**
  I.e. clear and yellow flames.

- **Never burn overnight**

By appointment to The Royal Danish Court

morsø

Morsø Jernstøberi A/S - 12.07.2019 - 71711000

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
E-Mail: stoves@morsoe.com · Website: www.morsoe.com

Manuel d’installation et d’utilisation

7100 B

Pour utilisation en Amérique du Nord

Enregistrez ces instructions

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
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Félicitations pour l'acquisition de votre nouveau poêle Morsø !

Morsø, le plus important fournisseur sur le marché danois, fabrique des poêles-cheminées de haute qualité depuis 1853. En suivant les présentes instructions, nous sommes persuadés que votre nouveau poêle vous apportera plaisir et satisfaction durant de nombreuses années.

Sommaire

Avant d'installer et d'utiliser votre nouvel appareil de chauffage, veuillez lire ce manuel en entier. Une mauvaise installation de cet appareil de chauffage peut entraîner un incendie.
Suivez les instructions d'installation pour limiter ce risque d'incendie. Le non-respect des instructions peut entraîner des dommages matériels, corporels ou même mortels.

Contactez l'administration locale de construction concernant les restrictions et équipements d'inspection dans votre région.

Conservez ces instructions

Accessoires en option
Une gamme étendue d'accessoires (tels que gants de manipulation, ustensiles de cheminée, nettoyant pour vitre et peinture résistant à la chaleur) est disponible pour une utilisation adaptée à votre poêle Morsø. Ils facilitent l'entretien et l'utilisation de chaque jour. Contactez votre revendeur Morsø pour plus d'informations.

Le 7110 B de Morsø ont fait l'objet de tests auprès des services de contrôle OMNI-Test Laboratories, Inc. Les standards du test sont UL-1482-2012 (R2015) pour les États Unis et ULC-S627-00 pour le Canada.

Tested & Listed By — Portland Oregon USA

OMNI-Test Laboratories, inc.
Report Number: 0192WS004E

Le poêle est répertorié uniquement pour brûler du bois. Ne brûler aucun autre combustible.

U.S. ENVIRONMENTAL PROTECTION AGENCY. Certifié conforme aux normes d'émission de particules 2020 en utilisant du bois de corde.

L'émission moyenne de particules selon la méthode d'essai ASTM E3053-17 sur le bois de corde est de 1,1 g / h

Sous conditions spécifiques de test, on a pu constater que le rendement calorifique varie entre 16,457 et 36,554 Btu/hr
Un essai effectué conformément à la norme CSA B415.1 a montré que ce poêle avait un rendement moyen de chauffage supérieur à 75 %.

Ce poêle doit être revisé et reparé périodiquement pour une utilisation correcte.
Il est contre la loi fédérale d'utiliser ce poêle contredit les instructions de ce manuel.

NATIONAL FIREPLACE INSTITUTE NFI CERTIFIED www.nficertified.org

We suggest that our woodburning hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Woodburning Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).

Wood Energy Technical Training www.wettinc.ca

La fonte
La fonte n'est pas un matériau inerte. Raison pour laquelle il n'y a pas deux poêles identiques. Ceci en raison des marges de tolérance de la fonte et de la fabrication artisanale des poêles. De fines irrégularités sont normales sur la surface de la fonte.

1.0 Installation de votre poêle Morsø

L'installation doit être conforme à la norme CAN / CSA-B365 .Code d'installation des appareils à combustibles solides et du matériel connexe

Les compromis de changement de structure pendant l'installation peuvent avoir des conséquences. L'installation des poêles à bois doit être sûre et légale.

Si votre poêle Morsø n'est pas installé correctement, un incendie peut en résulter. Afin de réduire ce risque, suivez attentivement les instructions d'installation. Contactez l'administration locale de construction concernant les restrictions et l'inspection de l'installation dans votre région.

Avant de commencer l'installation de votre poêle, assurez-vous que :
- Le poêle et le raccord de cheminée sont placés suffisamment loin des matériaux de combustion afin de remplir toutes les conditions d'espacement.
- La protection du sol est adéquate et correctement effectuée conformément aux conditions.

Contactez l'administration locale de construction pour toutes les approbations nécessaires.

La plaque d'informations située à l'arrière du poêle fournit les informations nécessaires concernant les données de test de sécurité, le nom du laboratoire de test agréé et les conditions d'installations.

Les conditions d'installation diffèrent selon les districts et l'administration locale de construction a le pouvoir d'autorisation définitive pour approuver votre installation. Discutez de l'installation avec eux avant de commencer. Pour plus d'informations, contactez votre vendeur.

Ne connectez aucun conduit ou système de distribution d'air.
Important : Si vous ne suivez pas attentivement les instructions d'installation, il peut en résulter des situations dangereuses comme des incendies de cheminée ou de maison. Suivez attentivement les instructions et ne vous en écartez pas car cela peut entraîner des dégâts corporels ou matériels.

1.1 Vérifier les pièces mobiles dans le poêle

Après le déballage, vérifiez que les briques réfractaires sont fermement en place et n'ont pas bougé pendant le transport. Vérifiez également que le contrôle d'air fonctionne librement.
Voir les instructions séparées pour l'assemblage des pieds, la fixation de la poignée et les déflecteurs.
Avant la première combustion, placez les deux déflecteurs en fonte au-dessus des trois conduits inoxydables d'admission d'air secondaire. Les déflecteurs sont fournis avec le poêle à la livraison.
Placez ensuite le revêtement de laine céramique au-dessus des deux déflecteurs en fonte.
Assurez-vous que l'écran de chaleur supérieur, les déflecteurs en fonte et le revêtement en laine céramique sont placés correctement, avant d'allumer le feu.

Accessoires standard
Le gant Morsø et le joint étanche de raccord de tuyau céramique sont des accessoires standard et se trouvent habituellement dans le cendrier ou le foyer.

1.2 Le système de cheminée/conduit

Remarque : le système de conduit doit être sécurisé de façon indépendante et ne doit pas reposer sur le poêle.

Le poêle ne doit pas être raccordé à un conduit de cheminée servant à un autre appareil. (Plusieurs tuyaux peuvent parcourir une seule souche de cheminée ; utilisez un seul tuyau par appareil).

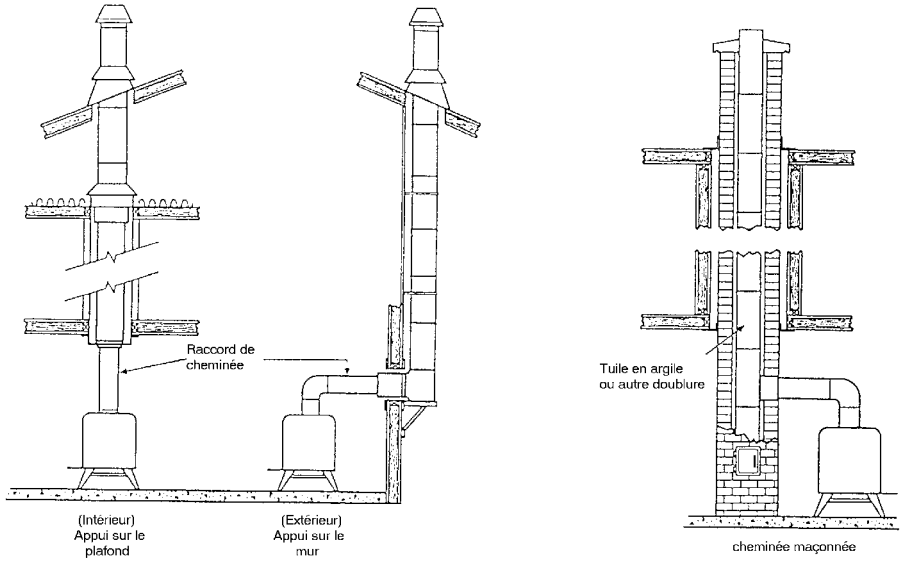
Utilisez une cheminée maçonnée de type résidentiel ou la cheminée usine de type H.T. répertoriée.

Cheminée Haute Température (H.T.) Standard UL-103-1985 (2100° F) pour les États-Unis et Standard Haute Température (650° C) ULC S-629 pour le Canada.

