

Electrostatic Precipitator

Selectively removes pre-charged particles from an aerosol flow

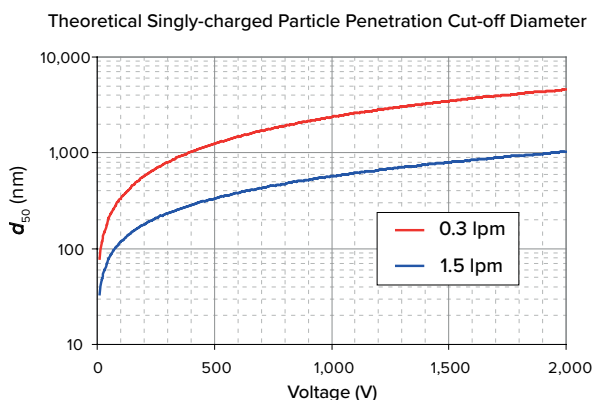
Allows quantification of the uncharged particle population for the CPMA-Electrometer mass standard



Introduction

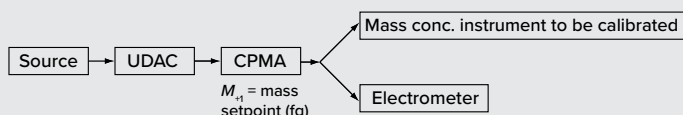
The Cambustion Electrostatic Precipitator selectively removes pre-charged particles from a nanoparticle aerosol stream. With a precipitation voltage of up to 2 kV, the d_{50} cutpoint of the precipitator can be varied to up to $1\mu\text{m}$ at 1.5 lpm flow, or $4.5\mu\text{m}$ at 0.3 lpm flow. With a built-in high voltage power supply and LCD voltage indicator, the voltage can be controlled from the front panel, or via an analogue input.

Performance



Use as part of an Aerosol Particle Mass Standard

The Centrifugal Particle Mass Analyzer (CPMA, Cambustion) can be used with a Unipolar Diffusion Aerosol Charger (UDAC, Cambustion) and an aerosol electrometer to form a suspended particle mass concentration standard for calibration of other mass concentration instrumentation (Symonds et al., *Aerosol Science and Technology* **47**(8), pp. i–iv, 2013):



$$m_{\text{total}} = \text{mass setpoint} \times \text{indicated electrometer concentration} + \text{zero charge correction}$$

This method requires the concentration of uncharged particles passing through the CPMA to be quantified. The Cambustion ESP placed in series with a Condensation Particle Counter is an ideal tool for this application.

Specifications:

Design flow rates	0.3–1.5 lpm
Precipitation voltage range	0–2 kV
Maximum d_{50} for singly charged particles	~ $4.5\mu\text{m}$ at 0.3 lpm ~ $1.0\mu\text{m}$ at 1.5 lpm
Electrode diameters	22.0 / 28.8 mm
Classification length	250 mm
Voltage display	Backlit LCD
Status indicator	OK / overcurrent / voltage not achieved
Voltage selection	Local control or by remote analogue voltage
Remote control voltage input	2–10 VDC, BNC connector
Sample inlet / outlet	6 mm o.d. stub
Power requirements	90–240 VAC, 50/60Hz, 100W Max
Max dimensions (w×d×h)	420 × 300 × 150 mm
Weight	3.5 kg
All specifications subject to change without notice	