REPORT

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Reference
O100282-1272978

Sorbeco AB
Box 92138
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Testing of filter unit

(1 appendix)

RISE has on behalf of Sorbeco AB, evaluated a filter unit with regard to pressure difference and air flow.

Test items

Sorbeco AB, Filter unit: Xodor 170

The filter unit is a circular bag, which is filled with "Sorbonite®" with a particle fraction of approximate 4-6 mm. The length of the filter unit is approximate 17 cm and has a diameter of approximate 10 cm. For the test, the bag was filled with approximate 750 g of Sorbonite.

Pictures of the test item, bag and Sorbonite, can be found in appendix 1.

The item was sent to RISE by Sorbeco AB and was received on July 1, 2024.

The item was without visible defects.

Test date

The test was carried out at RISE's laboratory of Building physics in Borås, Sweden on July 2, 2024.

Test method

The test item was connected to a Ø110 mm sewer pipe. The test item, mounted within a sewer pipe, was connected to a Ø100 mm ventilation duct with taps for measuring static pressure difference. The transition between the sewer pipe and the ventilation duct was sealed. The taps for measuring static pressure difference were placed approximate 65 cm from the outlet of the test item.

A horizontally placed air flow meter with a 90° bend was connected to the vertically placed duct with the test item. The air flow meter was connected to a fan creating negative/positive pressure in the build-up system. The fan was adjusted and the static pressure difference was determined for 11 volume air flows, between approximate 3 – 23 l/s. The tests were performed both with positive and negative pressure (suction and pressure flow).

Picture of the test set up can be found in appendix 1.

Test conditions

The tests were performed at the following test conditions:

Temperature in the range 22.1 – 22.5 °C, relative humidity in the range 47.6 – 49. % RH and an ambient atmospheric pressure at 981.4 – 981.5 hPa.

Test results

The results are valid only for the tested items and are presented in tables 1-2 and figure 1. Reported values of pressure difference have been corrected to an air density of 1.2 kg/m³.

Table 1. Pressure difference- / airflow measurement for filter unit, negative pressure:

Volume air flow	**Pressure difference corrected to density = 1.2 kg/m³**
(l/s)	(Pa)
2.91	56.5
3.55	77.0
4.16	101.0
5.07	140.4
6.55	219.3
8.05	306.6
9.24	389.5
11.37	554.7
13.18	715.3
15.33	934.9
17.37	1138.1
19.55	1428.8
22.77	1888.6

Table 2. Pressure difference- / airflow measurement for filter unit, positive pressure:

Volume air flow	**Pressure difference corrected to density = 1.2 kg/m³**
(l/s)	(Pa)
2.93	59.1
3.55	80.4
4.20	105.2
5.03	142.6
6.58	222.6
8.06	311.7
9.31	401.8
11.40	572.1
13.29	737.0
15.51	957.5
17.53	1174.9
19.93	1416.8
22.93	1727.9

