**Solid Aerosols**

In applications where air-floating particles are required such as testing of the separation performance of filter media an aerosol with certain, well-defined characteristic features and stability over a period of time is to be used. If the aerosol is produced from a certain powder the characteristic features of the generated dust will be determined by the powder. Additional characteristic features of the aerosol are achieved by transferring the powder into the air-floating state. The process is divided into two parts: the continuous dosing of the powder mass flow and the dispersing (thinning out) of the powder preferably down to the primary particle size of the material. The dust disperser SAG 420 is a device for generating aerosols by transforming a powdered solid into the air-floating state.

**Special Advantages**

- Dosing continuity of different dusts over a long period of time
- Mass flow control by weigh scale option
- Easy device control

**Applications**

- Charging of filters, filter media and separators with dust
- Generation of dust to determine the fractional as well as the total separation efficiency
- Visualization of air streams

Due to its special features the device can preferably be used in efficiency and capacity tests of filters and separators such as tests according to ISO 5011.

The flexibility of the device has been improved due to an extremely wide range of adjustable concentration. Thus it can be used in many fields. The control and operation of the aerosol generator is done by the software. The control of the generator can also be done directly through a test system.
**Operating Principle**

The dust disperser SAG 420 combines the two processes of dosing and dispersing in one unit and ensures the generation of a well-defined, stable aerosol over a certain period of time.

The operating principle is based on the adjustable and defined addition of fine solids from a holding vessel to a dispersion nozzle. In the nozzle the fine dispersion is achieved by means of a compressed gas, preferably air.

The solid material is conveyed using a feeding screw and is then captured in a feeding hopper which leads to the dispersion nozzle. The latter operates according to the injector principle. The propellant (compressed air) causes a defined volume flow and the solid material contained in it will be dispersed by the shearing forces of the turbulent gas stream. The generated aerosol is then available at the outlet of the nozzle.

The dosing of the powder mass flow is done by conveying a solid material of rectangular cross section on a feeding or dosing belt. The parameters of the mass flow are:

- Belt speed
- Cross section of the solid material
- Bulk density of the material on the belt

The speed of the dosing belt is determined by a stepping motor. Thus, the belt speed is kept constant and adjustable in a very wide range.

**Scheme of the SAG 420**

The cross section of the material is determined by the size of a specially shaped orifice. The height of the material is adjusted with a gate valve.

The homogeniser causes the bulk density of the powder in the holding vessel is independent of the filling level in the vessel.

The feed of the solid material from the dosing to the dispersion is done by means of a feeding screw. Thus the sporadic transfer of large particle clusters can be prevented and a constant feed from the belt is ensured.
Operating Principle

The device is controlled with specially designed software.

In the main window the current status values are shown and default values for variable parameters can be set.

In addition values for a controlled powder mass flow can be set using this software. For this application the SAG 420 has to be put on a sufficiently dimensioned weigh scale. For this application, a weigh scale is offered. In the case of the weigh scale option the change of the weigh scale value is taken into consideration for the control of the belt speed.

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Image of automated dust test rig ABP 115 with SAG 420

Image of Dust Disperser SAG 420 on a weigh scale with housing

Image of Main window of the control software

Image of Scheme of the automated dust test rig ABP 115


Product Group: Solid Aerosol Generators

To satisfy the variety of applications Topas GmbH developed different classes of devices:

The SAG 410 is produced in three versions with different dosing ranges. Due to a simple procedure of changing of the dispersing unit all three dosing ranges can be realised with only one control unit.

The SAG 420 offers the widest range of applications and is mainly used for tests according to ISO 5011.

The SAG 440 was especially designed for tests with ASHRAE dust.

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</table>

Operational ranges of the Topas solid aerosol dispersers

Technical Data

Dust

- max. particle size 200 μm,
- not to be used: abrasive, sticky, aggressive, toxic, biologically active materials

Dosing range

- 0.1 g/min – 200 g/min assuming a bulk density of 1 g/cm³

Max. capacity

- approx. 2 kg (assuming a bulk density of 1 g/cm³)

Range of volume flow

- approx. 3...18 m³/h

Compressed air supply

- max. 8 bar

Power supply

- 110...240 V AC, 50...60 Hz

Dimensions:

- SAG 420 (with hopper and dispersion nozzle)
  - 400 x 450 x 150 mm
- SAG 440 (with hopper and dispersion nozzle)
  - 295 x 160 x 215 mm

Weight:

- SAG 420 (with hopper and dispersion nozzle)
  - 4.7 kg
- SAG 440 (with hopper and dispersion nozzle)
  - 3.8 kg

QMS certified to DIN EN ISO 9001

For more information please visit our website at www.topas-gmbh.de

Specifications are subject to change without notice.

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