



Advantages

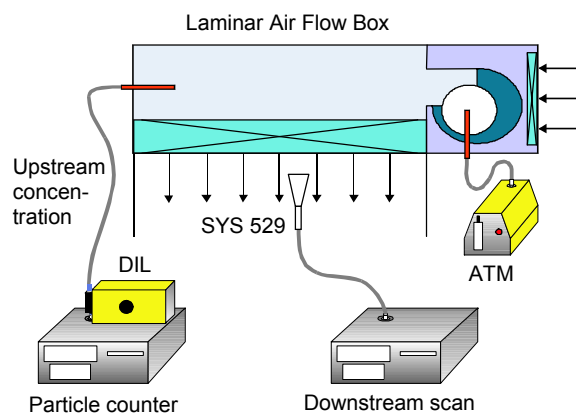
- Improved design for mobile use
- Straightforward to handle
- Rugged stainless steel casing
- Quick instrument setup
- Stable long-term operation
- Low-maintenance
- Rapid service for annual instrument validation and calibration

Topas instrument package for clean room applications: : aerosol generator ATM 226 and dilution system DIL 554(both to be connected to standard clean room particle counter) and rectangular sampling probe SYS 529

More and more clean room equipment and facilities are required by an increasing number of industrial applications and research fields. This equipment must be tested and validated on a regular basis. Apart from technical expertise, testing requires suitable instrumentation, which is itself verified and in compliance with existing standards and guidelines.

Topas offers aerosol generators, dilution systems and rectangular sampling probes which have been especially developed to comply with the requirements as specified in current standards and regulations. During the development phase, great emphasis was put on the design of instruments to make them suitable for mobile use.

At the same time, all our various devices have successfully been used worldwide for clean room validation and thus verified by this wide range of applications. During manufacture each device has to pass a series of defined testing procedures. This guarantees the consistently high quality of each unit which is documented by an official certificate of instrument testing.

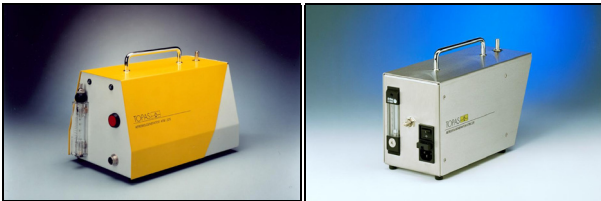


Arrangement of Topas instruments for validation of a laminar air flow box

A liquid challenge aerosol is generated using an atomizer aerosol generator Series ATM upstream of the laminar flow box. The required concentration of this challenge aerosol is achieved by dilution using a Topas Dilution System Model DIL.

The filter is scanned downstream using the special Sampling Probe SYS 529. The sample air flow is forwarded to the particle counter for measurement.

Atomizer Aerosol Generators ATM 225/E and ATM 226



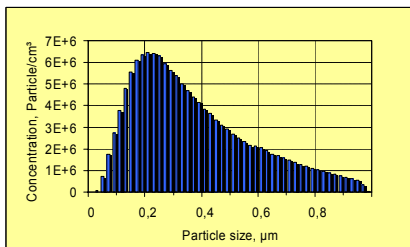
Atomizer aerosol generator ATM 225/E with adjustable particle production rate

Atomizer aerosol generator ATM 226, with adjustable particle production rate, stainless steel casing and integrated mains adapter

Aerosol generators are used to reliably test the performance of filter elements: They produce a liquid aerosol at a sufficiently high concentration with a peak particle size in the range of the most penetrating particle size (MPPS) of the filter.

Topas designed the ATM 226 especially for the clean room application. The patented injector nozzle (GM 94 08 604) produces a special droplet spray from a suitable aerosol substance.

DEHS (Di-Ethyl-Hexyl-Sebacate DEHS, DES) has been widely introduced across Europe. When this colourless, low volatile liquid is nebulised by the atomiser, the aerosol generator produces an aerosol with an exceptionally long term stability. The modal particle size has been found to be close to MPPS which is why this material has been found to be nearly ideal for HEPA and ULPA efficiency testing. Needless to say, other liquids such as DOP (Di-Octyl-Phthalate), Emery 3004, or paraffin oils can also be nebulised with the Topas range of atomizer aerosol generators.



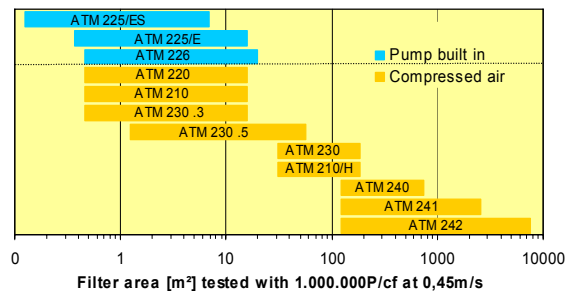
Particle size distribution of a DEHS aerosol, generated by an aerosol generator series ATM

Applications

- Efficiency testing of HEPA and ULPA filter media
- Validation of clean rooms and laminar air flow boxes
- Generation of tracer particles for low flow rates

Advantages

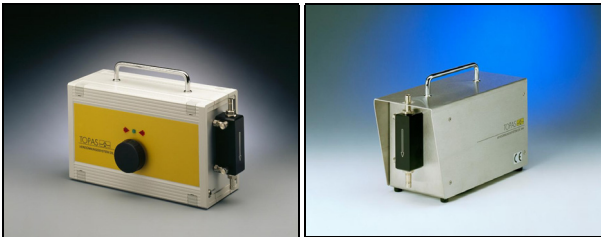
- Long-term stability of the generated aerosol
- Easy adjustment of particle concentration and particle production rate
- Rugged design provides high reliability
- Designed for portable use with small dimensions and low weight
- Easy to use and low-maintenance



