MFP 2000



The MFP filter test rig is a modular filter testing system for flat filter media and small mini-filters.The MFP 2000 can be used to determinepressure loss curve on the medium without a dust coating,fraction separation efficiency, orburden and fraction separation efficiency during application of the burdenwithin shortest times – reliably and therefore cost-effectively.

The aerosol generators are easy to interchange and coordinated with the overall system. As a result, filter tests can be performed quickly and easily with the different test aerosols. With the aid of the light scattering spectrometer Promo® 2000, clear and reliable determination of the aerosol concentration and the particle size and therefore an accurate determination of the fraction separation efficiency can be ensured.

The largely automated setup of the test sequence together with the clearly defined individual components and the individually adjustable sequence programs of the filter test software FTControl combine to deliver the high reliability of our measurement results.

OPERATION PRINCIPLE

QUALITY CONTROL AND DEVELOPMENT OF FLAT MEDIA STARTING AT 200 NM

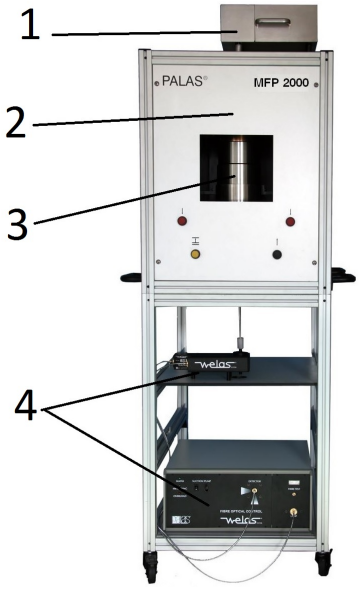


Fig. 1: MFP 2000

1. Variable aerosol generation Thanks to the use of different dispersers for dust, KCl/NaCl, DEHS, etc.; shortened measurement times are possible e.g., through increased dust concentration

2. Corona discharge (optional): Adjustable ion stream for different mass flows. Mixed air, adjustable for inflow speeds from 0.05 to 1 m/s. Optional: Transient inflow.

3. Mobile pneumatic filter holder for fast removal and loading of the test rig.

4. Light scattering spectrometer Promo® system for clear particle measurements in high concentrations of up to 1000 mg/m^3 (SAE Fine) with integrated Windows test rig software.

5. Easy to operate even for untrained personnel, thanks to the automated sequence programs for the performance of filter testing. The test rig can be controlled fully automatically.

The MFP 2000 has integrated mass flow controllers that it uses to control the volume flow; these can be automatically monitored and controlled via the FTControl filter test software. The integrated sensor data, such as the filter's volume flow and differential pressure, are also recorded automatically during the filter test.

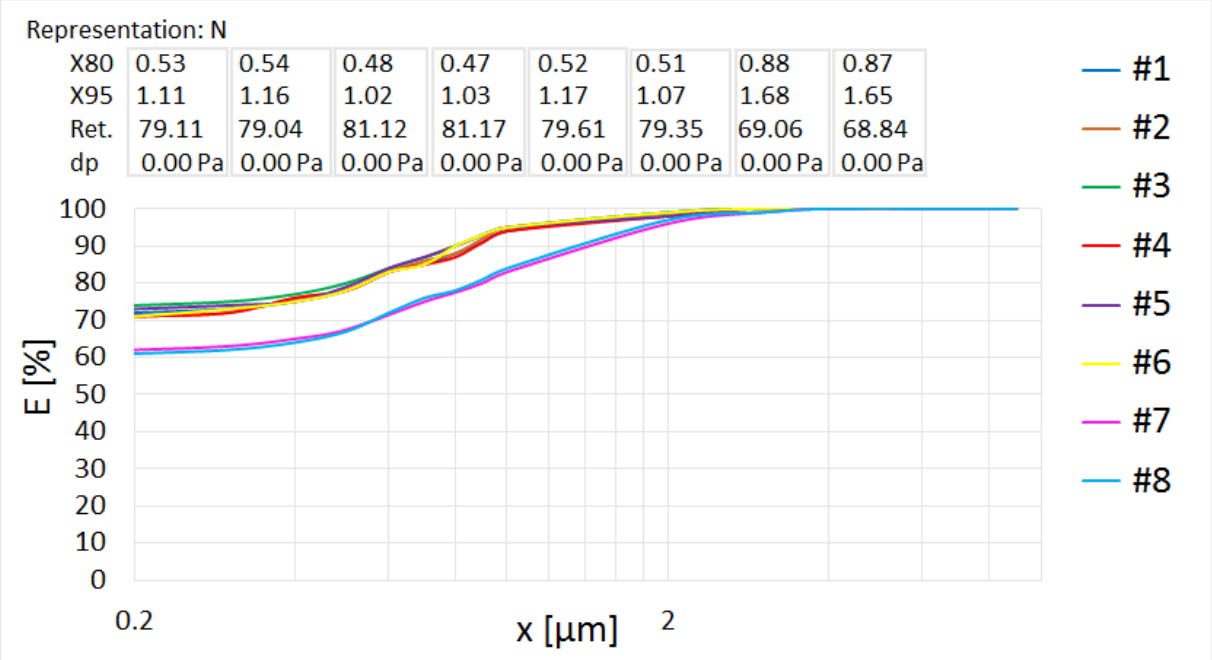


Fig. 2: Example: Comparison of fraction separation efficiencies

- Clear demonstration of the separation efficiency of your filter medium throughout the entire measurement range from 0.2 to 40 μm with the Promo® system
- With its maximum sensitivity, particle measurement technology can highlight even fine differences in separation efficiency.
- Short measurement times of around 2 minutes per separation efficiency measurement thanks to an optimized aerosol application
- Simple comparison of separation efficiency curves, and calculation of mean values are also possible

The strictly vertical layout of the MFP 2000 test system with just one sampling probe delivers clear measurements even for larger particles of up to 40 μm, as sedimentation losses can be ruled out. This enables reliable determination of the separation efficiency across the entire measurement range for all particle sizes.

