

# TEST REPORT

Addition to report 300-ELAB-2169-EN.

Report no.:  
300-ELAB-2329-EN safety



**DANISH  
TECHNOLOGICAL  
INSTITUTE**

Teknologiparken  
Kongsvang Allé 29  
DK-8000 Aarhus C  
+45 72 20 20 00  
[info@dti.dk](mailto:info@dti.dk)  
[www.dti.dk](http://www.dti.dk)

Page 1 of 7  
Init.: REHV/KMSA  
Order no.: 814599  
No. of appendices: 1

**Requested by:** Company: Schiedel Skorstene ApS  
Address: Industrivej 23  
Postcode/town: 7470 Karup J  
Country: Denmark  
Email: [info@schiedel.dk](mailto:info@schiedel.dk)  
Telephone: +45 7010 2011

**Product:** Solid fuel inset appliances: Type: Schiedel Celcius system

**Sample:** Receipt at DTI, Aarhus: 16.11.2018, sampled by company

**Test period:** Date of testing: 19.11.2018

**Procedure** Testing of a solid fuel stove appliance in accordance with DS/EN 13240:2003 and DS/EN 13240/A2:2004 Emission measurements are in accordance with DS/CEN/TS 15883 and FprEN 16510-1 See paragraph 5. The uncertainty of the measurements meets the requirements of DS/EN 13240 paragraph A3, and relevant parts of DS/CEN/TS 15883 and FprEN 16510-1.

**Result:** Temperatures on the outside of the test enclosure do not exceed 65K above ambient temperature.

**Remarks:** See paragraph 2 - Remarks.

**Terms:** Accredited testing was carried out in compliance with the current guidelines laid down by DANAK (The Danish Accreditation), cf. [www.danak.dk](http://www.danak.dk), 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 22.07.2019, Danish Technological Institute, Aarhus, Energy Laboratory

**Signature:** René Lyngsø Hvidberg  
Senior Consultant

Kim Sig Andersen  
Quality Assurance



 **DANAK**  
Test reg. no. 300



## **1 Documentation material**

Regarding Celsius 470 HF Small - see report 300-ELAB-2169-EN.

Additional material is enclosed as a digitally signed PDF file.

## **2 Remarks**

Furthermore, please see administrative approvals: Assessment of properties for Jupiter 470 HF and Schiedel Celcius regarding EN 13229 (nominal properties) and NS3058 (environmental properties) test results.

The documentation material has only been checked regarding information that is relevant as compared to the performed testing.

There are the following remarks to the product manual;

- Missing the product name as well as an image of the product
- Clarification of the rules to follow when installing the product
- For the CE label; missing year '19
- Uncertainty of the products collective weight.

## **3 The basis of the test**

The free-standing stove appliance has been subject to random sampling and is representative for appliances from the production. The manufacturer must be in possession of a written declaration of the above-mentioned.

Celcius 470 HF Small - see report 300-ELAB-2169-EN.

For description of the test enclosures and distances see section 4.

Testing was carried out by Danish Technological Institute, Kongsvang Allé 29, DK-8000 Aarhus C, Denmark.

The thermal loss in the flue gas was calculated according to a corrected formula. In formula 4 in the standard the factor 1.92 was corrected to 1.244 during the calculation.

### **3.1 Variants**

Danish Technological Institute has not assessed any variants; however, a pumice surround must minimum yield the same isolans as the tested test enclosure yielded with 40 mm walls.

## **4 Installation**

The Celcius system is comprised of an inset appliance built into a test enclosure made of 40 mm pumice stone. This test enclosure has been tested as a free-standing unit and temperatures are measured on the outside of the test enclosure as stated in paragraph 6.

The Celcius system has been installed directly up against combustible material:



The Celsius stove appliance has been installed with following distances to firewall:

- Back wall distance: 0 mm

The vertical flue gas connector was not insulated.

## 5 Test specimen

Celcius 470 HF Small - see report 300-ELAB-2169-EN.