Les dimensions internes du raccord de cheminée et de la cheminée ne doivent pas être inférieures à 6 pouces (150 mm) de diamètre (ou coupe transversale équivalente) et ne doivent être beaucoup plus grandes. Une coupe trop grande a tendance à laisser les gaz du conduit refroidir excessivement, causant ainsi lenteur ou imprévisibilité de fonctionnement du poêle.

Nous conseillons que la longueur de la cheminée est au moins de 16 pieds (4,90 m) (pas indispensable) au-dessus du poêle dans des situations ménagères normales, mesurée du collier de serrage du tuyau à l'extrémité supérieure de la cheminée.
Les conditions locales comme, par exemple, la construction du toit, de gros arbres à proximité et une altitude élevée, peuvent avoir une influence sur le tirage et la hauteur de la cheminée.
Veuillez donc contacter les ramoneurs professionnels locaux ou votre concessionnaire Morsø.

Installations typiques de cheminée usine ou maçonnée



1.3 Connexion du conduit

Le poêle est équipé par l'usine d'un collier de serrage du conduit fixé à la plaque supérieure et d'une plaque ronde détachable bloquant la sortie arrière du tuyau (derrière la plaque de protection arrière).
Utilisez un raccord de cheminée bleu ou noir de 24 MSG ou un raccord de cheminée à double paroi répertorié. Reportez-vous aux règlements locaux et aux instructions du fabricant de la cheminée concernant les précautions à respecter pour faire passer une cheminée à travers un mur ou un plafond combustible. Pensez à sécuriser le raccord de cheminée avec au moins trois vis au produit et à chaque section contiguë.
Le collier de serrage peut être fixé à la sortie arrière. Détachez simplement en frappant le panneau rond sur la plaque arrière de protection de chaleur pour révéler la plaque en fonte. Retirez la plaque détachable et le collier de serrage du tuyau et changez-les de place. Sécurisez à nouveau en appuyant vers le bas et en serrant les vis incluses.
Positionnez le poêle et connectez le système de conduit.

Portez des gants et des lunettes de protection lors du perçage, coupage ou assemblage des sections du raccord de cheminée.

1.4 Connexion à une cheminée déjà en place

Un raccord de cheminée est le tuyau à double ou simple paroi qui relie le poêle à la cheminée. La cheminée elle-même est la structure maçonnée ou préfabriquée qui contient le tuyau. Les raccords de cheminée permettent de relier le poêle à la cheminée.
Les raccords à double paroi doivent être testés et répertoriés pour une utilisation avec des appareils à combustibles solides. Les raccords à paroi simple doivent être faits en acier de calibre 24 ou plus. N'utilisez pas de raccords galvanisés : ils ne résistent pas aux hautes températures atteintes par la fumée et les gaz d'échappement et qui peuvent dégager des vapeurs toxiques sous grande chaleur. Le raccord doit avoir un diamètre de 6 pouces (150 mm).

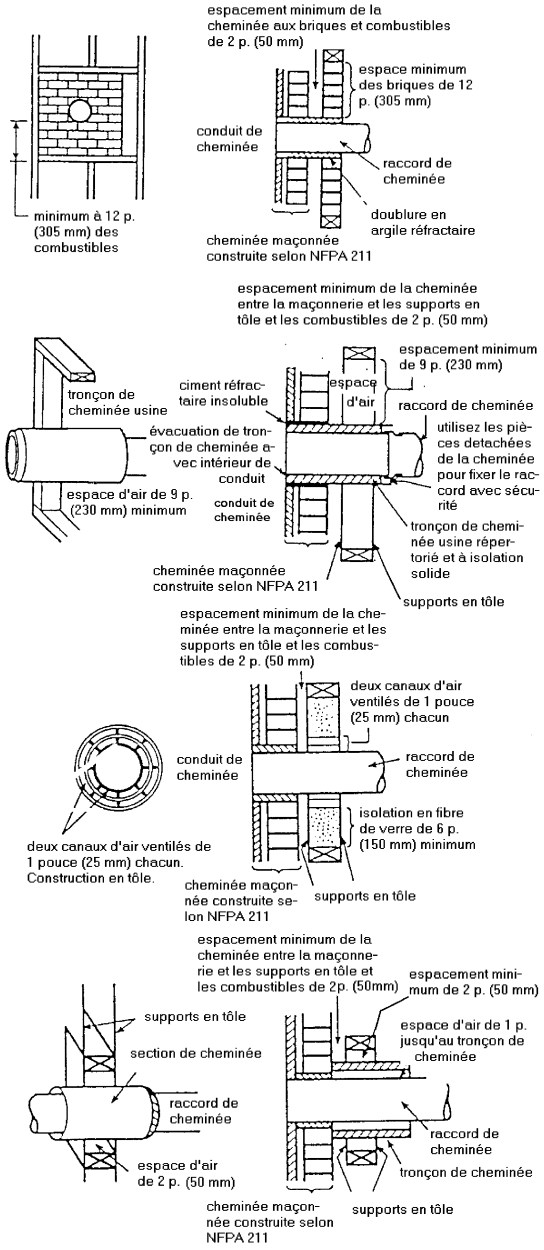
Si possible, évitez de faire passer le raccord de cheminée à travers un mur ou un plafond combustible. Si cela est inévitable, référez-vous aux sections sur Traverser les murs. Ne faîtes pas passer le raccord à travers un grenier, un placard ou tout espace confiné semblable lors de l'installation des raccords de cheminée.

Il est primordial de garder les gaz du tuyau en déplacement doux dans la bonne direction. Ne déviez pas dans un grand vide à cet endroit ; formez plutôt une section continue jusqu'en haut. Utilisez des courbures moyennes (par ex. 45° au lieu de 90°) plutôt que des angles aigus lorsqu'un changement de direction est nécessaire. Toutes les parties du conduit doivent être accessibles pour des raisons de nettoyage.
Dans les tronçons de cheminée horizontaux, maintenez un espacement de 18 pouces (455 mm) du plafond. Gardez-les aussi courts et directs que possible avec des coudes n'excédant pas 90 degrés. Inclinez les tronçons horizontaux de raccords de ¼ par pied (20mm par mètre) en partant du poêle vers la cheminée. La longueur maximum recommandée d'un tronçon horizontal est de 3 pieds (1 mètre) et la longueur totale ne doit pas dépasser 8 pieds (2,5 mètres).
Les informations sur l'assemblage et l'installation des raccords sont fournies par les instructions du fabricant, comme vous assemblez et fixez le raccord au poêle et à la cheminée.

Assurez-vous que le poêle et le raccord de cheminée installés se trouvent à une distance correcte des matériaux de combustion proches. Voir le paragraphe sur les espacements page 8.

Si le conduit passe par une paroi ou une cloison de construction inflammable, l'installation doit être conforme à la norme CAN/CSA-B365.

Systèmes de raccord de cheminée et autorisations des appareil de chauffage ménagers à travers les murs inflammables



A. Maçonnerie en briques charpentée d'au moins 3,5 pouces (90 mm) d'épaisseur dans un mur inflammable avec une séparation en brique de 12 pouces (305 mm) minimum de la doublure en argile aux combustibles. La doublure en argile réfractaire doit aller de la surface de la sortie du mur en brique jusqu'à la surface interne de la doublure du tuyau de cheminée mais pas au delà et doit être solidement cimentée en place.

B. Tronçon de cheminée usine répertoriée, à isolation solide, de même diamètre intérieur que le raccord de cheminée et ayant une isolation de 1 pouce (25 mm) ou plus avec un espace d'air minimum de 9 pouces (230 mm) entre le mur extérieur de la longueur de la cheminée et les combustibles.

C. Raccord de cheminée en tôle, minimum calibre 24 en épaisseur, avec un cylindre ventilé minimum calibre 24 en épaisseur ayant deux canaux d'air de 1 pouce (25 mm), séparés des combustibles par au moins 6 pouces (150 mm) d'isolation de fibre de verre.
L'ouverture doit être couverte et le cylindre sou tenu soutenu par un support en tôle, minimum calibre 24 en épaisseur.

