

Dust Dispenser SAG 420

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 dispenser SAG 420 is a device for generating aerosols by transforming a powdered solid into the air-floating state.

Applications

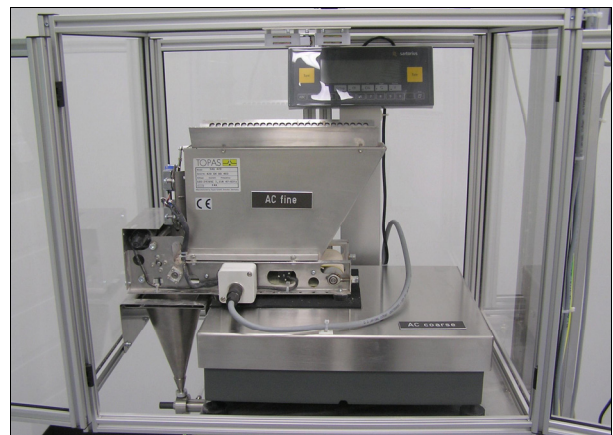
- Charging of filters, filter media and separators with dust
- Generation of dust to determine the fractional as well as the total separation efficiency
- Visualization of air streams

Special Advantages

- Dosing continuity of different dusts over a long period of time
- Mass flow control by weigh scale option
- Easy device control
- New technology: two-sided cogged belt, servo drive, step motor

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 directly using the software of a test rig.



Dust Dispenser SAG 420 on a weigh scale

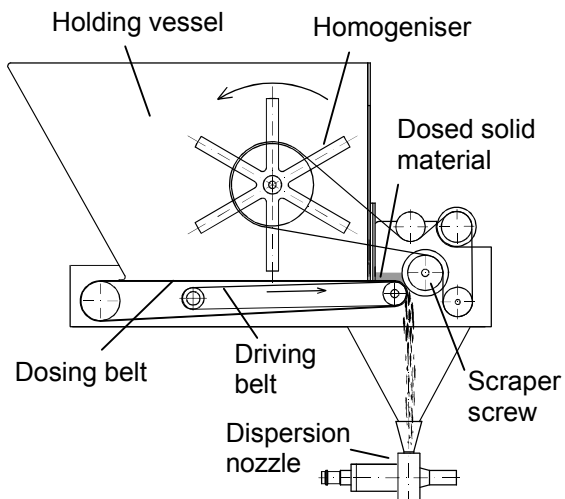
Principle

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.



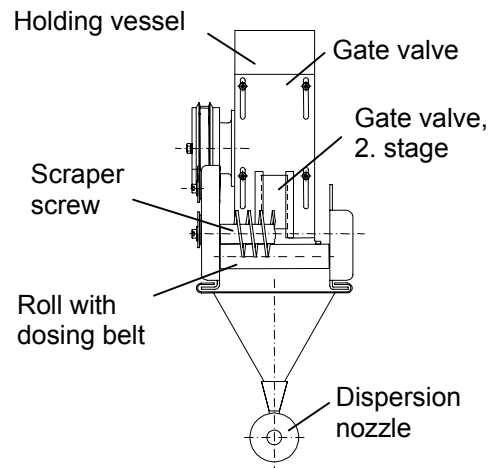
Scheme of the SAG 420

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.



Schematic front view 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 two-stage or bilevel servodriven 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.

Details

Example of Application



Automated dust test rig ABP 115 with SAG 420



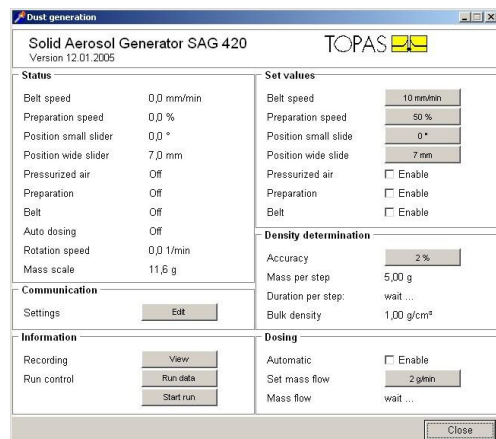
Dust Disperser SAG 420 on a weigh scale with housing

Software

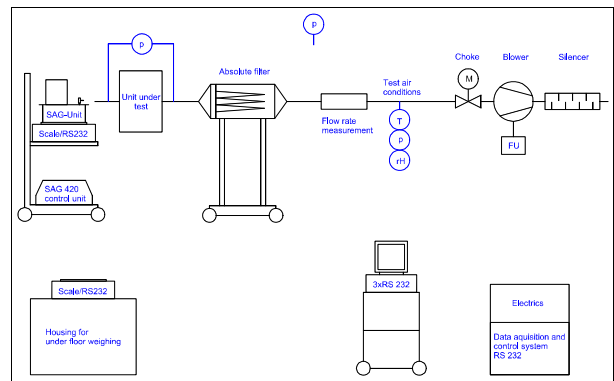
The device is controlled with specially designed software.

In the main window the current status values are shown and default values for variable parameter 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. 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.



Main window of the control software



Scheme of the automated dust test rig ABP 115

Specifications

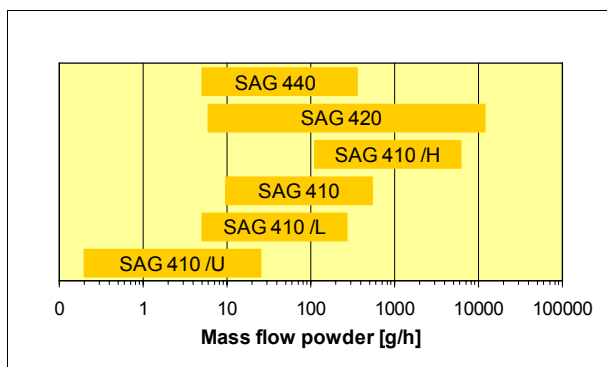
The Topas Product Group Solid Aerosol Generators

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. This generator is very suitable for any kind of tests with dust containing fibres.



Operational ranges of the Topas solid aerosol dispersers

Technical Data of the SAG 420

Dust	max. particle size 200 µm, <i>not to be used:</i> abrasive , sticky, aggressive, toxic, biologically active materials
Dosing range	0.1 g/min – 200 g/min assuming a bulk density of 1 g/cm ³
Max. capacity	approx. 2 kg (assuming a bulk density of 1 g/cm ³)
Range of volume flow	approx. 3...18 m ³ /h
Compressed air supply	max. 8 bar
Power supply	110...240 V AC, 50...60 Hz
Dimensions: SAG 420 (with hopper and disper- sion nozzle)	400 x 450 x 150 mm
Control unit	295 x 160 x 215 mm
Weight: SAG 420 (with hopper and disper- sion nozzle)	4.7 kg
Control unit	3.8 kg

QMS certified to
DIN EN ISO 9001.



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

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