## 6 Arrangement and premises for test

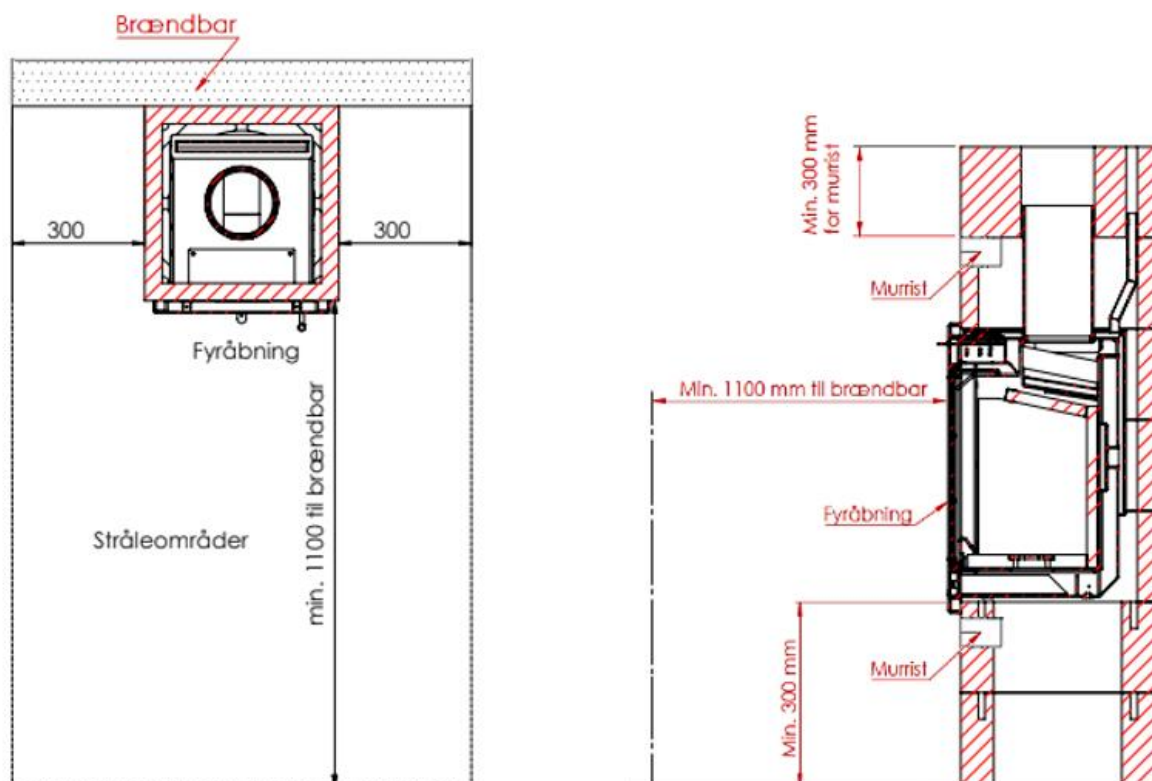
The solid fuel stove appliances were installed in accordance with clause A.4.1.

Safety test was carried out according to clause A.4.9.2.2. Sawn spruce wood was applied as fuel and the fuel load was calculated to 2.36 kg according to sub clause A.4.9.2.2.1.

For safety testing the door was kept ajar for nearly two minutes after refuelling time with fully open valve during the entire test

The fuel moisture of the firewood was determined according to the weigh/dry method.

Extrapolating takes place in accordance with prEN 16510-2-2:2014 (E) Annex AA "Example for the possibility to extrapolate the steady state condition from a curve of temperature measurements of at least 8h".





## 7 Test results

### Safety test in accordance with A.4.9.2.2

Parameter	Value			Unit
	Test 1	Test 2	Requirement	
Total no. of charges	8		-	pcs.
Total test duration	8.91		>8	h
No. of charges used for calculations below	6		-	pcs.
Weight per charge	2.31		-	kg
No. of pieces of firewood per charge	10		-	pcs.
Water content (wet matter)	16		15 ± 3	%
Charges altogether	13.8		-	kg
Test duration	6.94			h
Fuel consumption per hour	1.99		-	kg/h
Flue draught, mean value	15		15 <sup>+2</sup> <sub>-0</sub>	Pa
Mean ambient temperature	28		-	°C
Mean flue gas temp. at 20 °C ambient temp.	265		-	°C
Max. flue gas temp. at 20 °C ambient temp.	299		-	°C
<b>Surface temperature</b> (stated as measured value ÷ ambient temperature)				
Back wall (on external side of test enclosure)	64 <sup>1)</sup>		Max. 65	K
<b>Mounting distance to combustible material</b>				
Distance to combustible, back	0		-	mm

1) Extrapolated value, see appendix

**Test 1:** Safety test of Celcius system in a pumice system with construction in accordance with manufacturer's installation- and instruction manual where the appliance is supplied with a vent under inset appliance on minimum 225 cm<sup>2</sup> and a vent above inset appliance on minimum 225 cm<sup>2</sup>. The test enclosure measured (WxDxH): 440 x 440 x 1500 mm.