D. Tronçon de cheminée usine répertoriée, à isolation solide d'un diamètre intérieur plus grand de 2 pouces (50 mm) que le raccord et ayant une isolation de 1 pouce (25 mm) ou plus, servant de traverse pour un raccord de cheminée à simple paroi en tôle d'épaisseur minimum de calibre 24, avec un espace d'air d'au moins 2 pouces (50 mm) entre le mur extérieur de la section de cheminée et les combustibles. La longueur minimum de la section de cheminée doit être de 12 pouces (305 mm) et espacée de 1 pouce (25 mm) du raccord utilisant des plaques de soutien en tôle à chaque extrémité de la section de cheminée. L'ouverture doit être couverte et la section de cheminée soutenue des deux côtés avec des supports en tôle fixés à des murs de calibre 24 épaisseur minimum.
Les fixations utilisées pour sécuriser la section de cheminée ne doivent pas pénétrer la doublure du conduit de cheminée.

1.5 Positionnement du poêle

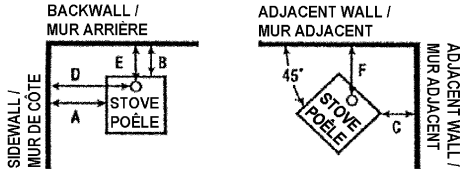
Distance avec murs et linteaux

Si le poêle se trouve à proximité de matériaux combustibles, consultez tous les règlements de constructions locaux et nationaux en vigueur en ce qui concernent les espacements. Quels que soient les règlements qui s'appliquent à votre région, n'installez en aucun cas le poêle à moins de 8 pouces (205 mm) des matériaux combustibles sur les côtés et à moins de 16 pouces (405 mm) au-dessus du poêle (des installations des poêles demandent plus d'espacement au-dessus du poêle - voir le graphique des distances en dessous). Il peut s'avérer nécessaire d'augmenter ces distances si les matériaux sont sensibles à la chaleur. Notez également que les papiers peints et autres matériaux de décoration peuvent se détacher sous l'effet de la chaleur. Prenez garde à ce qu'ils ne tombent pas sur le poêle, le cas échéant.

Si le poêle se trouve à proximité de matériaux non combustibles, un espace de 4 pouces (100 mm) ou plus est recommandé pour des raisons de nettoyage et afin d'assurer la circulation de la chaleur autour du poêle et dans toute la pièce.
Si un échappement sur l'arrière est utilisé, la protection du sol doit être étendue sous le conduit de cheminée et de 2 pouces de chaque côté.

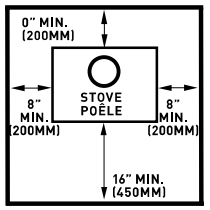
CONDITIONS D'ESPACEMENT REQUISES		INSTALLATION RÉSIDENTIELLE STANDARD RACCORD À SIMPLE PAROI	
		ÉTATS-UNIS	CANADA
A.	De la paroi latérale à l'unité	16"	18" - 457 mm
B.	De la paroi arrière à l'unité	6.5"	9.5" - 241 mm
C.	De la paroi d'angle à l'unité	8.5"	8.5" - 216 mm
D.	De la paroi latérale au raccord	23"	25" - 635 mm
E.	De la paroi arrière au raccord	10"	13" - 330 mm
F.	De la paroi d'angle au raccord	17.5"	17.5" - 445 mm
G.	De l'unité au plafond	56.5"	56.5" - 1435 mm
H.	Du sol au plafond	84"	84" - 2134 mm

MINIMUM CLEARANCES TO COMBUSTIBLES:
DEGAGEMENTS MINIMAUX AUX MATERIAUX COMBUSTIBLES:



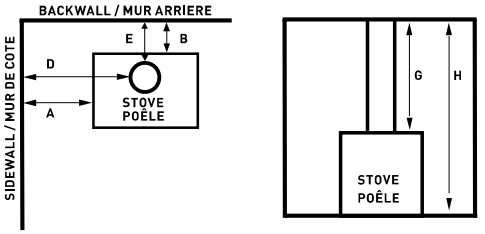
CONDITIONS D'ESPACEMENT REQUISES		INSTALLATION EN NICHE RACCORD À DOUBLE PAROI
A.	De la paroi latérale à l'unité	19" (483 mm)
B.	De la paroi arrière à l'unité	9.5" (241 mm)
C.	De la paroi d'angle à l'unité	N/A
D.	De la paroi latérale au raccord	26" (660 mm)
E.	De la paroi arrière au raccord	14" (356 mm)
F.	De la paroi d'angle au raccord	N/A
G.	De l'unité au plafond	20.5" (521 mm)
H.	Du sol au plafond	48" (1219 mm)

EXIGENCES PROTECTION DU SOL



LE PROTECTEUR DE PLANCHER DOIT ÊTRE D'UN MATÉRIAL INCOMBUSTIBLE. IL DOIT S'ÉTENDRE EN DESSEUS DE L'APPAREIL ET AU DEVANT, AUX CÔTÉS ET À L'ARRIÈRE DE L'APPAREIL COMME INDIQUÉ

INSTALLATION DE LA NICHE



Profondeur maximale de la niche: 32" (813mm)

Distance des meubles

La distance minimum recommandée entre le poêle et les meubles est de 30 pouces (760 mm). Veuillez noter que certains meubles sont plus facilement affectés par la chaleur et peuvent par conséquent nécessiter d'être plus éloignés. Ceci est votre responsabilité.
De plus, maintenez tout autre matériau combustible éloignés du poêle. En général, une distance de 30 pouces (760 mm) doit être conservée entre le poêle et les objets inflammables mobiles tels que chiffons, journaux, bois de chauffage, etc.

1.6 Installation pour mobile home

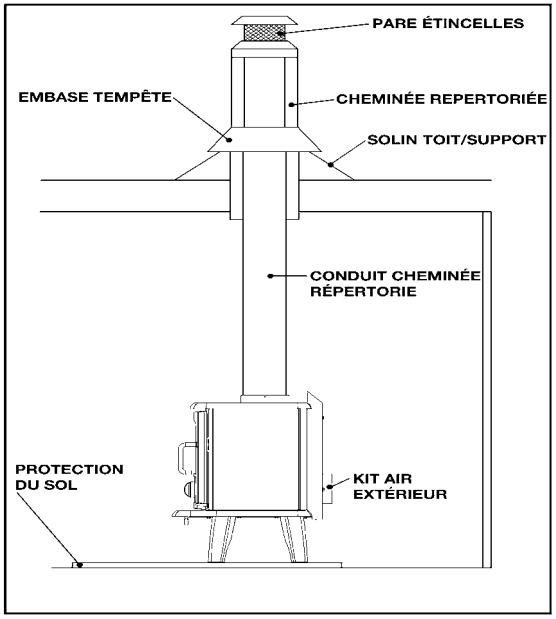
POUR LE CANADA: NE PAS INSTALLER DANS UNE MAISON MOBILE

Le poêle Morsø 7110 peut être installé dans un mobile home équipé d'un kit d'air de combustion extérieur et d'un capuchon avec pare-étincelles. Il doit de plus être conforme aux prescriptions suivantes.

- Le poêle doit être fixé de manière sûre à la structure du mobile home avec des boulons dans la plaque du foyer et le sol.
- Le poêle doit être installé avec un raccord de cheminée HT répertorié, une cheminée HT, et un capuchon avec pare-étincelles. Ne jamais utiliser un raccord à paroi simple (tuyau de poêle) dans une installation pour mobile home.
- Les conditions de protection du sol indiquées en section 1.5 doivent être strictement respectées.
- Au Canada, cet appareil doit être relié à une cheminée usine 6 pouces (152 mm) conforme à la norme des cheminées usine CAN/ULC-629M.
  Les conditions de protection du sol indiquée en section 1.5 doivent être suivies, et un Canadian Floor Protector doit être utilisé.
- Suivre les instructions du fabricant de la cheminée et du raccord, lors de l'installation du conduit pour un mobile home.
- Le kit d'air extérieur doit être installé selon le mode d'emploi du kit.
- La conduite d'admission d'air peut être installée par le sol dans l'espace d'accès ventilé ou par la paroi de la résidence, pour obtenir l'air extérieur. 13.5' from ground level for transportation purposes.
- Installez selon la directive CFR, Part (HUD).
- REMARQUE Les sections supérieures de la cheminée doivent être amovibles de manière à permettre un espacement maximal de 13.5' à partir du niveau du sol, en vue du transport.

