APM 2005

With this test rig concept, the flow over the material under testing is designed in a realistic manner and is made up – as required either fully or optionally (through replacement of the inflow module) – of different angles.

The APM 2005 is equipped with the new light scattering spectrometer system Promo® 3000 for virtually simultaneous measurements in the raw gas and clean gas.

Operation principle

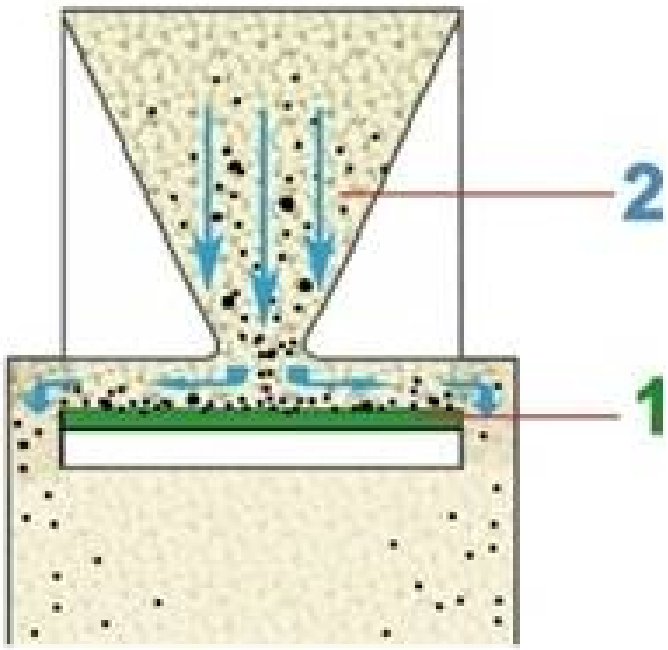

Fig 1: Filter holder In order to examine the material under testing in terms of its particle penetration properties, it is clamped in the filter holder (1) and subjected to an inflow rate of 1 – 5 m/s under defined conditions (2). The aerosol application and the determination of the particle concentration and the particle size in the raw gas are already performed before (2). A plate behind the clamping mechanism holding the test material (1) prevents the air from being able to flow directly with the test aerosol through the material. As a result, in a highly realistic manner only

the proportion of incoming particles that penetrates through the material due to the frontal flow can pass through the material. The measurement of the particle size and concentration behind the test material is performed with the clean gas sensor of the welas® digital 3000. The rest is transported away with the overall volume flow.

Advantages of the Promo® 3000 system

Two sensors are operated from just one **photomultiplier** and only **one** light source. As a result, the size resolution capacity, the size classification accuracy and the counting efficiency remain identical; the fraction separation efficiency of a filter can be accurately measured.

The sensors are installed directly on the filter test rig behind the raw gas and clean gas measurement point, as a result of which there are practically no particle losses in lines. Due to the optomechanical switching between raw gas and clean gas sensor and as a result of the installation of the sensors directly on the testing conduit, there is no need to switch between measurement points or to use long sampling lines, as a result of which sampling errors are significantly minimized. It is possible to equip the system with different sensors with differently dimensioned measuring volumes. The first sensor with a small measuring volume measures in high concentrations without dilution in the raw gas, the second sensor with a large measuring volume measures in lower concentrations in the clean gas.

As a result, higher counting rates are achieved and statistical measuring errors are reduced. The powerful FTControl software delivers reliable automated operation.

Measurement results

Comparison measurement of the fraction separation efficiency:

Same material with different inflow speeds.

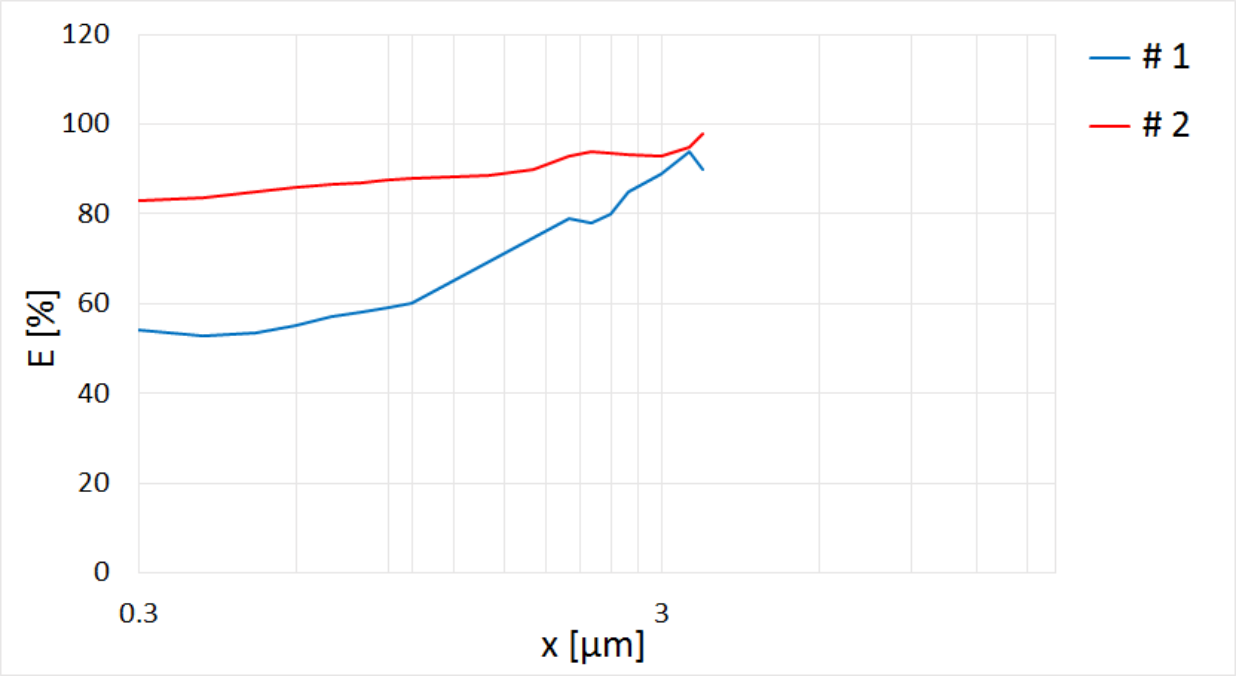

Fig 2 : Comparison of the fraction separation efficiency Red curve: Inflow at 2 m/s Blue curve: Inflow at 5 m/s

It can be clearly seen that more particles get through the material at the high inflow speed.

Benefits

- Particle measurement: 0.2 – 40 μm
- Virtually simultaneous particle measurement in the raw gas and clean gas
- Real measurement results through simulation of realistic inflow scenarios
- Option for comparing permeability in terms of particle penetration from multiple perspectives
- Option for setting up a defined pressure loss on the test medium through variation of the suction volume flow in the sample holder
- Low-maintenance
- Reliable in operation
- The unit will reduce your operating costs

DATASHEET

Volume flow	40 – 600 m^3/h (circulation)
Compressed air supply	6 – 8 bar
Dimensions	2,650 • 2,150 • 800 mm (H • W • D)

APPLICATIONS

- Practical test for protective materials
- Measurement of particle penetration without forced throughflow
- Research and development of permeability materials

Mehr Informationen:
https://www.palas.de/en/product/apm2005