

Automatic HEPA/ULPA Filter Scanning Test System according to ISO 29463-3/4/5

AFS 152/A



Automatic HEPA/ULPA filter scanner AFS 152/A

High efficiency EPA, HEPA, and ULPA particle filters are used in applications where clean, controlled air free of even the smallest particles is required to protect people, products, and processes. To ensure that the air filter achieves the desired performance, every HEPA and ULPA filter should be tested and certified in accordance with ISO 29463 or EN 1822.

Topas GmbH has developed an automatic HEPA/ULPA filter scanner, the AFS 152/A, which covers Parts 3, 4, and 5 of ISO 29463 and EN 1822. The main application of the AFS 152/A is the automatic scanning of panel filters in accordance with ISO 29463-4. Using this scanning method, filters are specifically checked for leaks while simultaneously determining local efficiencies. By summing the local efficiencies, the integral efficiency of the filter can also be determined. For filter designs that cannot be scanned, such as compact filters, a special hood is used to reliably measure the integral efficiency in accordance with ISO 29463-5. Alternatively, the AFS 151 Robot HEPA/ULPA filter scanner enables the scanning of three-dimensional filter elements.

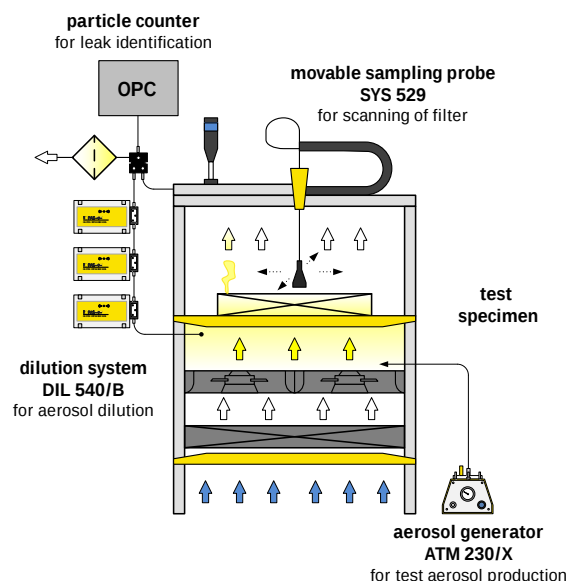
Applications

- automated scanning of panel filter elements according to ISO 29463-4 to detect leaks and determine local efficiency
- determination of integral efficiencies according to ISO 29463-5
- testing of filter media according to ISO 29463-3
- differential pressure testing

Features

- automated test procedures, data acquisition and analysis
- user defined reports as proof of filter quality
- high filter throughput while simultaneously detecting the smallest leaks
- high measurement accuracy & reproducibility
- automated scan traverse can be upgraded to existing AFS 152 systems

Principle of operation



Schematic illustration of the operational principle of AFS 152/A

Specifications

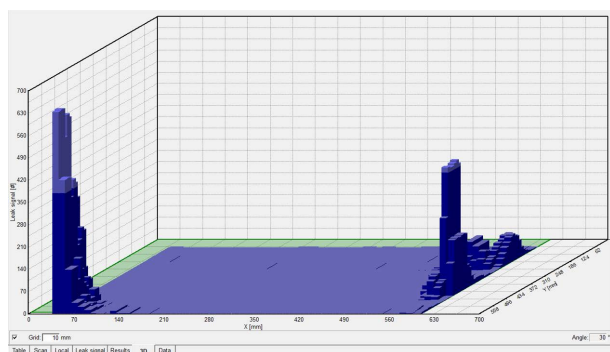
A defined volume flow is generated in the inflow unit, with the test air being supplied to the system via a HEPA intake filter. A test aerosol is introduced into the test air flow, primarily DEHS; alternatively, other oil-based substances or PSL particles can also be used. The filter under test is mounted on the adapter of the inflow unit. A sampling probe scans the entire filter as well as the filter frame.

To measure the aerosol concentration, a vacuum pump generates a flow rate through an optical particle counter. This detects particles in the size range of 0.1–1 μm . A switching unit allows selection between a HEPA protective filter, the upstream and downstream measuring point. During the upstream measurement, the aerosol is additionally passed through a dilution system. The dilution ratio and the aerosol concentration are automatically adjusted based on the filter class and flow rate.

Details

The modular design allows for easy upgrading and flexible replacement of components. For example, a second probe, including an additional particle counter, can be integrated. The simultaneous operation of two probes reduces the duration of each filter scan and increases efficiency.

The test system comes with the AFS152AWin software. The software is used for visualization and control of the test system, as well as for data acquisition and analysis. The user interface provides a clear overview of all relevant components



3D diagram of a scan result including leakages

Standardized test procedures are available for measurements according to ISO 29463 Parts 3, 4, and 5. These procedures guide the operator through the measurement process and generate a

test report that complies with the standard. An integrated database solution stores all performed tests, enabling traceable quality assurance during filter production. In addition, filter types, test parameters, and fabric systems can be conveniently managed.

Accessories

- AFS 153 – Filter media tester (ISO 29463-3)
- Flow hood for integral measurements (ISO 29463-5)
- ATM 240/L for PSL aerosols (ISO 29463-4 appendix E)



Flow hood for integral measurements (left) and AFS 153 media tester (right)

Technical specifications

filter dimensions depending on inflow unit (w x h x d)	min. 305 x 305 x 30 mm max. 1830 x 915 mm (small) max. 1830 x 1220 mm (big)
volume flow rate	300 ... 4000 m ³ /h
filter classes	H13 – U16
filter face velocity	around 0,45 m/s
differential pressure of test filter	max. 400 Pa
scanning velocities	5 ... 100 mm/s
aerosol substances	DEHS, PAO, PSL
power supply	230 VAC, 16 A, 50/60 Hz, 3 kW
air supply	5,5 ... 7 bar
dimensions (w x h x d)	2300 x 700 x 2000 mm
normative references	ISO 29463-3/4/-5 EN 1822-3/4/-5

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