AVERTISSEMENT
NE JAMAIS TIRER DE L'AIR DE COMBUSTION D'UNE PAROI, DU SOL, D'UN ESPACE DANS LE PLAFOND, NI D'UN D'UN ENDROIT CLOS COMME DES COMBLES OU UN GARAGE. NE PAS INSTALLER DANS UNE CHAMBRE À COUCHER.

ATTENTION
L'INTÉGRITÉ STRUCTURELLE DU SOL, DES PAROIS ET DU PLAFOND/TOIT DU MOBILE HOMEDOIT ÊTRE PRÉSERVÉE (NE PAS COUPER DANS UNE POUTRELLE DE SOL, UN TENON DE PAROI, UN SUPPORT DE PLAFOND, ETC.)
NE PAS UTILISER DE GRILLE POUR SURÉLEVER LE FEU – ALLUMER LE FEU DIRECTEMENT DANS LE FOYER.



Remarque :
Protection de l'acide
En cas de lavage à l'acide de la maçonnerie autour du poêle, protégez la surface du poêle avec une couverture résistante à l'acide.

Entrée d'air frais
A moins que la circulation d'air dans la pièce par les portes, fenêtres et autre soit jugée suffisante, une entrée d'air frais est nécessaire. Cette entrée d'air doit avoir un espace d'air libre de 2 pouces carrés (1250 mm carrés). Ceci est particulièrement important lorsque la pièce est bien scellée ou lorsqu'une hotte aspirante ou un système de ventilation perturbe la pression naturelle de l'air. Une telle entrée d'air ne doit pas se trouver sur un mur habituellement sujet à une pression négative du déplacement habituel du vent. Evitez de placer l'entrée d'air directement à l'opposé du poêle dans la pièce créant ainsi un courant d'air froid.

2.0 Fonctionnement

2.1 Avant d'allumer le feu

Pour une utilisation avec des combustibles solides uniquement. Ne poussez pas trop le feu, si l'appareil ou le raccord de cheminée devient incandescent, le feu est trop fort. Inspectez et nettoyez fréquemment la cheminée. Dans certaines conditions d'utilisation, la formation de créosote peut arriver rapidement. A cause des risques de débordement de fumée et de flammes, opérez uniquement avec la porte fermée.

Attention :
Chaud pendant le fonctionnement. Tenir les enfants, vêtements et meubles éloignés. Risque de brûlures cutanées en cas de contact. Ne pas utiliser de produits chimiques ni de liquides pour l'allumage. Ne pas brûler de déchets ni de liquides inflammables.
Ne pas utiliser d'essence, de pétrole à lampe, de kérosène, d'allumeur ou de liquide à charbon de bois ou tout autre liquide pour démarrer ou relancer un feu dans ce poêle.
Tenir tous ces liquides éloignés du poêle pendant son fonctionnement.

Choisir votre combustible
Vous pouvez brûler tous les types de bois naturel dans ce poêle mais ils doivent être bien secs. Une fois coupé en longueur, couper le bois en deux - conformément aux dimensions mentionnées ci-dessous - pour permettre à l'humidité de s'évaporer.
Couper le bois à une longueur maximale de 18 pouces (45 cm) et d'un diamètre d'environ 3 à 3,5 pouces (7 à 8 cm). Si vous pouvez peser votre bois, comptez environ 1,0 kg. Pour une combustion optimale et un bon dégagement de chaleur, le bois doit pas contenir plus de 20% d'humidité; ceci peut facilement être contrôlé à l'aide de l'hygromètre Morsø (article # 62929900). Stockez les bûches couvertes dans un endroit bien aéré, où l'air peut circuler entre les bûches. Certains bois tendres peuvent n'avoir besoin que d'un bel été pour sécher, alors que certains bois plus durs, comme p.ex. le chêne, l'érable et l'orme peuvent prendre jusqu'à 18 mois. Eviter du bois trop sec, souvent d'une couleur tirant sur le gris, car dans certaines conditions, cela peut poser des problèmes de rendement tels que lenteur et projection d'étincelles. Un bois bien sec est léger à manipuler et présente des fentes du centre vers les extrémités. Si votre bois crépite ou grésille en brûlant et que de la suie persiste à se former sur la porte vitrée du poêle, votre bois n'est pas suffisamment sec. N'utilisez jamais de dérive (de la mer) dont le contenu salé peut entraîner de la corrosion, ni du bois de construction pouvant être imprégné de produits chimiques.

Attention ! Ne pas entreposer de combustible dans l'espacement libre requis à proximité du poêle ni dans l'espace destiné au chargement du combustible ou au vidage des cendres.

Allumage
Au début, faîtes un petit feu pour que la peinture s'accoutume et que les plaques principales du poêle se mettent en place. La peinture peut dégager des vapeurs. Aérez la pièce pendant cette phase. Le réglage de l'aération, les techniques d'allumage et les intervalles d'alimentation dépendent du tirage de la cheminée, du combustible utilisé, de la chaleur voulue, etc. Quelques techniques de base sont soulignées ci-dessous.

En principe:
Votre poêle est équipé de quatre admissions d'air.
L'air primaire est contrôlé par le régulateur d'air supérieur de la porte. L'air circule éventuellement à grande vitesse au bas de l'arrière de la porte vitrée. Cet air surchauffé active la combustion des gaz volatils générés par le feu. L'air secondaire arrive vers le haut du feu par les orifices des tubes situés sous le déflecteur inférieur. Ceci permet de brûler efficacement les autres gaz résiduels. Les émissions sont donc très propres. Cette admission d'air est constante et ne peut être modifiée.

L'air secondaire arrive vers la chambre de combustion grâce au déflecteur spécialement conçu, situé derrière la chambre de combustion.
L'air secondaire est injecté dans les gaz du conduit à la fois au dessus et en face du feu, rendant ainsi le processus de combustion plus propre et plus efficace. L'admission d'air secondaire est constamment ouverte et n'est pas réglable. Pour plus de sécurité, votre poêle est équipé d'une poignée amovible.

Pour optimiser la performance
Brûler du bois humide a un effet négatif sur le rendement de l'appareil.

2.2 Allumage et intervalles d'alimentation

Le premier allumage du poêle nécessite un volume d'air important. Lorsque le poêle est froid, laissez la porte entrouverte de 2 ou 3 cm pendant les premières minutes et ouvrez complètement l'entrée d'air primaire. Ne laissez pas le poêle sans surveillance tant que la porte est ouverte.
Afin de constituer un lit de cendres raisonnable au fond du poêle, utilisez 5 à 6 pouces (130 à 150 mm) (2 à 4 livres) de petit bois sec lors du premier allumage. Maintenez en permanence une couche de 1 à 1,5 pouces (2 à 3 cm) de cendres au fond de la chambre de combustion à chaque fois.

1. Lorsqu'on allume un poêle à bois, il est recommandé d'utiliser la méthode d'allumage Top Down. C'est la méthode d'allumage la plus respectueuse de l'environnement. Pour obtenir rapidement la formation d'une couche de braises, utiliser pour l'allumage 2 sachets allume-feu, ainsi que 1,5 kg environ de bois d'allumage. Poser les allume-feu juste en-dessous de la couche supérieure de petit bois.
Il est important de commencer avec précaution, de telle sorte que la combustion se développe lentement. De cette manière, la formation de suie sur la vitre est faible. En effet, l'encrassement de la vitre est souvent dû à une combustion trop violente et au fait que les flammes entrent en contact avec des surfaces froides. En évitant la formation de suie lors de l'allumage et en faisant en sorte d'obtenir une couche de braises chaudes, la formation de suie sera minime lors des étapes suivantes d'alimentation.

2. Ouvrez complètement le régulateur d'air secondaire.

3. Allumez le feu.

4. Après l'allumage, fermez partiellement les portes en les laissant entrouverte de 2 ou 3 cm pour laisser entrer suffisamment d'air de combustion.

5. Lorsque la cheminée est chaude après 5 à 10 minutes, fermez les portes. Un lit de braises convenable se forme au bout de 15 à 20 minutes.

6. Au moment de recharger, repartez les braises dans le foyer en les rapprochant surtout vers l'avant du poêle.
Nous vous recommandons d'utiliser une charge de carburant pesant 4 lb (2 pièces) et jusqu'à 10 lb (5 pièces).

Toujours garder la charge de carburant sous le tube d'air secondaire le plus bas. L'espace devant et au-dessus du tube à air le plus bas est réservé à la combustion de gaz volatil.

