



MFP 3000 with additional test duct for 400 cm² filter test area

Description



Fig. 1: MFP 3000 FTD The **MFP 3000 FTD** filter test rig comprises the **test rig MFP 3000** with a test surface of 100 cm² and the **additional conduit FTD 3000** with a test surface of 400 cm², which can be operated in turn. The MFP 3000 FTD operates in suction mode. This ensures a particularly uniform formation of the dust cake even at high inflow speeds. **Our quality in detail** 1. **Variable aerosol generation** Thanks to the use of different dispersers for dusts, KCl/ NaCl, DEHS etc.; shortened measurement times are possible e.g. through increased dust concentration 2. Mixed air, adjustable for inflow speeds from 2 to 20 cm/s (FTD 3000); optional: transient inflow 3. **Light scattering spectrometer Promo® 3000 for clear particle measurements in high concentrations of up to 5000 mg/m³ (SAE Fine) and low concentrations for the determination of the initial fraction separation efficiency** 4. Clean gas sensor 5. Raw gas sensor 6. Mobile pneumatic **filter holder** for fast removal and loading of the test rig: 400 cm² for the FTD 3000 7. **Gravimetric filter holder for simple and fast evaluation of the gravimetric separation efficiency** **Automation** The MFP 3000 has an integrated mass flow controller that it uses to control the volume flow. The volume flow rates are automatically monitored and controlled by the FTControl filter test software. The data from the integrated sensors – such as the volume flow, temperature, relative humidity and differential pressure at the filter – are also recorded automatically during the filter test. **Measurement of the fraction separation efficiency**

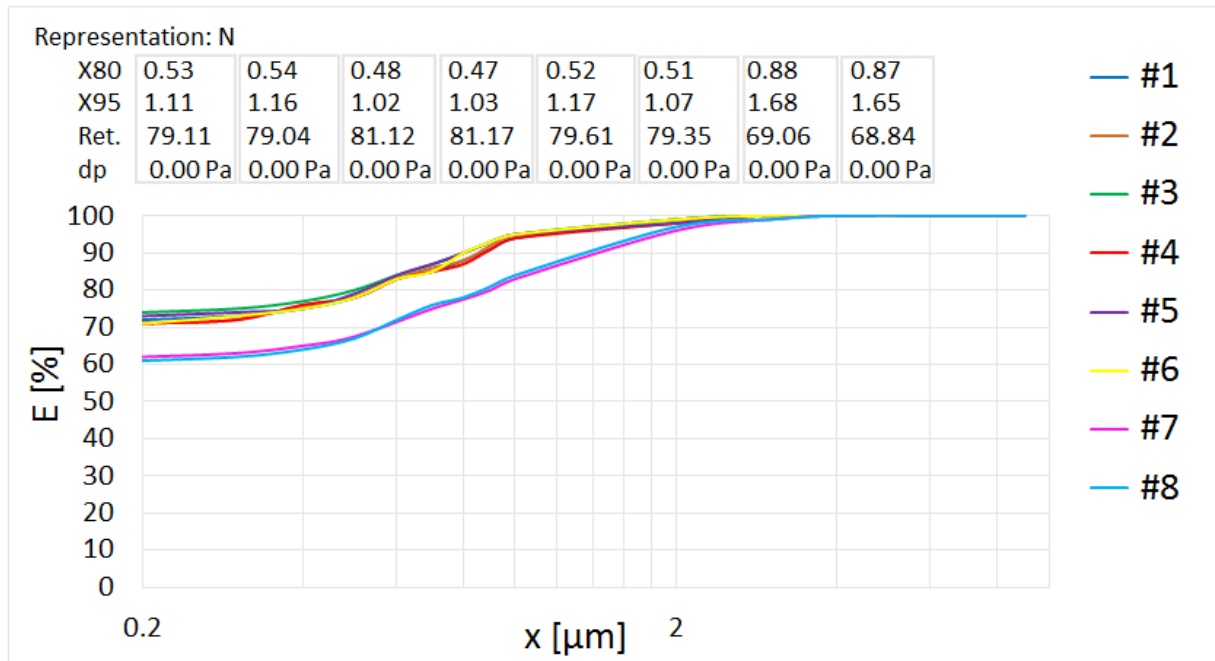


Fig. 3: Example: Comparison of fraction separation efficiencies

- Fully-automated measurement of the fraction separation efficiency
- 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
- Highest measurement reproducibility and repeatability highlight even fine differences in the separation efficiency
- Short measurement times of around 2 minutes per separation efficiency measurement thanks to optimized aerosol application
- Simple comparison of separation efficiency curves, calculation of mean values also possible

Sampling and layout The vertical layout allows even large particles (up to 40 μm) to make their way onto the filter medium. On the raw and clean gas side, isokinetic sampling probes are provided for the raw and clean gas sensor. **Burden / hold time measurement and record of the pressure loss curve**

