Product data sheet

Palas® Aerosol Generator for Solid Particles RBG 1000

Applications

- Filter industry:
- Determination of fractional separation efficiency
- Determination of total separation efficiency
- Long-term dusting
- Filter media and ready-made filters
- Dust removal filters
- Vacuum cleaners and vacuum cleaner filters
- Car interior filters
- Engine air filters
- Calibration of particle measurement devices
- Flow visualization
- Inhalation tests

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- Tracer particles for LDA, PIV, etc.
- Coating of surfaces

Benefits

- Highest short-term and long-term dosing constancy
- Disperses virtually all non-cohesive dusts
- Easy exchange of different solid material reservoirs and dispersing covers
- Easy determination and adjustment of the mass flow
- Pulse mode
- Device easy to clean
- Quick and easy to operate
- Reliable operation
- Little maintenance required

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Description

Low-concentration solid particle aerosols produced from powders are required for many applications in research, development, and quality assurance and for the calibration of particle measurement devices.

For more than 25 years, the RBG system has been used worldwide with great success for the reliable dispersion of non-cohesive powders such as mineral dusts, active pharmaceutical ingredients, pollen, etc. in the size range of < 100 µm and with a fine fraction of < 100 nm. Monolithic solid materials such as blackboard chalk are finely dispersed with highest dosing constancy.

The special advantage of this dosing and dispersion system is that in the case of the RBG 1000, mass flows ranging from approx. 40 mg/h up to approx. 430 g/h are dispersed with the highest level of dosing constancy thanks to quick, easy exchange of the solid material reservoir.

Optional:

Pressure-resistant up to 3 bar

New: Low pressure operation from 300 mbar (absolute pressure), operation with nitrogen

Start-up

The powder to be dispersed is filled little by little into the cylindrical solid material reservoir and compressed with a tamper. In the context of the validation of the guideline "Prüfverfahren für mobile Raumluftreinigungsgeräte" at the Lucerne University of Applied Sciences and Arts an excellent reproducibility of the tamping density in the solid material reservoir was determined. The deviation of the tamping densities of five fillings was just 3.4 %.

The filled solid material reservoir is inserted into the dispersing head of the RGB, and the powder, which has thus been uniformly compressed across the filling level, is conveyed onto a rotating brush at a precisely controlled feed rate. An adjustable volume flow streams over the tightly woven precision brush at a very high speed and tears the particles out of the brush.

The entire material delivered can optionally be determined gravimetrically with the RBG 1000 L.

The dispersing head assembly comprises a dispersing head, dispersing cover, precision brush, and solid material reservoir.

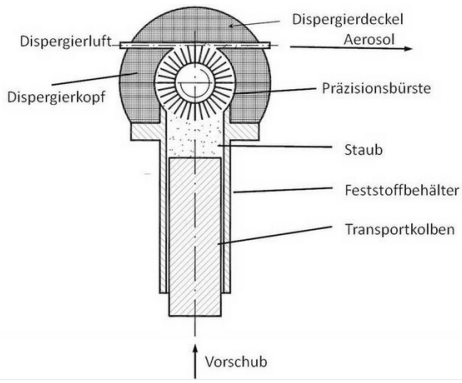

Fig. 1: Schematic diagram of RBG system

Dosing

Dosing is performed via the precisely controlled feed rate of the feed piston. The desired mass flows can be easily and reproducibly specified based on the cross section of the solid material

reservoir, the precisely adjustable feed rate of the feed piston and the easy-to-determine tamping density of the powder in the reservoir.

Dispersing

The powder separated from the reservoir by the precision brush is almost completely dispersed into the constituent particles, down to < 100 nm (see Fig. 2), in the dispersing head by the dispersing air flowing at high speed.

