PORTABLE TEST AEROSOL GENERATOR MODEL 3073

THIS ADVANCED SELF-CONTAINED ATOMIZER PROVIDES STABLE TEST AEROSOL FOR DEMANDING APPLICATIONS

The Model 3073 is a truly portable high end test aerosol generator. Polydisperse test aerosols are generated by atomizing various oils or salt solutions where the mode of the produced particle size distribution is typically between 0.15 and 0.3 µm. Monodisperse Particles such as PSL can be generated as well from liquid suspensions. The innovative new flow control via nozzle pressure sensor and proportional valve achieves highly stable low particle production rates. Selecting the same set point, yields the same concentrations again and again.

In the lab the Model 3073 is ideally suited for calibration setups where low but stable aerosol concentrations are needed. Particle measurement instruments can typically be connected without additional dilution. Due to the new nozzle operating mode also high concentrations can be produced stable over long periods (VDI 3491-2).

For field use the Model 3073 can be equipped with an optional battery pack that directly mounts to the chassis. This transforms the model 3073 into a completely stand-alone unit. The significantly reduced power consumption allows run times up to 8 hours (2h at full load). The Model 3073 also features an external control interface that enables remote control which is very helpful in duct measurements.

Features and Benefits

+ Highly portable, self-contained design
+ Steplessly variable output flow rate 0.3 to 4.5 L/min with improved accuracy and reliability
+ Suitable for PSL, different oils, and salt solutions
+ Interface supports remote control
+ Internal brushless pump for long-life
+ Compact and lightweight design with integrated wide-range power supply
+ Optional battery for increased flexibility and field use

Applications

+ Calibration of particle sizing instruments
+ General purpose reproducible test aerosol generation
+ Tracer particle generation (seed particles)
+ HEPA/ULPA filter integrity testing
+ Cleanroom and safety cabinet validation according to ISO 14644-3
+ In-use acceptance testing of low- and high flow filters
+ Smoke detector testing

SPECIFICATIONS

PORTABLE TEST AEROSOL GENERATOR
MODEL 3073

Mode of Operation
Atomizer with submerged two-stream injection nozzle (Laskin mode)

Particle Size, d_{mode}
0.15 to 0.3 µm (DEHS), 0.05 to 0.2 µm (salt, varies with concentration)

Particle Concentration
85/cm³ to >10⁷/cm³

Particle Type

Liquid	DEHS, PAQ (Emery 3004), Paraffin
Solid	PSL, NaCl and other salt solutions

Flow Rate
0.3 to 4.5 L/min

Dosing Period
~44 h continuous operation
~2 h in battery operation at full load

Reservoir
100 mL standard laboratory glas bottle with DIN thread (d = 56 mm)

Aerosol Outlet
Ø 8 mm

Maximum Counter Pressure
40 kPa (0.4 bar)

Dimensions (L x W x H)
30 cm x 12 cm x 19.5 cm (11.8 in. x 4.7 in. x 7.7 in.)

Weight
3.9 kg (8.6 Lb)

Power Supply
100 to 240 VAC. 12 VDC, battery operation optional
Note: Powerbank should provide 12V, it is not supplied by TSI.

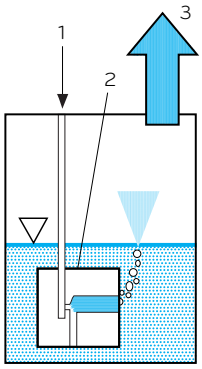
TO ORDER

Portable Test Aerosol Generator

Specify	Description
3073	Portable Test Aerosol Generator
3062-NC/3062	Diffusion Dryer

Operation:

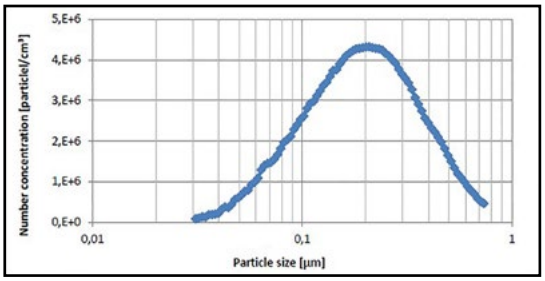
The Model 3073 uses a low-noise brushless swing piston pump and a submerged two-stream nozzle to produce a steady stream of aerosol. The nozzle inlet pressure can be set on the display and controls the flow and the particle production rate. As an added value of this design, the same output is achieved just by setting the nozzle pressure to the same value, even on the next day provided the solution remains the same.



Schematic of the model 3073.
(1) HEPA-filtered air flow, (2) submerged two-stream nozzle, (3) Aerosol output

As the air passes through the nozzle the Bernoulli Effect causes the liquid from which the aerosol is to be produced to be drawn in. The high shear forces within the nozzle lead to droplet formation. Since the nozzle is submerged ("Laskin mode") the droplets pass through the remaining liquid which acts as a separator for the big droplets. This defines the resulting particle size distribution in the submicrometer range.

With this design crystalline deposits are prevented and small as well as large mass flows can be generated. The fine droplet aerosol leaves the model 3073 on the top through an Ø 8 mm outlet.



Example: Model 3073 generated DEHS aerosol measured with TSI SMPS 3938

UNDERSTANDING, ACCELERATED

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