CIF 3000



Palas offers the CIF 3000 test rig with the Promo ® 3000[1] unit for standard tests on motor vehicle passenger compartment filters in accordance with DIN 71460-1 and ISO/TS 11155-1.

OPERATION PRINCIPLE

STANDARD TESTS ON MOTOR VEHICLE PASSENGER COMPARTMENT FILTERS

The volume flow is automatically regulated and adjustable from 60 to 800 m^3/h.

With the aid of the CIF, both the fraction separation efficiency and the burden on the complete filters or filter media are measured and evaluated.

Particle dosing for the filter test is performed with the brush generator RBG 1000[2] , which has been internationally established for over 30 years. On the CIF 3000, overall and fraction separation efficiency are determined with the high-resolution light scattering spectrometer Promo® 3000.

The main advantage of the Promo ® 3000[3] spectrometers lies in the use of fiber optic technology. This allows the sensor heads to be positioned directly at the measurement site, resulting in minimized line losses. Furthermore, with the aid of the Promo® 3000, it is possible to use different sensors for raw gas and clean gas. With the Promo® 3000 measuring systems, reliable tests to determine the separation efficiency and burden tests can be performed across the entire measurement range for all particle sizes.

Following ISO/TS 11155-1, the test rig is equipped with the salt aerosol generator AGK 2000[4] . In the testing conduit, filter media up to a size of approx. 220 x 500 mm can also be tested under the conditions stated above. To test the influence of real ambient conditions on the separation behavior of filters, Palas offers an upgrade to the CIF test rig with climate technology components for adjustment of the temperature between +18 °C and +90 °C and the relative humidity between 30% and 70%.

As an option, the test rig can be upgraded after the provision of the measuring equipment for gas analysis for investigations of the adsorption and desorption dynamics following DIN 71460-2 and ISO/TS 11155-2.

[1] Promo® 3000: https://palas.de/product/promo1000
[2] RBG 1000: https://palas.de/en/product/rbg1000
[3] Promo® 3000: https://palas.de/product/promo1000
[4] AGK 2000: https://palas.de/product/agk2000

The CIF 3000 is equipped with a high-pressure ventilator, which can be throttled on the pressure side with infinitely variable adjustment and is frequency-controlled and can be automatically regulated via the FTControl filter test software to regulate the volume flow. Furthermore, sensor data such as the volume flow, temperature, relative humidity, and differential pressure at the filter are also recorded automatically during the filter test. The aerosol generators and the corona discharge can be actuated via the FTControl software.

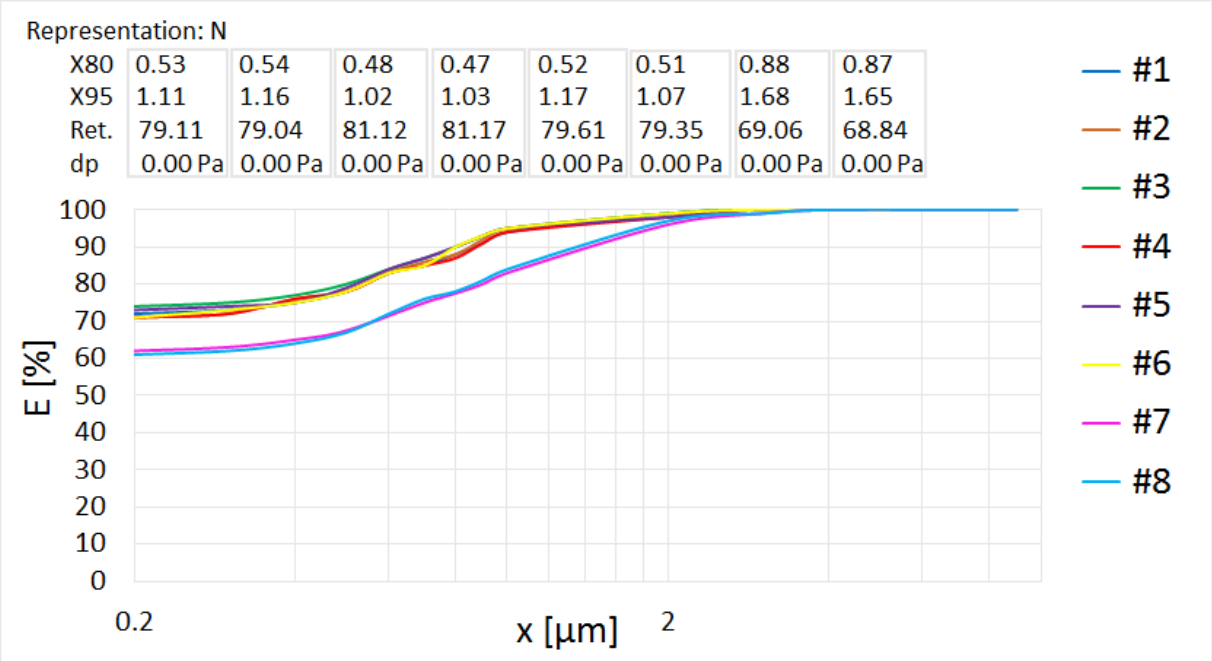


Fig 1: Example showing a comparison of fraction separation efficiencies

- Clear demonstration of the separation efficiency of your filters or 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 application
- Simple comparison of separation efficiency curves, calculation of mean values also possible