Lorsque vous rechargez votre poêle, il est recommandé d'ouvrir la porte du poêle lentement de 2 à 3 centimètres et d'attendre ensuite quelques secondes pour égaliser la pression dans le poêle. Vous pouvez ensuite ouvrir entièrement la porte du poêle en toute sécurité. En procédant de cette manière les reflux de fumée peuvent être éliminés, en particulier lorsque le tirage de la cheminée est mauvais. Ne pas ouvrir la porte du poêle lors d'une forte combustion.

7. Poser 2-5 morceaux de bois (3 à 10 livres) d'environ 25 cm de longueur sur les braises. Laissez ½ pouce (1 cm) ou plus entre chaque morceau.

8. Fermez la porte et laissez l'entrée d'air secondaire complètement ouverte.

9. Une fois que le nouveau combustible a pris, réglez la quantité d'air secondaire souhaitée.
La combustion optimale continue jusqu'à la formation de braises. Anticipez une nouvelle alimentation après 60-70 minutes.

10. Souvenez-vous de n'ajouter qu'une modeste couche de bois tant qu'il y a beaucoup de braises. Reprenez les points 6 à 7.

Règles de feu de bois
Pour avoir moins de chaleur, mettez moins de bûches dans le poêle et réduisez la quantité d'air. Il est toujours important de maintenir une bonne couche de braises.

Moins de chaleur – moins de bois – moins d'air
Plus de chaleur – plus de bois – plus d'air
Des dépôts de suie se font sur la vitre si le poêle fonctionne trop lentement ou si votre bois n'est pas assez sec.

N'essayez en aucun cas d'accroître le feu de votre poêle en modifiant le réglage du contrôle d'air décrit dans ces instructions.

Attention : Les poêles à feu de bois ne doivent jamais être laissés sans surveillance la porte ouverte.

Cet appareil de chauffage à bois a un taux de combustion minimal inférieur fixé par le fabricant et qu'il convient de ne pas modifier. Les règles fédérales interdisent de modifier ce réglage ou d'effectuer sur ce poêle toute autre intervention contrevenant aux instructions de service figurant dans le présent manuel.

Si vous laissez les portes entrouvertes, gaz et flammes peuvent sortir du foyer par l'ouverture, créant ainsi des risques d'incendie et de fumée. Nous vous conseillons d'installer un détecteur de fumée dans la pièce où vous installez le poêle.

NE PROVOQUER JAMAIS DE SURCHAUFFE. Toute surchauffe peut entraîner un incendie ou des dégâts permanents pour le poêle. Si n'importe quelle pièce du poêle devient incandescente, vous êtes en surchauffe.

Le poids maximal de bois recommandé par charge est de 4.5kg/h/10lbs (environ 5 bûches).

Dans des conditions de chauffage normales, la température moyenne à l'intérieur du tuyau du poêle, mesurée à 20 cm au-dessus du poêle est d'env. 300° C (550°F). La température maximale dans le tuyau du poêle ne doit pas excéder 450° C (750°F). Une température du poêle dépassant 450°C (750°F) est considérée comme surchauffe et peut être la cause d'une usure prématurée du poêle.

Pour permettre de mesurer correctement la température de fonctionnement de votre poêle, nous recommandons l'utilisation du Thermomètre à gaz pour poêle Morsø (article # 62901200). Le Thermomètre à gaz pour poêle est magnétique; il se fixe sur le tuyau du poêle, à environ 20 cm (8") au-dessus de la plaque supérieur du poêle, et mesure la température de surface du tuyau du poêle. Disponible auprès de votre distributeur Morsø agréé.

Conditions de tirage
Si de la fumée ou des émanations se dégagent du poêle lors de l'allumage et de l'alimentation ou si tout simplement le feu ne prend pas, ceci est sûrement dû à un faible tirage. (Dans très peu de cas, pas assez d'air frais entre dans la pièce – voir les conseils d'installation plus haut). Demandez conseil à votre vendeur pour savoir comment améliorer votre système de tuyauterie pour accroître le tirage.

Détecteurs de monoxyde de carbone
Dans certaines juridictions, l'installation de détecteurs de fumée et d'oxyde de carbone dans les lieux où sont placés des appareils de chauffage est obligatoire. Pour assurer votre sécurité, installez au moins un détecteur de fumée à chaque étage de votre maison. Il devra être placé à distance de l'appareil à bois et à proximité des espaces de repos. En effet, en plaçant un détecteur de fumée trop près du poêle, l'alarme risque de se déclencher si un rejet de fumée intervient lorsqu'on ouvre la porte pour remettre du bois. Suivez les instructions du fabricant de détecteurs de fumée concernant l'emplacement, l'installation et l'entretien.

3.0 Entretien

Lors de l'entretien de votre poêle, portez toujours des lunettes et des gants de protection.

3.1 Entretien extérieur

La surface du poêle est peinte avec la peinture résistant à la chaleur Senotherm. Nettoyez de préférence avec un aspirateur équipé d'un embout à brosse souple ou en essuyant avec un chiffon anti-peluche.
Au bout d'un certain temps, la surface peinte peut devenir légèrement grise. Vous pouvez trouver une boîte de peinture en spray pour retouche Morsø chez votre revendeur. Il suffit de quelques minutes – en suivant les instructions- pour l'appliquer. Lors du premier allumage après une retouche, une légère odeur peut se dégager du poêle le temps de l'accoutumance de la peinture. Assurez-vous de bien aérer la pièce pendant cette période.

3.2 Entretien intérieur

Vitre
Si le poêle est généralement utilisé aux températures correctes, la vitre ne devrait être que peu ou pas sale. Si de la saleté se dépose lors de l'allumage, la majeure partie brûlera au fur et à mesure que la température augmente. En cas de dépôts plus importants qui ne brûlent pas, utilisez le nettoyant pour vitres Morsø. Appliquez sur la vitre froide en suivant les instructions. N'utilisez jamais de nettoyants abrasifs sur la surface vitrée.

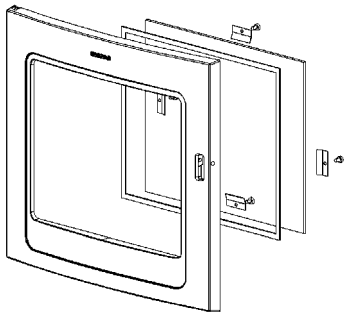
Causes possibles de vitre sale
- Combustible trop humide
- Bûches trop grandes ou non fendues
- Température de combustion trop basse

Ne pas nettoyer le verre lorsqu'il est chaud
Remplacez immédiatement toute vitre cassée.
N'utilisez pas votre poêle si la vitre de la porte est endommagée.

Si vous devez changer la vitre, utilisez du verre céramique à haute température fourni par Morsø. Contactez votre concessionnaire Morsø.

Installer la vitre
N'installez jamais la vitre lors du fonctionnement du poêle.

Remplacement du vitre céramique
Le vitre céramique ne peut pas être recyclé, car sa température de fusion est trop élevée. Si le vitre céramique est mélangé au verre normal, la matière première est dénaturée et le processus de recyclage du vitre peut être interrompu. Veillez à ce que le vitre réfractaire ne soit pas traité comme matériau à recycler normal. Vous contribuerez beaucoup à la protection de l'environnement.
ATTENTION ! Doit être déposé comme vitre céramique dans une station de collecte des déchets.



1. Soulevez la porte pour la sortir de ses gonds et posez-la face avant vers le bas sur des cartons ou tout autre tissu non abrasif.

2. Dévissez les 8 boulons qui maintiennent la vitre. (Au cas où un boulon se casserait lors du dévissage, retirer le reste du boulon en perçant au centre avec une mèche de perceuse acier grande vitesse de 1/8 de pouce (3 mm). Des mèches plus petites peuvent également convenir mais n'utilisez en aucun cas de mèche plus grande. Assurez-vous que la mèche ne touche pas les bords du boulon – ceci pouvant endommager le filetage dans la fonte).

3. Retirez le joint d'étanchéité en céramique usagé et nettoyez la surface en dessous avec de la paille de fer ou du papier de verre pour éliminer les particules.

