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## Testing a roomheater model Eco Igniz

(6 appendices)

### The assignment

Testing the roomheater type Eco Igniz in accordance with EN 13240:2001.

In addition emissions of OGC, NO<sub>x</sub> and particulates (PM) were measured on request by the manufacturer. These additional emission measurements were performed in accordance with EN 16510-1:2018. PM was measured according to annex F in EN 16510-1:2018 heated filter method.

### Item for testing

The roomheater Eco Igniz, is manufactured by Calidum Cor AB, Sweden. The appliance arrived to RISE on 2<sup>nd</sup> May 2018. The item was selected by the client, and was in used condition on arrival.

This test report relates only to the actual item tested.

### Technical description

The roomheater Eco Igniz is mainly constructed of steel. The secondary combustion chamber and the bottom of the primary wood chamber is insulated with ceramic (vermiculite). The appliance has a downdraught combustion which means that the flame is directed downwards through a glass cylinder and into a secondary combustion chamber. The roomheater has a by-pass control which switches the upward draught to downward draught. Primary air is added in the primary wood chamber. The secondary air is added in the glass cylinder. The roomheater Eco Igniz has a nominal heat output at 10 kW.

The flue gas connector and chimney shall be mounted on the top of the appliance.

A heat radiation plate (steel) was installed under the roomheater to protect the floor against high temperatures, see drawing in appendix 6.

### Informative material supplied

Manual:

- Version 1,2 2018-09-27 (in Swedish).

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Drawings:

**Table 1: Drawings**

<b>Drawing nr</b>	<b>Date</b>
K 101	2016-10-31
K 101-2	2016-10-31
K 101-4	2016-10-31
K 101-5	2016-10-31
K 101-6	2016-10-31
K 102-1	2016-10-31
K 102-2	2016-10-31
K 102-7	2016-10-31
K 102-8	2016-10-31
K 103	2016-10-31
K 104	2016-10-31
K 105	2016-10-31
K 106	2016-10-31
K 107	2016-10-31
K 108	2016-10-31
K 109	2016-10-31
K 110	2016-10-31
K 111	2016-10-31
K 112	2016-10-31
K 113	2016-10-31
K 114	2016-10-31
K 115	2016-10-31
K 116	2016-10-31
K 117	2016-10-31
K 118	2016-10-31
K 119	2016-10-31
K 200	2016-10-31
K 201	2016-10-31
K 202	2016-10-31
K 203	2016-10-31
K 204	2016-10-31
K 205	2016-10-31
K 206	2016-10-31
K 207	2016-10-31
K 208	2016-10-31
K 209	2016-10-31
K 200	2018-09-24
K 113	2018-09-24

### **Test procedure**

Testing was carried out at/by RISE's department Energy and Circular Economy during April 2018, in accordance with European Standard EN 13240:2001. The emissions of OGC, NO<sub>x</sub> and particulates were measured according to EN 16510-1:2018. The emission values and temperatures were measured continuously during three test periods. The roomheater was tested as an intermittent appliance and the weight of the basic fire bed was about 200 g.

27 cm long birch wood logs were used as fuel (see appendix 5).

The chimney was top mounted and had a diameter of 150 mm and a height of about 5 m above floor level.

The following parameters were measured and/or calculated (as appropriate) approx. every 15<sup>th</sup> second:

- Ambient temperature
- Flue gas temperature
- Flue draught
- CO<sub>2</sub> concentration
- CO concentration
- O<sub>2</sub> concentration
- THC concentration
- NO<sub>x</sub> concentration
- PM (Particulate matter) concentration
- 

Also recorded values:

- The total efficiency
- The mean CO emission at 13% O<sub>2</sub>
- The mean OGC emission at 13% O<sub>2</sub>
- The mean NO<sub>x</sub> emission at 13% O<sub>2</sub>
- The mean PM emission at 13% O<sub>2</sub>
- The mean flue gas temperature

## Results

Table 2 shows a summary of the test results. The results from the appliance are calculated as mean values from three test results. For complete test results see appendix 3.

**Table 2:** Summary results.

Description	Unit	Results
Efficiency	%	91,2
Heat output	kW	10,0
Flue gas temperature	°C	154
CO	% at 13% O <sub>2</sub>	0,06
CO	mg/m <sup>3</sup> <sub>n</sub> dry gas at 13% O <sub>2</sub>	772
OGC	mg/m <sup>3</sup> <sub>n</sub> dry gas at 13% O <sub>2</sub>	112
NO <sub>x</sub>	mg/m <sup>3</sup> <sub>n</sub> dry gas at 13% O <sub>2</sub>	103
PM (particulates)	mg/m <sup>3</sup> <sub>n</sub> dry gas at 13% O <sub>2</sub>	10

## Comments

The roomheater Eco Igniz, manufactured by Calidum Cor, Sweden complies with the requirements in SS-EN 13240:2001 chapter 6.

The roomheater Eco igniz also complies with the Swedish building regulations BFS 2018:4 chapter 6:7412.

**RISE Research Institutes of Sweden AB**  
**Energy and circular economy - Combustion and Aerosol Technology**

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**Appendices**

Appendix 1 Identification

Appendix 2 Requirements according to EN 13240:2001

Appendix 3 Results from nominal heat output test

Appendix 4 Instrumentation and uncertainty of measurement

Appendix 5 Test fuel specification

Appendix 6 Technical drawings