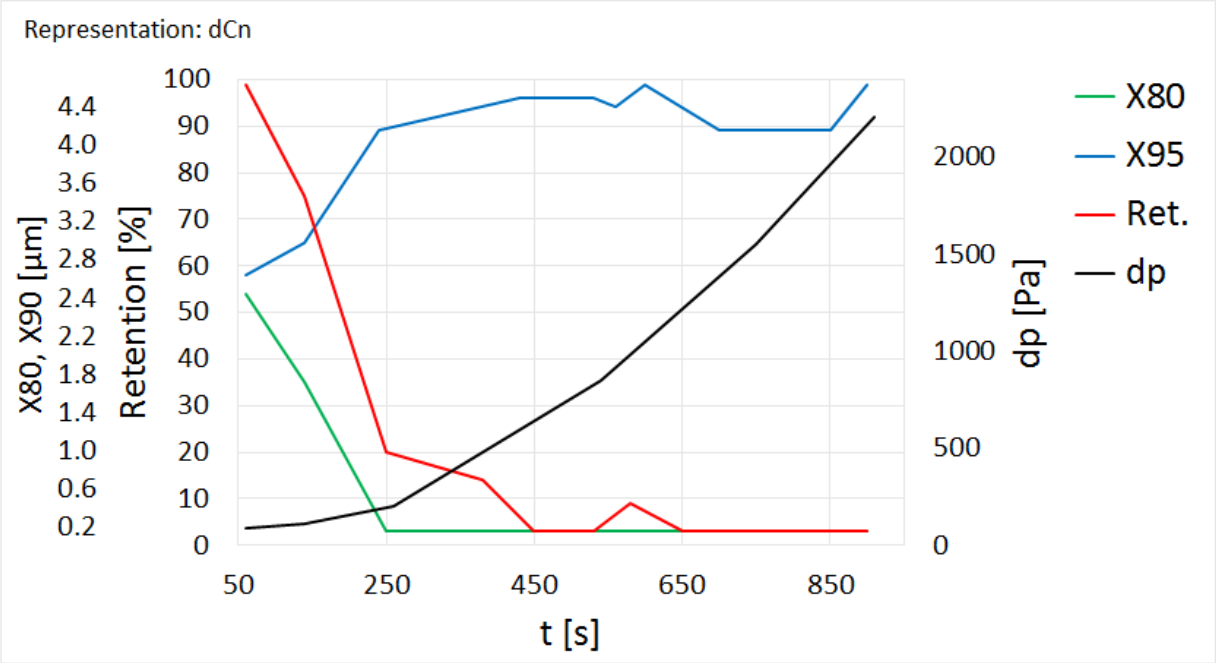


Fig. 2: Example of the hold time measurement

- 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 and retention curves in a diagram and table form. Representing 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

- Particle measurements from 200 nm
- Virtually simultaneous raw gas and clean gas measurement
- Measurement and evaluation of fraction separation efficiency and burden
- Automatic data acquisition for barometer pressure, temperature, humidity, differential pressure
- Optional Temperature control (+18°C to +90°C) and moisture control (30 – 70%)
- Automatic actuation of all test rig components
- Automatic performance of the measurement processes
- Individual programming of measurement processes for filter testing using the FTControl software
- Separate measurement and analysis parts – this saves time and money, as the analysis can be performed while the measurement is still on-going
- Printouts and saving of complete test records
- Easy access to all data for the recorded measurement signals from the up to 6 external sensors
- Low-maintenance
- Easy operation
- Reliable operation
- The unit will reduce your operating costs

NORMS AND CERTIFICATES

DIN 71460-1, ISO/TS 11155-1

DATASHEET

Measurement range (size)	0.2 – 40 μm
Volume flow	60 m^3/h – 800 m^3/h (cycle operation)
Material	Stainless steel V2A, 2 mm
Temperature regulation	+18 °C – +90 °C
Luftfeuchteregelung	30% – 70%
Temperatur- und Feuchtesensor	Measuring range: -20°C - +80°C, 0 - 100 % rH, Accuracy: ± 0.1°C (20°C), ± 1 % rH (0 - 90 % rH), ± 2 % rH (90 - 100 % rH)
Barometric pressure gauge	Measuring range: 600 - 1,100 hPa, Accuracy: ± 0.10 hPa
Differential pressure gauge	Measuring range: < 2,500 Pa, Linearity error: < 0.2 % of final value
Measurement of the air velocity	Measuring range: 0.5–40 m/s, Accuracy: < +/- 0.05 m/s (up to 20 m/s), < +/- 0.08 m/s (20–30 m/s), < +/- 0.1 m/s (30–40 m/s)
Preconditions	3 phases, 400 V, neutral, earth connection of approx. 3 KW and provision of pressurized air max. 8 bar
Dimensions	Test rig: 2,800 • 1,000 • 4,200 mm (H • W • D), Filter holder: 300 • 600 mm (H • W) (filter and others on request)

Applications

- Complete filter test according to DIN 71460-1 & ISO/TS 11155-1
- Test of filter media according to DIN 71460-1 & ISO/TS 11155-1
- Test of other complete filters and filter media

Mehr Informationen:
https://www.palas.de/en/product/cif3000