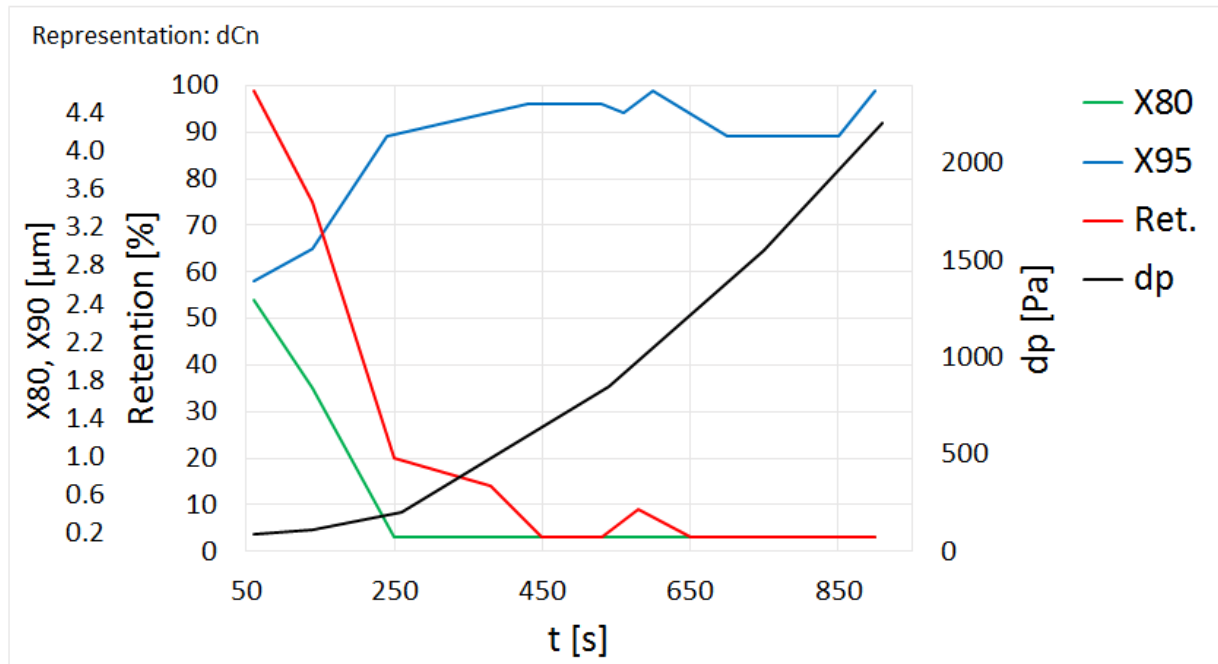


Fig. 4: Example: Hold time measurement

- Performance of measurements of the fraction separation efficiency during dust application; pressure loss or measurement time can be pre-selected as the abort criterion
- Pre-selectable burden application steps in relation to pressure loss or time
- Gravimetric determination of the separation efficiency
- Determination and display of the pressure loss curve and retention curve in diagram and table form; the representation of the particle diameters at 80% and 90% 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 aerosol concentration

Benefits

- Additional test channel in FTD 3000
- Enhanced comparability of inhomogeneous filter media
- Optional: The FTD 3000 can also be used as stand-alone device (special model) without MFP 3000
 - Can be directly connected to the suctioning and compressed air connections of the MFP 3000 2 channels: 1 suctioning channel, 1 compressed air channel
- Virtually simultaneous particle measurement in the raw gas and clean gas
- Particle size measurements from 0.2 – 40 μm
- Measurement of $C_{n\text{max}} = 10^6$ particles/ cm^3 without dilution
- Internationally comparable measurement results
- Widespread distribution of the measurement system
- High reproducibility of the testing method
- Easy use of different test aerosols, e.g. SAE Fine and Coarse, NaCl/KCl, DEHS
- Highest raw gas concentrations of up to > 1000 mg/m^3 (ISO Fine) or > 5000 mg/m^3 (ISO Coarse) with measurement of the fraction separation efficiency for burden tests
- Flexible filter test software FTControl
- Sequence programs for pressure loss measurements, measurements of fraction separation efficiency and burden measurements
- Easy to operate, even untrained personnel can be instructed quickly in the use of the equipment
- Short set-up times
- Cleaning and calibration can be performed autonomously by the customer
- Easy use of the measurement technology components – even in other applications
- Mobile setup, easy to move on castors
- Reliable operation
- Validation of the clear function of individual components and the overall system during pre-delivery acceptance testing and upon delivery
- Low-maintenance
- The unit will reduce your operating costs

Datasheet

<i>Parameter</i>	<i>Description</i>
Measurement range (size)	0.2 – 40 µm
Volume flow	1 – 36 m ³ /h (suction mode)
Dimensions	approx. 600 • 2,500 • 900 mm (MFP 3000), approx. 440 • 2,200 • 440 mm (FTD)
Inflow velocity	20 cm/s (others on request)
Differential pressure measurement	0 – 5,000 Pa
Test area of the medium	100 cm ² , 400 cm ² (FTD)
Aerosols	Dusts (e. g. SAE dusts), salts (e. g. NaCl, KCl), liquid aerosols (e. g. DEHS)
Aerosol concentrations	For SAE Fine without additional dilution up to 1,000 mg/m ³ (ISO A2 Fine)
Compressed air supply	6 – 8 bar

Applications

- For filter media and small filter elements
- product development/ during production monitoring.
- Testing based on ISO 11155-1 / DIN 71460-1 (cabin air filters)
- Testing based on ISO 5011 (engine pre-air filters)
- Testing based on ISO 16890 (room air filters)
- Other standards in various versions
- Fully automatic measurement of the fractional efficiency, the pressure drop curve, the dust holding capacity and the gravimetric efficiency
- International comparable results due to the high distribution of the system

Palas GmbH
Partikel- und Lasermesstechnik
Greschbachstrasse 3 b
76229 Karlsruhe
Germany

Managing Partner:
Dr.-Ing. Maximilian Weiß
Commercial Register:
register court: Mannheim
company registration number: HRB 103813
USt-Id: DE143585902



Contact: E-Mail: mail@palas.de Internet: www.palas.de Tel: +49 (0)721 96213-0 Fax: +49 (0)721 96213-33