

# LightAir IonFlow air purifying capabilities at fine dust printer emissions

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## Conclusion

The findings of this study are as follows:

### *LAIF in a 'controlled' area*

- Switching a LAIF device on in a 'controlled' area (1.15 m<sup>3</sup>), with and without scavenging, brings about a reduction of approximately 93% in particle number concentrations within a time frame of approx. 10 minutes compared with the situation when the LAIF is switched off.

### *LAIF and printer in a 'controlled' area*

- The maximum particle number concentration present when performing print jobs with the LAIF switched on (33980 #/cm<sup>3</sup>) is considerably lower than when the LAIF (56140 #/cm<sup>3</sup>) is switched off. The peak concentration values are lower with the LAIF switched on.

- With the LAIF switched on, there is an average 99% reduction in the particle number concentration between the maximum level and 5 minutes after activating the print job. With the LAIF switched off, the reduction within this five-minute time frame averages 61%. The explanation for the reduction in particle number concentrations when the LAIF is switched off is that the particles are deposited on the walls and there are small openings in the 'controlled area' through which there is contact with ambient air.

- The greater the concentration of particles in the 'controlled' area, the more rapid the cleansing effect of the LAIF.

### *LAIF and printer in a meeting room*

- After the LAIF is switched on, the particle number concentration in the meeting room falls within 2 hours from 5000 to 2050 #/cm<sup>3</sup> (a 59% reduction).

- A comparison between the initial and final concentrations before and after performing a print operation without switching on the LAIF shows an increase of 2200 #/cm<sup>3</sup> (68%). If the LAIF is switched on, however, there is an increase of 1060 #/cm<sup>3</sup> (53%). Switching on the LAIF prior to printing means that there are fewer particles in the air than if the LAIF is not switched on.
- Whether the LAIF is standing on the floor or on the table makes little or no difference to its efficiency.
- The LAIF removes more of the particles emitted by the printer if it is positioned close to the printer.

### *Ozone*

- It is not possible to perform ozone measurements in the 'controlled' area with the measuring apparatus that was used.
- It is not possible to measure the effect of switching the LAIF on and off in the meeting room owing to the major fluctuations in background concentrations.

Using our measuring apparatus, we were able to conclude that the LAIF reduces the amount of (ultra)fine airborne dust in an area containing a printer that is emitting ultrafine dust (measuring range: particle sizes of between 6 nm and >3 µm). No reliable results were obtained from the ozone measurements. No conclusions can be drawn about ozone emissions during the operation of the LAIF.