4. Mettez en place le nouveau joint d'étanchéité tout autour de l'emplacement de la vitre en vous assurant de bien le pincer tout le long de façon à faire un joint continu. Ne laissez aucun espace

5. Placez la nouvelle vitre sur les bandes et revissez les boulons et équipements à la main.

6. Enfin, donnez environ un demi-tour supplémentaire aux boulons. La vitre doit être tenue assez fermement de manière à ne pas bouger pendant le nettoyage. Ne vissez pas les boulons trop fort car cela entraîne une pression excessive sur la vitre risquant de la casser. Important !

Afin de réduire le risque de casser la vitre, évitez de frapper sur la vitre ou de claquer la porte.

Pièces de rechange intérieures
L'équipement feu – comprenant le cendrier, la grille, les briques réfractaires, plaques de fonte pour protection feu, la vitre, le déflecteur et le collier de serrage du tuyau – est soumis à une chaleur extrême produite par le feu. De temps en temps, il peut s'avérer nécessaire de remplacer une de ces pièces pour des raisons d'entretien routinier.

REMARQUE : L'équipement feu, la corde céramique et la finition de peinture ne sont pas couverts par la garantie.

Toutes ces pièces de rechange sont en vente chez votre concessionnaire Morsø et nous vous recommandons de remplacer toute pièce endommagée aussi tôt que possible afin d'éviter des dégâts supplémentaires.

Si le déflecteur est déformé par une surchauffe, le poêle continue à fonctionner même si sa performance peut être compromise. Remplacez-le dès que possible.

Causes possibles d'usure interne rapide
Feu fort et persistant
Accumulation de suie et de cendres

Joint d'étanchéité
Le joint entourant le périmètre des portes peut durcir avec le temps. Remplacez-les s'il devient difficile de fermer les portes ou si l'air commence à s'infiltrer autour des portes, causant ainsi un feu un peu moins contrôlable. Un jeu de joint Morsø est en disponible chez votre revendeur.

3.3 Nettoyage du poêle et du conduit

Vérifiez la présence de suie au-dessus de la plaque du déflecteur et autour de la sortie du tuyau environ tous les mois pour commencer. Si le poêle devient soudain lent, regardez si de la suie est tombée autour du collier de serrage du tuyau ou dans le tuyau/ la cheminée, au moins une fois par an.
Effectuez une inspection de la cheminée et du raccord de cheminée au moins tous les deux mois pendant la saison de chauffage pour détecter la formation éventuelle de créosote. S'il y a de créosote il faut l'éliminer pour réduire le risque d'un feu de cheminée. Nettoyez le tuyau/ la cheminée – sur toute la longueur du poêle jusqu'à l'extrémité du tuyau sur le toit de la maison. Une bonne habitude est de nettoyer le tuyau après chaque saison de chauffage dans tous les cas et d'inspecter avant chaque saison pour vous assurer qu'aucun nid d'oiseau ou autre bouchon ne s'est constitué pendant la saison de non-utilisation.

Elimination des cendres
Videz les cendriers quotidiennement ou selon les besoins. Si vous laissez des cendres s'accumuler en dessous de la grille, la chaleur est piégée et cela peut entraîner un mauvais fonctionnement prématuré de la grille.

Videz le cendrier selon cette procédure :
Ouvrez les portes avant et utilisez une pelle ou un tisonnier pour remuer l'excès de cendres et la faire tomber dans les cendriers à travers les fentes de la grille. Retirez le cendrier en prenant soin de bien le tenir horizontal.

Jetez les cendres dans un récipient en métal avec un couvercle hermétique.
Placez le récipient fermé contenant les cendres sur un sol non inflammable ou sur la terre, bien éloigné de tout matériau combustible en attendant l'enlèvement définitif. Si vous vous débarrassez des cendres en les enterrant ou en les dispersant, gardez-les dans le récipient fermé jusqu'à leur refroidissement complet. Remettez le cendrier en place et fermez le poêle.

Attention :
Ne jamais vider un poêle en train de fonctionner.
Ne jamais utiliser votre aspirateur ménager ou professionnel pour enlever les cendres du poêle ; toujours éliminer les cendres correctement.

Créosote – Formation et élimination.
Lorsque le bois brûle lentement, il produit du goudron et d'autres vapeurs organiques qui s'associent avec l'humidité émise pour former du créosote. Les vapeurs de créosote se condensent dans le conduit de cheminée relativement froid lors d'un feu brûlant faiblement. Il en résulte que les résidus de créosote s'accumulent sur la paroi du tuyau. Une fois enflammé, le créosote crée un feu extrêmement chaud.
Vérifiez la cheminée et le conduit de cheminée au moins deux fois par mois pendant la saison de chauffage pour contrôler l'absence de formation de créosote. En cas de dépôt de créosote, éliminez-le pour diminuer le risque de feu de cheminée.

Ramonage de la cheminée
Inspectez le système régulièrement au cours de la saison de chauffage comme partie intégrante d'un programme d'entretien régulier. Pour inspecter la cheminée, laisser le poêle refroidir complètement. Puis, à l'aide d'un miroir, regardez par le collier du tuyau dans le conduit de cheminée. Si vous ne pouvez pas inspecter le système de conduit de cette façon, déconnectez le poêle pour faciliter l'accès.Nettoyez la cheminée à l'aide d'une brosse de la même forme et taille que le tuyau. Faites coulisser la brosse de haut en bas et inversement dans le conduit afin de faire tomber tous les dépôts en bas de la cheminée où vous pouvez les évacuer grâce à la porte de nettoyage. Nettoyez le raccord de cheminée en déconnectant les sections, mettez-les à l'extérieur et éliminez tous les dépôts avec une brosse dure. Remettez les sections du raccord en place après le nettoyage en vous assurant de sécuriser les joints entre chaque section avec des vis en tôle.Si vous ne pouvez pas inspecter ou nettoyer la cheminée vous-même, contactez votre concessionnaire Morsø ou un ramoneur professionnel.

En cas de feu de cheminée, agissez rapidement et :
1. Fermez le contrôle d'air.
2. Faites sortir tout le monde de la maison.
3. Appelez les pompiers.

Entretien annuel
Avant la saison de chauffage, effectuez un nettoyage en profondeur, inspectez et réparez:
Nettoyez la cheminée et le raccord de cheminée à fond.
Vérifiez si la cheminée est abîmée ou usée. Remplacez les sections faibles de la cheminée préfabriquée. Faites faire les réparations par un maçon pour la cheminée maçonnée.
Inspectez le raccord de cheminée et remplacez les sections endommagées.
Vérifiez l'usure ou la compression de l'étanchéité et remplacez si nécessaire.
Vérifiez si la vitre est craquelée; remplacez si nécessaire.
Vérifiez si la porte et les poignées ferment bien. Ajustez si nécessaire.