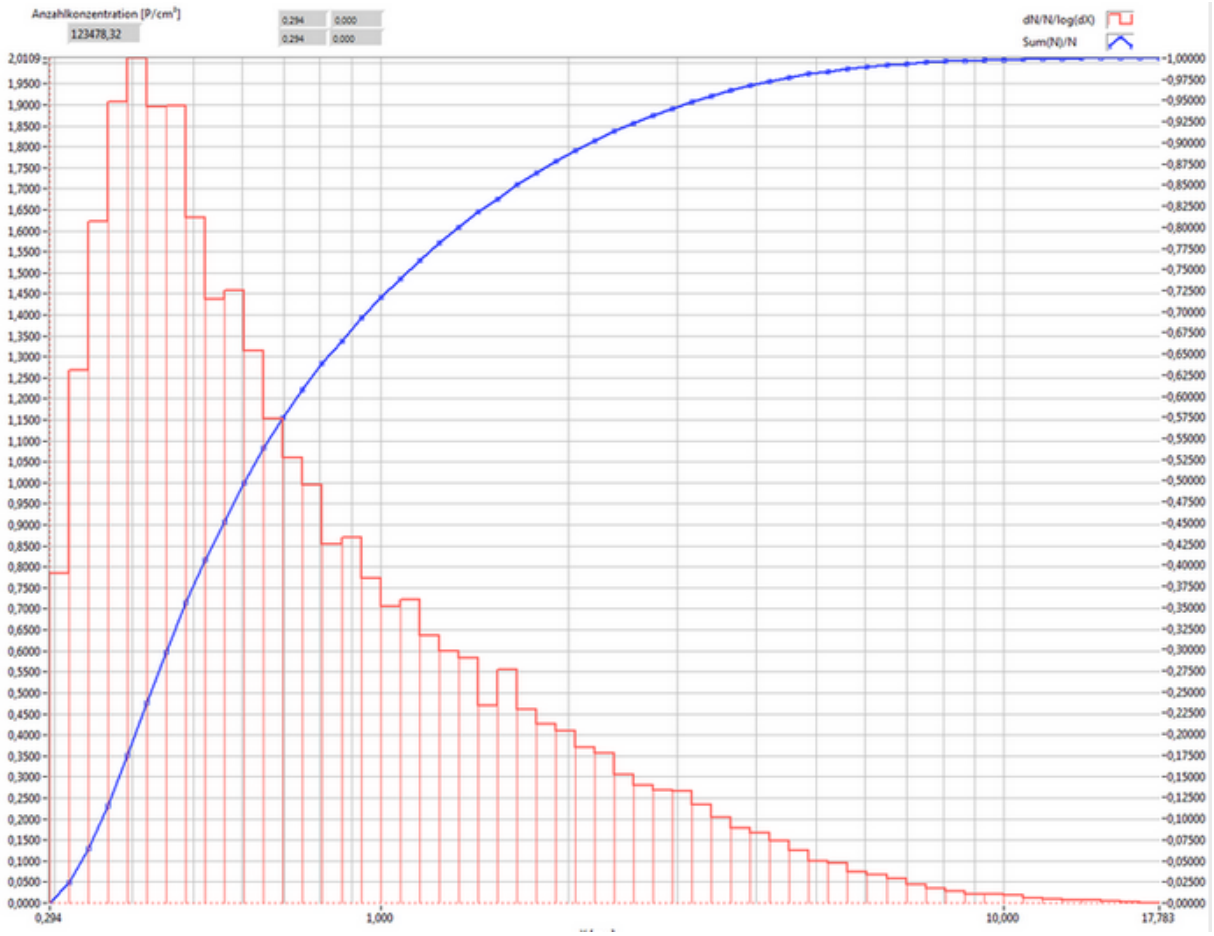

Fig. 2: Particle size distribution with the welas® digital 2000

Fig. 3: Dispersing covers, type A,. type B and type C

Four different dispersing covers can be used for optimal dispersion (see Fig. 3, additional details under "Accessories").

Pulse mode

The construction design of the RBG system allows for operation in "powder"/"no powder" pulse mode with cycle lengths ranging down to a second. The function can be set manually via the "Stop/Start", and "Forward" keys or automatically via an electric timer switch.

All RBG versions can be optionally **controlled via remote control** or via computer.

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Specifications

Volume flow	0.5 – 5.0 m³/h
Power supply	115 - 230 V, 50 - 60 Hz
Dimensions	465 • 320 • 200 mm
Weight	Approx. 19 kg
Particle material	Non-cohesive powders and bulks
Dosing time	Several hours nonstop
Maximum particle number concentration	Approx. 107 particles/cm³
Mass flow (particles)	0.04 – 430 g/h (with an assumed compacted density of 1 g/cm³)
Particle size range	0.1 – 100 µm
Carrier/dispersion gas	Random (generally air)
Pre-pressure	4 – 8 barg
Feed rate	5 – 700 mm/h
Reservoir diameter	7, 10, 14, 20, 28 mm
Maximum counter pressure	200 mbarg
Reservoir length	70 mm
Dispersion cover	Type A, type B, type C, type D
Compressed air connection	Quick coupling
Aerosol outlet connection dispersion cover type A	Øoutside = 8 mm / Øinside = 5 mm
Aerosol outlet connection dispersion cover type B	Øoutside = 6 mm / Øinside = 3.6 mm
Aerosol outlet connection dispersion cover type C	Øoutside = 6 mm / Øinside = 2.5 mm

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Aerosol outlet connection dispersion cover type D

Øoutside = 8 mm / Øinside = 5 mm

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