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### Testing of particle concentration up- and down-stream of AirFree

#### Items tested

Air cleaner AirFree, 230 V, 50 Hz, 400 mA, 46 W, Serial # 53002309. The item arrived to SP on February 27, 2001 in good condition. The air cleaner was on for eight days before testing to get rid of initial emissions. The test results apply only for the item tested.

#### Place and date of testing

The test of particle concentration was carried out at SP's Energy Technology / HVAC laboratory in Borås on Mars 7, 2001. The air cleaner was tested in a mechanically ventilated office without any known moisture damages. A person was present during the test.

#### Test procedure

The air cleaner was placed on a desk. The concentration was measured by altering between up- and down-stream (15 mm above the outlet in the center) of the air cleaner. An ELPI (Electrical Low Pressure Impactor, Dekati FIN) was used to measure numbers and sizes of the particles.



Figure 1. Test set up.

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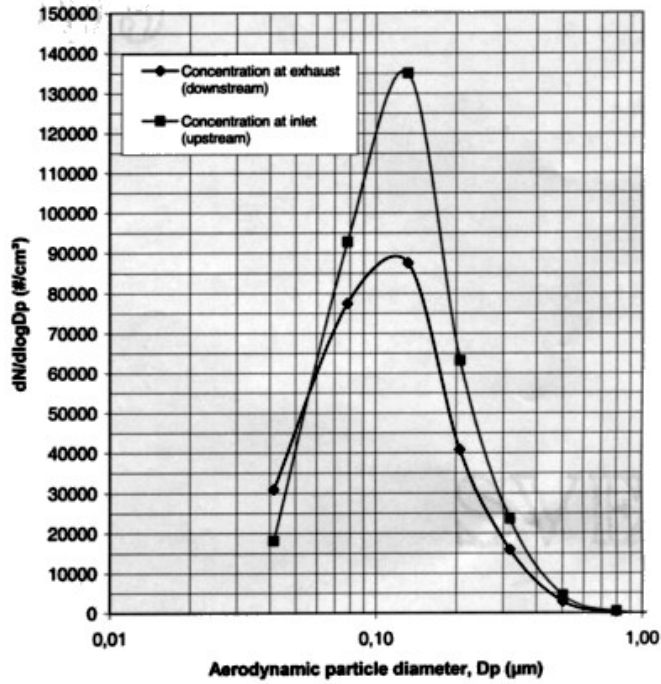


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## Results

The relative humidity of the air in the office was 20 %, the temperature was 23.5 °C and the atmospheric pressure was 1000 mbar. The power consumption for the air cleaner was 46 W.



Graph 1. Particle concentration up- and down-stream of air cleaner.

|       | 0,04 | 0,08 | 0,13 | 0,21 | 0,32 | 0,50 | 0,80 | 1,27 | 2,00 | ( $\mu\text{m}$ ) |
|-------|------|------|------|------|------|------|------|------|------|-------------------|
| Ratio | 1,71 | 0,84 | 0,65 | 0,65 | 0,67 | 0,64 | 0,62 | 0,56 | 0,58 |                   |

Table 1. Ratio between downstream and upstream concentration.



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### Measurement equipment

- Particle counter ELPI, impactor 2125 (SP's inventory no. 202 259)
- Temperature and humidity meter TESTO 610 (SP's inventory no. 201 392)
- Power-meter EMU 1.44, (SP's inventory no. 202 197)
- Barometer Druck DPI-260, (SP's inventory no. 201 637)

### Estimated uncertainties of measurement

- Relative humidity  $\pm 3$  %-RH
- Dry temperature  $\pm 1$  °C
- Power consumption  $\pm 1$  W

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