

Impact of OurAir SQ 2500 operation on ambient air particle concentration in a closed indoor environment – seminar room

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Devices used in the study

Aerosol generator
Palas® ÄKG 2000



Source:
PALAS

Aerosol measurement technology
Fidas® Frog



Source:
PALAS

Indoor air purifier
MANN+HUMMEL OurAir SQ 2500



Source:
MANN+HUMMEL

Technical data AGK 2000

Particle material	Sodium chloride
Concentration of generated aerosol (at 0.8 bar at nozzle and 4 bar at dilution)	560,000 particles/cm ³
X _{50.0}	0.361 µm
Concentration of saline solution	16.6 % by weight
Total volume flow at outlet	24.9 l/min

Technical data Fidas® Frog

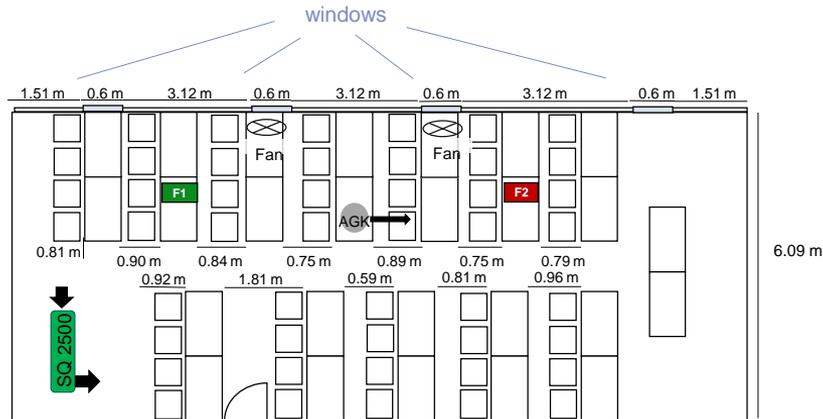
Height x width x depth	100 mm x 240 mm x 150 mm
Detectable size range	0.18 – 18 µm
Size channels	32/decade, 256 raw data channels
Measuring principle	Optical light scattering at the single particle
Concentration range (number CN)	0 – 20,000,000 particles/l
Volume flow rate	1.4 l/min

Technical data indoor air purifier OurAir SQ 2500

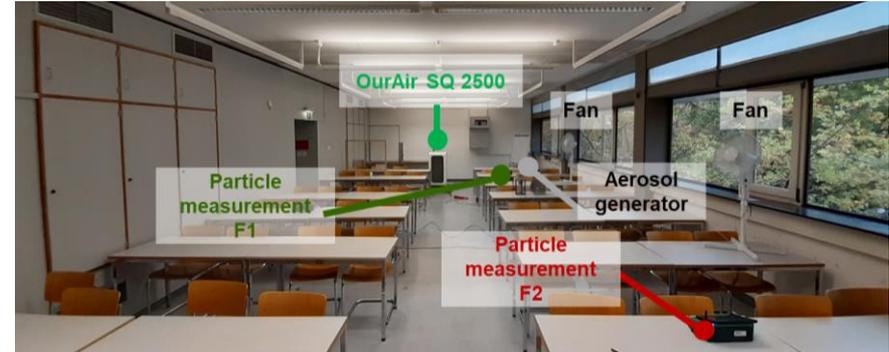
Length x width x height	1.004 m x 0.523 m x 1.051 m
Weight	170 kg
Power demand	500 W at $\dot{V} = 2500 \text{ m}^3/\text{h}$
Flow rate	Up to 2500 m ³ /h
Filter classification	HEPA H14 + F7 pre-filter

Examined seminar room

Schematic overview

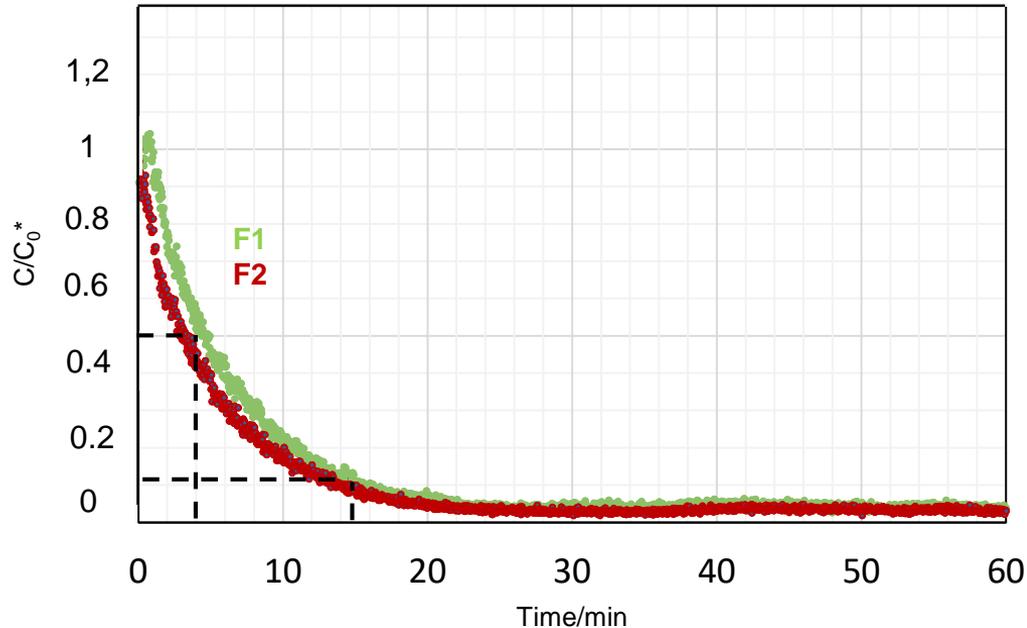


Picture



$$V_{\text{room}} = 14.77 \times 6.09 \times 2.98 = 268.05 \text{ m}^3$$

Concentration decrease



- Reduction of aerosol concentration:
50% = 4 min.
90% = 15 min.
- Asymptotic course after 20 min.
- The particle concentration at F2 decreases slightly faster than at F1

- Particle measurement F1
- Particle measurement F2

Initial concentration C_0 after operation of aerosol generator

$C_0 = 911-940 \text{ \#/cm}^3$

*Relative Particle Concentration

Summary

Investigation of the reduction of the aerosol level by using the OurAir SQ 2500

- Significant equal reduction of the aerosol levels at both measuring points F1 and F2 after switching on the indoor air purifier (The particle concentration at F2 decreases slightly faster than at F1)
50% after 4 min. / 90% after 15 min.
- Operation below the designed filter rate ($\sim 5 \text{ h}^{-1}$) results in a slower reduction