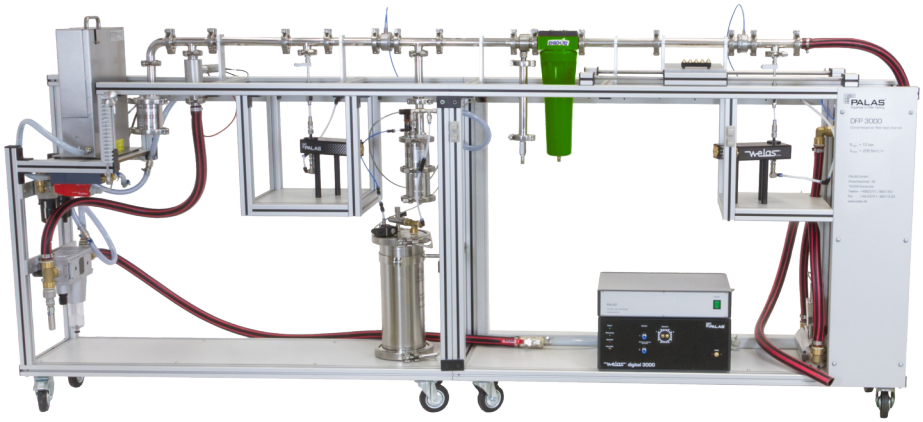
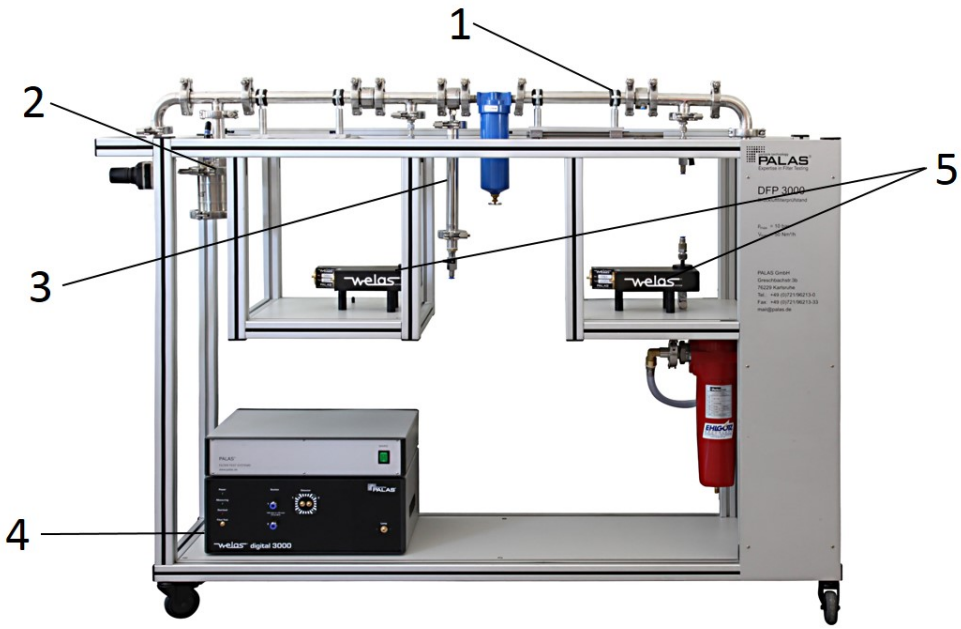
DFP 3000



The compressed air filter test rig DFP 3000 delivers fully-automated measurements of fraction separation efficiency for compressed air filters under overpressure up to 7 bar, offering better results than ISO 12500. On request, we can also supply an additional filter holder for flat filter media. The fraction separation efficiency is measured with the new aerosol spectrometer Promo® 3000 P , which is equipped with pressure-resistant welas® aerosol sensors for raw gas and clean gas measurements. The largely automated setup of the test sequence, the clearly defined individual components, and the individually adjustable sequence programs of the filter test software FTControl deliver the high reliability of our measurement results.