UTILLISEZ TOUJOURS DES PIÈCES DE RECHANAGE D'ORIGINE MORSØ

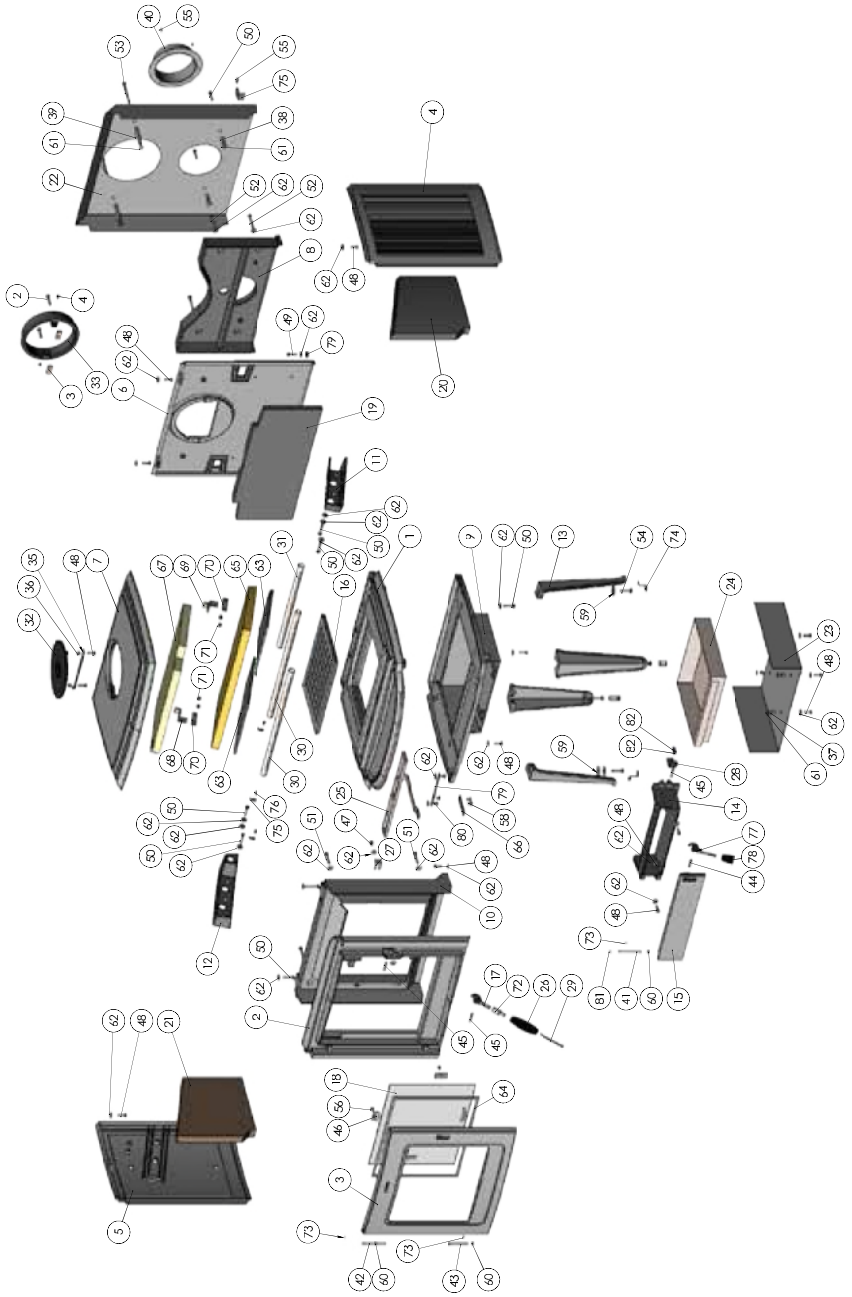
3.4 Périodes prolongées de non-utilisation du poêle

Important :
Si vous n'utilisez pas le poêle pendant une période quelconque, nettoyez-le en profondeur et laisser l'aération légèrement ouvert pour laisser l'air circuler. Assurez-vous que le tuyau ne laisse pas entrer d'eau de pluie près du poêle ; installez un chapeau sur la cheminée mais ne bouchez pas complètement le tuyau.
Ces mesures permettent d'assurer un léger courant d'air dans le poêle et au corps du poêle de rester sec, dans les moindres recoins.
Les cendres laissées dans un poêle qui ne brûle pas attirent l'humidité comme du papier buvard. Si vous laissez l'humidité s'installer dans le poêle, de la rouille se forme. La rouille s'étend dès qu'elle prend prise. Ceci peut entraîner une pression excessive sur les joints du poêle, endommageant ainsi ultérieurement le poêle.

REMARQUE : Il est préférable de nettoyer à fond le poêle à la fin de la saison de chauffage. Ajouter un dessicatif, comme de la litière pour chat, dans le cendrier aide à absorber l'humidité pendant les mois d'été. Assurez-vous de l'enlever avant la saison de chauffage.

Nous vous remercions d'avoir acheté un poêle Morsø
Nous vous souhaitons des années de chaleur sans souci en sa compagnie. Après quelques expérimentations initiales avec les techniques d'alimentation et de fonctionnement, vous trouverez vos habitudes. En cas de problèmes après cette courte phase d'apprentissage, adressez-vous au vendeur de votre poêle. Si celui-ci est dans l'impossibilité de vous aider, veuillez nous contacter par écrit à l'adresse figurant sur la première page de cette publication.

3.5 Schéma des pièces détachées pour Morsø 7110



3.6 Liste des pièces détachées pour Morsø 7110

No.	Pièces détachées	numéro de SKU
1	Plaque de base	44710100
2	Cadre frontal	44710200
3	Porte	44710300
4	Plaque latérale, droite	44711900
5	Plaque latérale, gauche	44712000
6	Plaque arrière	44710600
7	Plaque supérieure	44710700
8	Conduit air arrière	44710800
9	Conduit air, fond	44710900
10	Conduit air, avant	44711000
11	Conduit air secondaire, droit	34711100
12	Conduit air secondaire, gauche	34711200
13	Pied	44711300
14	Cadre pour porte cendrier	44711400
15	Porte cendrier	44711500
16	Grille	34711600
17	Fermeture, porte cendrée	79711700
18	Vitre céramique	79710000
19	Brique, arrière	79710100
20	Brique latérale, droite	79710200
21	Brique latérale, gauche	79710300
22	Écran de protection radiant, arrière	54710100
23	Écran de protection radiant, fond	54710200
24	Cendrier	71710300
25	Damper primaire	71710400
26	Poignée	71710500
27	Raccord brique	71710600
28	Raccord pour axe à cendrier	71710700
29	Vis M5x80 DIN 912	73984200
30	Tube secondaire, grand	71710900
31	Tube secondaire, petit	71711000
32	Couvercle	44261000
33	Collier de serrage du tuyau	44344100
34	Raccord avec fil pour collier de serrage du tuyau	44256700
35	Barre d'arrêt	544541
36	Tube d'éloignement Ø10x1 L = 8.5	545007
37	Tube d'éloignement Ø10x1 L = 10	541439
38	Tube d'éloignement Ø10x1 L = 20	542635
39	Tube d'éloignement Ø10x1 L = 67	54710100
40	Adaptateur air	71360600
41	Axe de charnière Ø5x75	545008
42	Axe de charnière Ø5x75	54503000
43	Axe de charnière Ø5x60 DIN 660	74701000
44	Fente Ø6x30mm DIN 1481	791870
45	Fente Ø6x35mm DIN 1481	79187200
46	Raccord verre	54146361
47	Vis M6X10 Din933	731610
48	Vis M6X20 Din933	731620
49	Vis M6X25 Din933	731625
50	Vis M6X35 Din933	731635
51	Vis M6X40 Din933	731640
52	Vis M6X50 Din933	731650

3.6 Liste des pièces détachées pour Morsø 7110

No.	Pièces détachées	numéro de SKU
53	Vis M6x80 Din931	73168000
54	Vis M8x30 DIN 933	731830
55	Vis Ø3.5X9.5 DIN 7981 fzb	791835
56	Vis M5x08 ISO7380	73850800
57	Vis M6x35 Din7991	74241900
58	Vis M6x10 Buttonhead	73861000
59	Rondelle 30x8.4x1.25 art9021	79189500
60	Rondelle 6mm DIN 125A laiton	746006
61	Vistop rondelle terminale 6mm	746206
62	Rondelle Washer M6x25 DIN 933	731625
63	Plaque de déflecteur, fonte	34711800
64	Bande de serrage pour verre 8x3mm	79074500
65	Isolation couverture	79710500
66	Poignée primaire	71711161
67	Plaque de déflecteur, avant	79710400
68	Raccord arrêt, gauche, pour plaque de déflecteur	71711200
69	Raccord arrêt, droit, pour plaque de déflecteur	71711300
70	Raccord pour plaque de déflecteur	71711400
71	Vis M6x6 DIN 933	731606
72	Adaptateur pour poignée	71710800
73	Vis M4x05 Din916-45H	739405
74	Raccord pour, pied	71711800
75	Fermeture raccord pour tube secondaire	71712061
76	Vis M5x08 Din933	74150804
77	Fermeture, porte cendrée	79127000
78	Poignée Bakelite 36mm	79118200
79	Raccord pour poignée primaire	71711500
80	Vis M6x8 Buttonhead	73860800
81	Rondelle, Anneau de retenue 4mm DIN 6799	791824
82	Vis M5x10 Buttonhead	73851000

Enregistrement de la garantie du produit

CERTIFICAT DE GARANTIE 10 ANS MORSØ

Chaque produit Morsø est le résultat de plus de 160 années d'expérience de la conception et de la fabrication des poêles à bois. Le contrôle de la qualité a toujours été la clé de voûte de notre processus de production. Des mesures rigoureuses ont été mises en place à chaque étape clé. Par conséquent, lorsqu'un poêle est fourni par un revendeur Morsø agréé, Morsø offre une garantie de dix ans contre tous les défauts de fabrication sur tous les principaux composants extérieurs de ses poêles.