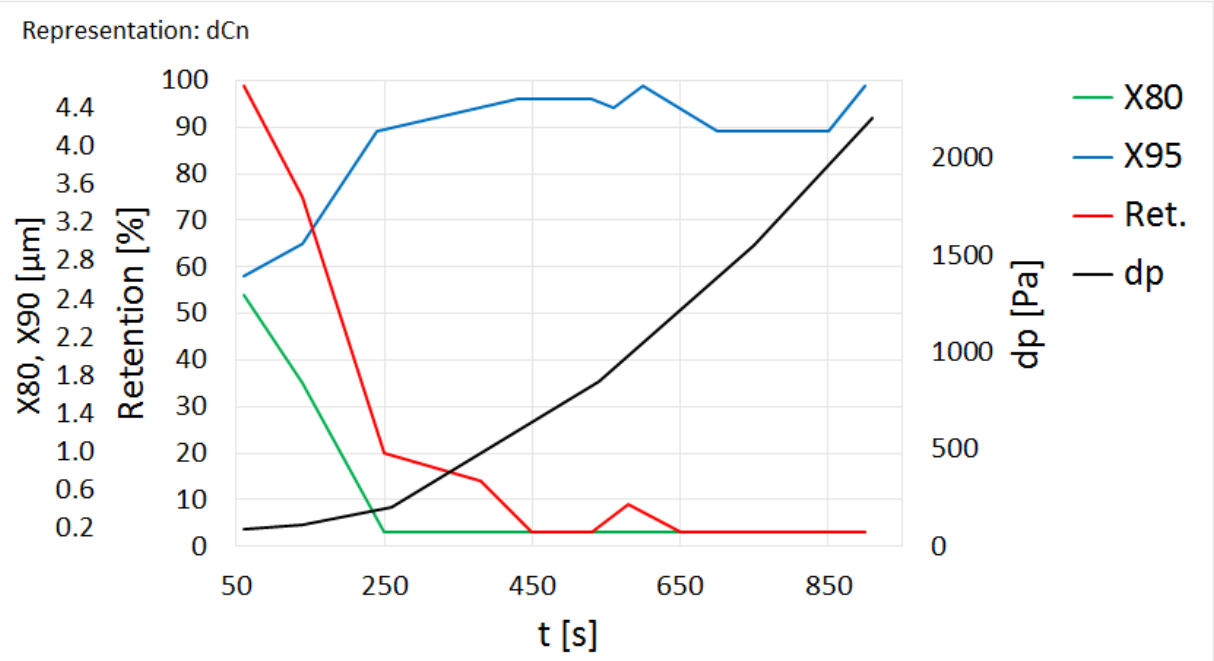


Fig. 3: Example: Hold time measurement

- Performance of measurements of the fraction separation efficiency during dust application; pressure loss or measurement time can be pre-selected as the abort criterion
- Determination and representation of the pressure loss curve and retention curve in a diagram and table form The representation of the particle diameters at 80% and 95% separation efficiency provides additional information.
- Comparison of the fraction separation efficiencies during the different burdening steps
- Shortening of the measurement times, e.g., through increased dust concentration

Extensions/Accessories

Aerosol generation
Thanks to the modular design, various test aerosols can be generated, depending on the aerosol generator used: DEHS, oils, kerosene oil, NaCl or KCl, and test dust such as ISO A2 Fine.

- RBG 1000
- AGK 2000 with drying length
- PLG 1000

Aerosol discharge
Depending on the application, the aerosol is discharged via the electrical corona discharge CD 2000 or the X-ray source XRC 049, which is not subject to approval.

BENEFITS

- Particle size measurements from 0.2 μm
- Internationally comparable measurement results
- High reproducibility of the testing method
- Easy use of different test aerosols, e.g. SAE Fine and Coarse, NaCl/KCl, DEHS
- Sequence programs for pressure loss measurements, measurements of fraction separation efficiency and burden measurements
- Short set-up times
- Cleaning and calibration can be performed by the customer
- Easy use of the measurement technology components – even in other applications
- Mobile setup, easy to move on castors
- Validation of the clear function of individual components and the overall system during pre-delivery acceptance testing and upon delivery
- Low-maintenance

NORMS AND CERTIFICATES

ISO 11155-1, ISO 5011, ISO 16890, EN 1822-3, CEN EN 143

DATASHEET

Aerosols	Dusts (e.g., SAE dusts), salts (e.g., NaCl, KCl), liquid aerosols (e.g., DEHS)
Test area of the medium	100 cm^2
Measurement range (size)	0.2 – 40 μm
Measurement range (mass)	Up to 1,000 mg/m^3 (depending on the version)
Volume flow	1 – 35 m^3/h - pressurized operation
Power supply	115 – 230 V, 50/60 Hz
Differential pressure measurement	0 – 1,200 Pa selectable, 0 – 2,500 Pa selectable, 0 – 5,000 Pa selectable
Inflow velocity	5 cm/s – 1 m/s (others on request)
Compressed air supply	6 – 8 bar
Dimensions	1,800 • 600 • 900 mm (H • W • D)

Applications

- For filter media and small mini-filters
- Product development and during production monitoring.
- Testing based on ISO 11155-1 (cabin air filters)
- Testing based on ISO 5011 (engine pre-air filters)
- Testing based on ISO 16890 (room air filters),
- EN 1822-3 (HEPA filters)
- CEN EN 143 and other standards in various versions

Mehr Informationen:
https://www.palas.de/en/product/mfp2000