Operation principle

Compressed air filter test rig



1. Mobile test set-up, easy filter changes thanks to the movable clean gas section: Thanks to the movable clean gas section, filter housings of different sizes can be used without difficulty

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

3. Wall flow separator With drain valve prevents the transport of separated oil particles on the walls of the duct in the raw gas into the filter housing

4. Light scattering aerosol spectrometer Promo® 3000 P for precise particle measurements directly under overpressure up to 10 bar; the integrated automatic regulation of the sampling volume flow under pressure changes ensures that the measurement conditions are correct

5. Flexible, pressure-resistant aerosol sensors in the welas® 2xxx P series in raw gas and clean gas for precise particle measurements directly under overpressure up to 10 bar; thanks to the use of welas® aerosol sensors, which are fine-tuned to the different aerosol concentrations in the raw gas and clean gas, no dilution systems are needed

Automation

The DFP 3000 is equipped with integrated mass flow controllers for regulating the volume flow and the dispersal volume flow through the aerosol generators. A pressure control valve on the system's inlet automatically sets the system pressure for the filter test.

Filter test software FTControl

With the aid of pre-programmable sequence programs for the measurement procedure, filter tests can be performed individually and automatically. The sequence programs enable both the test parameters to be pre-defined (including the main volume flow, the system pressure, and the control of the aerosol generators) and the sequence of the filter test to be specified:

- Performance of measurements of the fraction separation efficiency during burdening; 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
- Representation of the particle diameters at 80 % and 95 % separation efficiency
- Comparison of the fraction separation efficiencies during the different burdening steps
- Shortening of the measurement times, e.g., through increased aerosol concentration

Integrated sensor data such as the volume flow, system pressure, and differential pressure at the filter are also recorded automatically during the filter test.

Extensions/Accessories

The DFP 3000 can be equipped with three different aerosol generators:

The PLG 3000 is used for measurement of the fraction separation efficiency and for burdening with oil aerosols. The oil quantity can be adjusted via the volume flow of the disperser between values of approximately 0.2 and 12 g/h.

The AGF 3000 is used to burden the filters with oil aerosols. The unit can generate mass flow rates of up to 29 g/h thanks to its special nozzle. This minimizes the burdening time. This generator features an automatic refilling unit for the oil supply.

The RBG Professionalis used to measure the fraction separation efficiency and for burdening with dust. Thanks to its interchangeable solids containers, the RBG Professional offers a particularly wide concentration range during dispersal.

Benefits

- Particle measurements at a glance
- Internationally comparable measurement results
- High reproducibility of the testing method
- Easy use of different test aerosols, e.g., DEHS, SAE Fine and Coarse
- Flexibly programmable sequence programs for pressure loss measurements, measurements of fraction separation efficiency, and burden measurements
- Fully-automatic and reproducible test sequence, including pressure and volume flow control
- Easy to operate
- 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 precise function of individual components and the overall system during pre-delivery acceptance testing and upon delivery
- Low-maintenance

DATASHEET

Aerosols	Liquid aerosols (e. g. DEHS)
Measurement range (number C_N)	Up to 10^6 particles/cm^3
Measurement range (size)	0.2 – 40 μm, 0.3 – 40 μm (at 7 bar_g)
Volume flow	1 – 60 Nm^3/h or 10 – 200 Nm^3/h- pressurized operation
Power supply	115 – 230 V, 50/60 Hz
Differential pressure measurement	0 – 3,000 Pa
Compressed air supply	10 bar
Pressure	1 – 7 bar_g relative
Dimensions	3000 • 1300 • 600 mm (H • W • D)

APPLICATIONS

- Testing of complete filters better than ISO 12500
- Testing of filter media
- Determination of the drainage amount during burdening

Mehr Informationen:
https://www.palas.de/product/dfp3000