

General Air Filter Test System acc. to ISO 16890

ALF114



Test system ALF 114 for testing general air filters.

The test system ALF 114 has been developed for air filter testing according to standards ISO 16890, EN 779 and ASHRAE 52.2.

The ALF 114 was developed with the aim of testing filters with different shapes (cassette filter, pocket filters, filter cartridges and plane filter media) using varying test aerosols (salt, oil, dust). By using the test system, the following filter characteristics can be determined: differential pressure curves, dust holding capacity, gravimetric efficiency, fractional efficiency, efficiency according to ISO 16890, efficiencies after different dust loading steps (EN 779 and ASHRAE 52.2).

Applications

- testing of general air filters according to ISO 16890, EN 779 and ASHRAE 52.2
- energy efficiency rating for filters according to EUROVENT
- research and development on general air filter elements

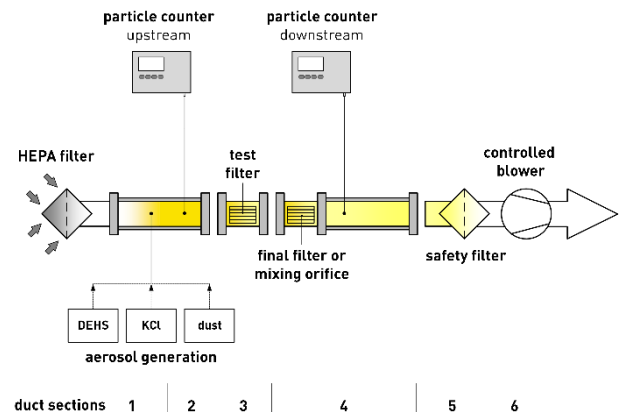
Features

- rotatable and movable duct sections
- universal filter holding system
- injection of different aerosols (DEHS, KCl, Dust), into an optimal flow profile

- high level of automation, mostly automated test runs with complete operator guiding through all tests, data handling and protocols

Principle of operation

The figure below depicts a simplified schematic illustration of the functional principle of ALF 114.



Schematic illustration of the operational principle of ALF 114.

The test system is composed of 6 airproofed duct sections:

1. air conditioning and aerosol inlet
2. upstream measurement
3. filter sample duct
4. downstream measurement or final filter
5. safety filter
6. flow rate measurement.

A defined volume flow rate is sucked through a HEPA intake filter, the attached test duct and the safety filter. The filter samples can be easily installed into the rotatable and movable duct sections. The measurement sections are equipped with ports for the aerosol characterization and the determination of the pressure drop. These measurement parameters can be used to classify the filters.



Specifications

Details

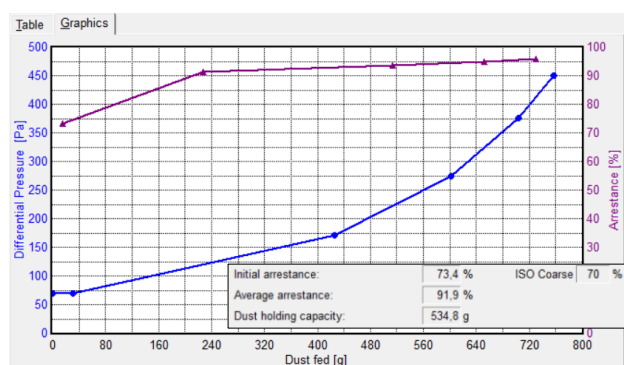
DEHS and KCl aerosol are used to determine the fractional efficiency. The aerosol characterization is realised with two LAP 340 optical particle counters (0.2 ... 10 µm, 16 particle size classes). Optical particle counters can be used to determine number-based particle size distribution and particle number concentrations of the test aerosol.



Rotatable and movable duct sections of the ALF114.

The dust loading is carried out with the solid aerosol generator SAG 440 and an optional filter weighing system. With the online filter weighing option, the data from the scale is transferred directly to the ALF114Win software.

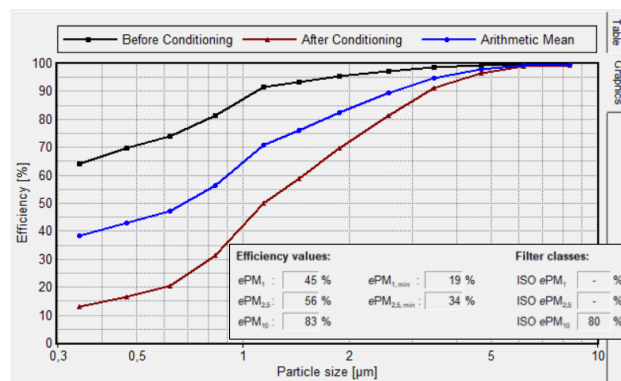
The ALF 114 is provided together with ALF114Win software. The inhouse developed software allows the visualisation and control of the test system as well as the acquisition and processing of the recorded data.



Exemplary dust loading test according to ISO 16890.

The ALF 114 can be operated in manual or automatic mode. The operator can define test

sequences for routine measurements, which leads the user through the individual measurement steps.



Exemplary efficiency rating according to ISO 16890.

Accessories

- TDC 584 - IPA conditioning cabinet for testing air filters acc. to ISO 16890-4
- AFS 153 – Flat sheet filter media tester

Technical specifications

air flow rate	600 ... 6000 m³/h
differential pressure	≤ 2000 Pa
test aerosol	DEHS, KCl
test dust	ASHRAE test dust, ISO 12103-A2 (fine) and ISO 12103-A4 (coarse)
dimensions of filter samples	Pocket and cassette filters cross section ≤ 610 x 610 mm filter cartridges length ≤ 1,5 m diameter ≤ 400 mm flat sheet filter media surface 1 m²
environmental sensors	temperature, relative humidity, air pressure
power supply	3 x 400 V AC; 125 A; 50 Hz
compressed air supply	> 5 bar (17 m³/h)
dimension (w x h x d)	3.5 x 3.0 x 14.0 m

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QMS certified according to DIN EN ISO 9001.



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