Operation ranges of atomizer aerosol generators ATM 210...242

Specifications	ATM 225/E	ATM 226
Flow rate	50...250l/h (0.8..4.2l/min)	50...300l/h (0.8 5l/min)
Mass flow rate	approx. 2.5g/h	
Aerosol liquid	10kPa (0.1bar)	
Max. counter pressure	max. 25h (without refilling)	
Continuous operating time	DEHS, DOP, Emery 3004, Paraffins, Salt solutions, PSL etc.	
Aerosol materials	12VDC	100...240VAC
Power supply	approx. 200 x 280 x 175mm	
Dimensions	4.5kg	4.2kg
Weight		

Dilution Systems DIL 550 and DIL 554

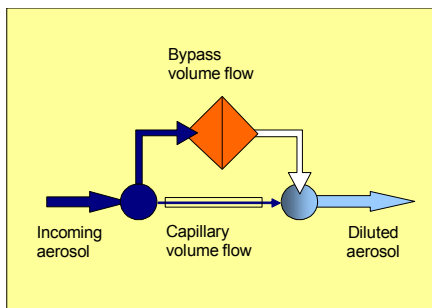


Dilution system DIL 550
(Dilution Ratio 1:100 or 1:10)
to be connected to 1cfm
(28.3lpm) clean room particle
counter (alternatively 2.83lpm)

Dilution system DIL 554
(Dilution Ratio 1:100, adapted
for 28.3l/min or alternatively for
56.6l/min), power supply via
battery, stainless steel casing

A reliable detection of filter leaks in clean room environments is only possible if the filter is challenged with a sufficiently high number of particles on its upstream side. In VDI guideline 2083 this concentration is defined as 1million particles/cf. As clean room particle counters are limited to a certain concentration range, the challenge aerosol must be diluted in a controlled manner. In this way both upstream and downstream concentrations can be measured with only one particle counter.

The Topas DIL 550 range of dilution systems is supplied with a fixed dilution ratio of either 1:10 or 1:100 adjusted to a particle counter flow rate of 0.1cfm (2.8lpm) or 1cfm (28.3lpm) respectively. Dilution ratios of 10,000 or 100,000 can be obtained by cascading two or more dilution units. The DIL 554 system is adapted for 28.3l/min or for 56.6l/min and a dilution ration 1:100. The pressure drop of the DIL 554 is about 50 % reduced.



Principle of
aerosol dilution

Applications

- Testing and validation of clean room facilities in combination with a clean room particle counter
- Determination of filter efficiency
- Aerosol research – measurement of highly concentrated aerosols

Advantages

- Consistent and reproducible aerosol dilution ratios even under varying operating conditions (e.g. inlet pressure)
- Simple control and indication of properly adjusted dilution ratio
- Designed for portable use (field application) by avoiding exhaust air and no need for compressed air supplies
- Flexible and easy to use for many particle counters (reduced pressure drop in the DIL 554)
- Extended life time and high reliability with minimal maintenance requirements
- Operation under positive and negative pressure possible
- Customized dilution ratios and flow rates available on request

Specifications	DIL 550	DIL 554
Total flow rate	0.1cfm (2.83lpm) *) or 1cfm (28.3lpm) *)	1cfm (28.3lpm) or 2 cfm (56.6lpm)
Dilution ratio	1:10, 1:100 *)	1:100
Tubing connector	8mm	
Power supply	9...15VDC ; DC mains adapter	9V battery
Dimensions	160 x 300 x 110mm	
Weight	1.5kg	3.2kg

*) customized on request

Rectangular Sampling Probe SYS 529



Rectangular sampling probe with antistatic tubing to be connected to cleanroom particle counter

Until recently only circular scanning probes have been manufactured and used for leak detection. Because of isokinetic sampling requirements this has been the shape preferred for many years but now more and more users prefer rectangular sampling probes because of the advantages they offer compared with circular inlets. Topas probes are manufactured to rectangular inlets which gradually lead into a cylindrical tube. The design of this special probe is based on ISO CD 14644 which specifies a maximum width to length ratio of 1:6. The Topas manufacturing process guarantees high-quality, smooth internal surfaces throughout the probe including all transition regions to minimise particle deposits.

Advantages of Rectangular Inlet Shape

- More accurate sampling than with a circular inlet cross section
- Precise scanning at the edges of a filter element
- Designed according to ISO CD 14644-3 (1998)
- Shorter scanning times

Specifications

Tubing connector	8mm diameter
Materials	Aluminium coated and polished, stainless steel polished
Design	Complies with ISO CD 14644-3 (1998)
Cap	Synthetic material, tight fitting, with connecting arm for HEPA-Filter
Dimensions	Length 130mm (overall length of 235mm with tubing port)
Weight	170g

Standard Probe

Average air velocity at sampling flowrate of 1cfm(28.3lpm)	0.45m/s
Inlet cross section	1200mm ²
Inlet dimensions	15mm x 80mm

The complete package has been developed in accordance with the following standards:

- VDI 2083, VDI 3491
- EN 1822
- DIN EN ISO 14644
- DIN EN 12469
- FED 209 (USA)
- DIN 12980



As manufacturers of instruments in the field of particle technology and filter testing Topas GmbH has been certified to comply with the high requirements as specified in DIN EN ISO 9001:2000 (and its predecessors) since 1999.

For more information please visit our website at www.topas-gmbh.de.

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