Pour en savoir plus sur la «garantie de 10 ans Morsø / carte d'enregistrement de produit» et enregistrer votre nouveau poêle Morsø en ligne, allez sur le site: http://international.morsoe.com/warranty-registration

Morsø Jernstøberi A/S - 12.07.2019 - 72710600

IMPORTANT!

Comment chauffer en toute sécurité pour l'environnement et pour vous-même!

- **Utiliser uniquement du bois sec**
  Utiliser uniquement du bois sec (teneur en humidité max. de 20%) et non traité. Le combustible doit être coupé en deux et faire de 8 à 12 cm d'épaisseur.

- **Allumer**
  Allumer avec du bois d'allumage sec (utiliser 1 - 2 kg). Laisser la porte entrouverte et rester à proximité du poêle pendant la phase d'allumage.

- **Obtenir une bonne couche de braises**
  S'assurer d'avoir une bonne couche de braises avant d'alimenter le feu. Le bois doit s'allumer en 2 minutes. Si les bûches ne s'allument pas, dans des circonstances extrêmes, cela peut provoquer l'allumage des gaz de combustion, ce qui présente un risque de dommages matériels et de préjudices corporels.

- **Alimenter le feu**
  Pour alimenter le feu, utiliser 2 ou 3 morceaux de bois (pas plus de 2 - 2,5 kg).

- **Garantir une ventilation adéquate**
  C'est-à-dire des flammes claires et jaunes.

- **Ne jamais laisser brûler toute la nuit**

By appointment to The Royal Danish Court

morsø

Morsø Jernstøberi A/S - 12.07.2019 - 72710600

MORSØ JERNSTØBERI A/S . DK-7900 NYKØBING MORS
E-Mail: stoves@morsoe.com · Website: www.morsoe.com

Sample analysis, HF 1, 14. January 2019

Sample analysis, test run #1				
Filter series:	(1-4)	1		
Gasket series:	(1-4)	1		
Probe series:	(A-B-C)	A		
	PRIOR (mg)		**FINAL (mg)**	
Main probe	119807,6		119807,9	Main train
Filter 1+2	182,3		185,6	
Gasket 1+2	4914,6		4914,8	
Split probe 1H	120123,1		120123,3	Split train, 1. hour
Filter 3+4	182,5		185,7	
Gasket 3+4	4903,6		4903,8	
Split probe remaining	120593,5		120593,5	Split train, remaining time
Filter 5+6	180,9		181,1	
Gasket 5+6	4942,2		4942,3	
Room probe	-		-	Room blanc
Filter 7	92,4		92,3	
Gasket 7	2438,5		2438,6	

Sample analysis, MF, 14. January 2019

Sample analysis, test run #2				
Filter series:	(1-4)	2		
Gasket series:	(1-4)	2		
Probe series:	(A-B-C)	B		
	PRIOR (mg)		**FINAL (mg)**	
Main probe	120164,3		120164,3	Main train
Filter 1+2	179,4		181,8	
Gasket 1+2	4884,9		4885,7	
Split probe 1H	120030,6		120030,6	Split train, 1. hour
Filter 3+4	180,6		183,0	
Gasket 3+4	4905,9		4909,1	
Split probe remaining	120683,8		120683,8	Split train, remaining time
Filter 5+6	184,8		185,0	
Gasket 5+6	4915,9		4916,0	
Room probe	-		-	Room blanc
Filter 7	90,3		90,2	
Gasket 7	2482,6		2482,8	

Sample analysis, HF, 15. January 2019

Test run #3 was a dry run only intended to condition the fire bed prior to the subsequent LF test. No PM sampling was performed.

Sample analysis, LF, 15. January 2019

Sample analysis, test run #4				
Filter series:	(1-4)	3		
Gasket series:	(1-4)	3		
Probe series:	(A-B-C)	C		
	PRIOR (mg)		**FINAL (mg)**	
Main probe	121230,7		121130,8	Main train
Filter 1+2+xtra front filter	179,1		180,3	
Gasket 1+2	4897,5		4897,9	
Split probe 1H	120720,6		120720,8	Split train, 1. hour
Filter 3+4	179,6		180,6	
Gasket 3+4	4895,5		4895,7	
Split probe remaining	121051,4		121051,6	Split train, remaining time
Filter 5+6+ extra front filter	179,6		179,8	
Gasket 5+6	4968,0		4968,2	
Room probe	-		-	Room blanc
Filter 7	89,8		89,9	
Gasket 7	2457,0		2457,2	

DTI Stoves&Boiler test lab

Manufacturer:	Morsø	Technicians:	JSA
Model:	7110B series		
Date:	01-14-19		
Run:	#1		
Control #:	100% open		
Test Duration:	58,01366666		
Output Category:	HIGH		

Test Results in Accordance with CSA B415.1-10

	HHV Basis	LHV Basis
Overall Efficiency	69,0%	74,1%
Combustion Efficiency	99,5%	99,5%
Heat Transfer Efficiency	69%	74,5%

Output Rate (kJ/h)	38.534	36.554	(Btu/h)
Burn Rate (kg/h)	2,78	6,12	(lb/h)
Input (kJ/h)	55.887	53.014	(Btu/h)

Test Load Weight (dry kg)	2,69	5,92	dry lb
MC wet (%)	16,7		
MC dry (%)	20,05		
Particulate (g)	3,686962178		
CO (g)	27		
Test Duration (h)	0,97		

Emissions	Particulate	CO
g/MJ Output	0,10	0,74
g/kg Dry Fuel	1,37	10,23
g/h	3,81	28,42
lb/MM Btu Output	0,23	1,71

Air/Fuel Ratio (A/F)	12,79

VERSION: 2,4 15-04-2010

DTI Stoves&Boiler test lab

Manufacturer:	Morsø	Technicians:	JSA
Model:	7110B series		
Date:	01-14-19		
Run:	#2		
Control #:	21% Open		
Test Duration:	150,0443333		
Output Category:	MEDIUM		

Test Results in Accordance with CSA B415.1-10

	HHV Basis	LHV Basis
Overall Efficiency	76,0%	81,7%
Combustion Efficiency	97,2%	97,2%
Heat Transfer Efficiency	78%	84,1%

Output Rate (kJ/h)	21.946	20.818	(Btu/h)
Burn Rate (kg/h)	1,43	3,16	(lb/h)
Input (kJ/h)	28.862	27.378	(Btu/h)

Test Load Weight (dry kg)	3,59	7,91	dry lb
MC wet (%)	16,6		
MC dry (%)	19,90		
Particulate (g)	2,681616753		
CO (g)	153		
Test Duration (h)	2,50		

Emissions	Particulate	CO
g/MJ Output	0,05	2,78
g/kg Dry Fuel	0,75	42,59
g/h	1,07	61,09
lb/MM Btu Output	0,11	6,47

Air/Fuel Ratio (A/F)	11,78

VERSION: 2,4 15-04-2010

DTI Stoves&Boiler test lab

Manufacturer:	Morsø	Technicians:	JSA
Model:	7110B series		
Date:	01-15-19		
Run:	#4		
Control #:	Minimum setting		
Test Duration:	200,548		
Output Category:	LOW		

Test Results in Accordance with CSA B415.1-10

	HHV Basis	LHV Basis
Overall Efficiency	77,1%	82,9%
Combustion Efficiency	98,0%	98,0%
Heat Transfer Efficiency	79%	84,6%

Output Rate (kJ/h)	17.348	16.457	(Btu/h)
Burn Rate (kg/h)	1,12	2,46	(lb/h)
Input (kJ/h)	22.496	21.340	(Btu/h)

Test Load Weight (dry kg)	3,74	8,24	dry lb
MC wet (%)	17,3		
MC dry (%)	20,92		
Particulate (g)	1,279779449		
CO (g)	120		
Test Duration (h)	3,34		

Emissions	Particulate	CO
g/MJ Output	0,02	2,07
g/kg Dry Fuel	0,34	32,16
g/h	0,38	35,96
lb/MM Btu Output	0,05	4,82

Air/Fuel Ratio (A/F)	11,14

VERSION: 2,4 15-04-2010