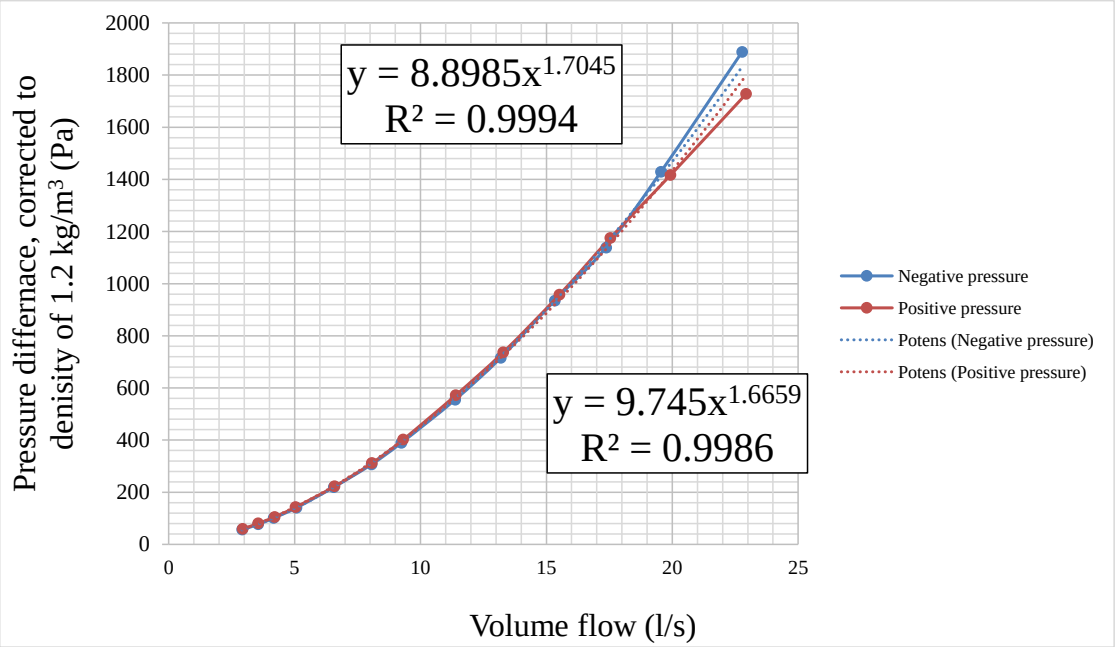

Fig 2. Pressure difference- / airflow chart for both tests, negative and positive pressure.

Measurement equipment

Air flow meter Micatrone MFS-C-50	RISE inv. no. 202 190
Micromanometer Furness FCO-12	RISE inv. no. BX70937
Micromanometer Furness FCO-12	RISE inv. no. 201 687
Micromanometer Furness FCO-12	RISE inv. no. 201 690
Temperature and humidity sensors Testo 635	RISE inv. no. 900 066
Atmospheric pressure sensor Druck DPI705E	RISE inv. no. KWP04677

Uncertainty of measurement

The uncertainty has been calculated according to EA-4/16 with a coverage factor k = 2.

Air flow rate: better than ± 10 % (< 5 l/s) and better than ± 5 % (> 5 l/s) of measured value
Static pressure: better than ± 1 % of measured value but not less than 1 Pa
Temperature: better than ± 0.5 °C
Relative Humidity: better than ± 4 % RH
Atmospheric pressure: better than ± 1 hPa

RISE Research Institutes of Sweden AB
Building physics & sustainable buildings - Building physics testing

Performed by

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Examined by

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Appendix

1. Pictures

Appendix 1

Fig 1. Overview of the test item.

Appendix 1

Fig 2. Overview of the Sorbonite in the test item.

Appendix 1

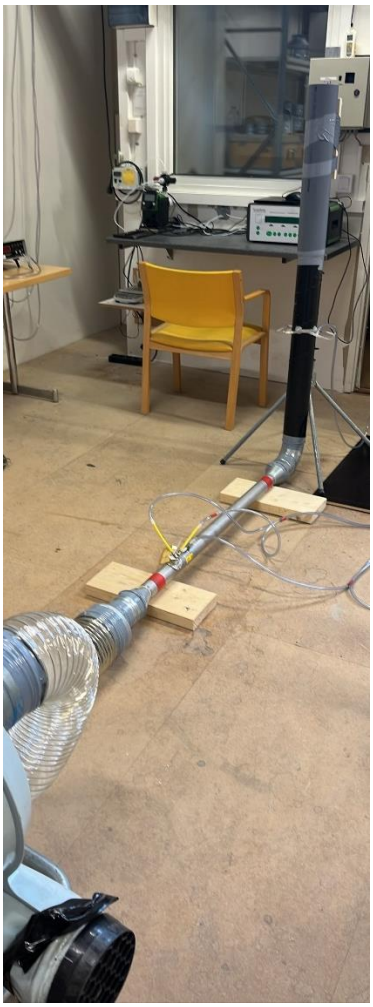

Fig 3. Overview of the test setup

Verification

Transaction 09222115557521691427

Document

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