**Test 2:** Not accomplished.



## 8 Control and assessment before and after testing

Paragraph in the standard	Subject	Remarks	Requirement met
4	Requirements on materials, design and construction	None	Yes
5	Safety requirements	None <sup>1)</sup>	Yes
6	Requirements on output, CO emission	None	Yes
6	Requirements on efficiency	None	Yes
7	Requirements on installation and operating instructions	None	Yes
8	Requirements on marking	None	Yes

<sup>1)</sup> A glove must be provided.



## 9 Test equipment

Testing was carried out at test rig D

Instrument	Trace-ability	Instrument number		
		Test rig B	Test rig C	Test rig D
Data logger, HP 34970A	DANAK 200	270-A-2498	270-A-1630	Id no. 94128
DOP version II	-	-	-	-
CO/CO <sub>2</sub> analyser, ABB IR	ELAB	270-A-2423	270-A-2276	Id no. 108176
Spangas CO/CO <sub>2</sub> , AGA (High CO and CO <sub>2</sub> )	Swedac	Id no. 135573		
Spangas CO/CO <sub>2</sub> , AGA (Low CO)	Swedac	Id no. 135574		
NOx analyser, Eco Physics CLD	ELAB	Id no. 106124	Id no. 106124	270-A-2420
Spangas NO, AGA	Swedac	Id no. 135576		
FID meter M & A Thermo- / AAL FIDs	ELAB	270-A-1611	270-A-2497	270-A-1751
Spangas C <sub>3</sub> H <sub>8</sub> (Propane)	Swedac	Id no. 135580	Id no. 135581	Id no. 135582
Surface temperature, walls Thermo couples, type T	ELAB	Id no. 134392	Id no. 134395	Id no. 134397
Thermo couples, others, type T and type K	ELAB	Id no. 134394	Id no. 134396	Id no. 134398
Surface temperature, Technoterm 5500	DANAK 200	270-A-0976	270-A-0976	270-A-0976
Surface temperature, Dan 1200	DANAK 200	270-A-0876	270-A-0876	270-A-0876
Surface temperature, Ametek	DANAK 200	270-A-1649	270-A-1649	270-A-1649
Pressure gauge, Autotran 700 (flue draught)	ELAB	270-A-1166	270-A-1632	Id no. 81592
Calibrator, Jofra 650 SE	DANAK 200	270-A-0912	270-A-0912	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 XS 204 (220g/0,1mg)	ELAB	Id no. 7084		
Scale, Mettler, 600 kg, KC 600	ELAB	270-A-1790	270-A-1638	Id no. 81593
Disa Dantec flow analyser (air velocity)	DANAK 200	270-A-0486	270-A-0486	270-A-0486
Dantec Flowmaster	DANAK 200	270-A-0750	270-A-0750	270-A-0750
Hygrometer (air humidity) Thermoguard	DANAK 200	Id no. 142357		
Barometric reading (atmospheric pressure) Thermoguard/(Ahlborn)	DANAK 200	Id no. 7102		
Dust measuring equipment (Wöhler SM 96)	ELAB	Id no. 7205	Id no. 7205	Id no. 81603
Flow meter	ELAB	270-A-1793	270-A-1636	Id no. 81604
PST leakage meter (Brooks glass tube)	ELAB	Id no. 83013		
Thermo sensor Pt 100 (inlet) <sup>1)</sup>	DANAK 200	270-A-1262-1	-	-
Thermo sensor Pt 100 (return) <sup>1)</sup>	DANAK 200	270-A-1262-2	-	-
Water flow <sup>1)</sup>	DANAK 200	270-A-1507	-	-

<sup>1)</sup> Only used for testing of solid fuel stove with boiler.



## 10 Appendices

Appendix 1: Projected back wall temperature.

### **Construction Product Regulation:**

The Danish Technological Institute guarantees that employees carrying out tests to be used together with harmonized standards under notification no. 1235 according to EU regulation 305/2011, article 43, satisfy all the requirements made for capability, integrity and impartiality.

You find the CPR here:

[http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=uriserv:OJ.C\\_.2017.267.01.0016.01.ENG](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=uriserv:OJ.C_.2017.267.01.0016.01.ENG)

September 2017

## Appendix 1; extrapolated back wall temperature, Schiedel Celsius (470 HF) at out side of pumice

