
AIM5000 Particle Monitor

for Wet Gas

Sensitive System For Continuous Extractive Particle Concentration Measurement In Accordance With Faraday-Cup Principle.



Applications

The AIM5000 is used for measuring dust concentration in wet gas.

Potential applications e.g.:

- Measurements in saturated gas downstream of desulfurization plants
- Downstream of wet cleaning plants
- Waste incineration plants
- Technological processes.

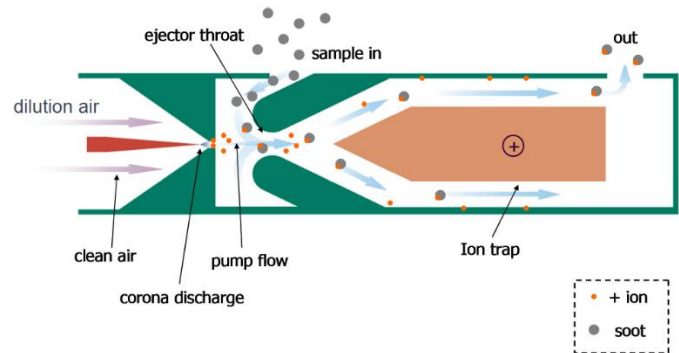
Features

- Measures both particle number and mass
- Compact design
- Low maintenance requirement
- In-situ measuring method with continuous measurement
- High sensitivity
- No laborious device adjustment.

Measuring principle

AIM5000 is based on particle charging and Faraday-Cup which detect the free ions. It is a non-collecting measurement method, ensuring long maintenance and cleaning interval.

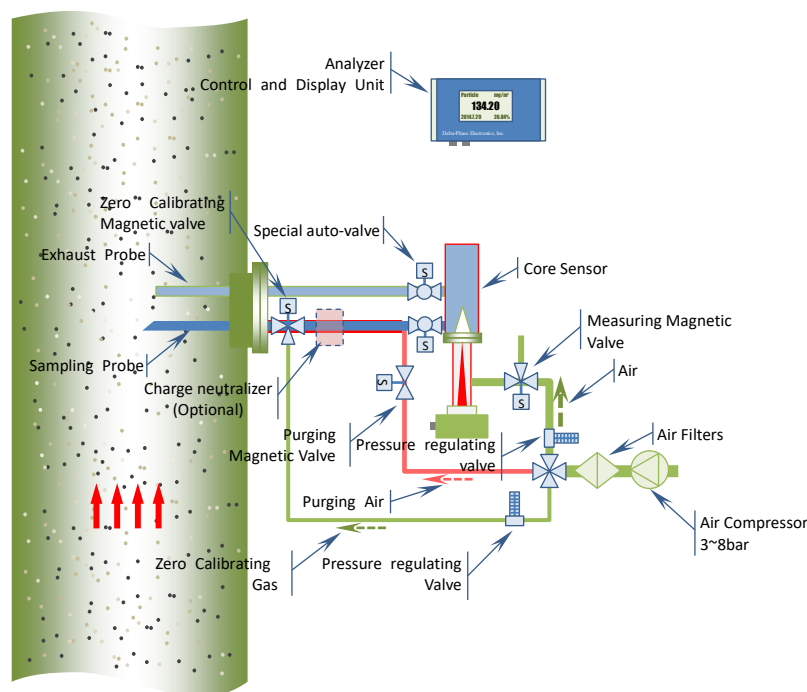
AIM5000 comprises an ejector where the motive fluid flow is generated by pure, particle free gas. Typically this gas is filtered air. The motive fluid flow generates an under pressure to the sample inlet and due to the negative pressure, particle-containing gas flows into the sensor.



The clean motive fluid is ionized before it enters the sensor. This ionized air is then used to charge the particles in the sensor. Mixing between the ionized air and the sample flow is very effective and thus all particles are efficiently charged. Particle charging is relative to the particle size.

Ions that are not attached to the particles are removed from the gas flow by an ion trap. As the electrical mobility of the ions is much higher than the mobility of charged particles, the ion trap effectively removes only the ions.

When the free ions are removed, the only mechanism carrying electrical current is the flow of charged particles. The electrical current escaping from the sensor with the charged particles can be measured and this gives a direct, fast real-time measurement of the particle concentration. The measurement result can be expressed either or both as mass concentration or as number concentration.



SYSTEM COMPONENTS

Sampling Probe, Heating System, Sensor, Analyze Unit, Purging System, Multistage Air Filter.

COMPARE WITH LIGHT SCATTERING

Technology	AIM5000	Light Scattering
Lowest Measurable Particle size*	10nm	200~300nm
Concentration Rang	0.01~300mg/m ³	0.1~5mg/m ³ 0.1~200mg/m ³
Sensitive to Particle Refractive index	No	Yes
Sensitive to Flue Channel Pressure Variations	No	-
Heating of extraction pipe	Yes(180°C)	Yes
*After good filtration technology (wet ESP) 50% or more of mass is at PM-1(<1µm). It's now necessary to cover the full size range and especially the ultrafine (Nano) particle range (most dangerous for lungs and air pollution.		

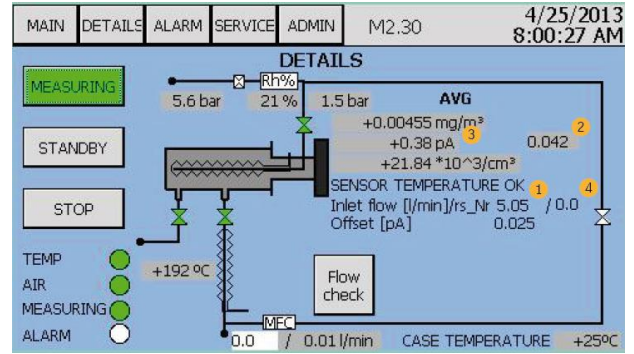
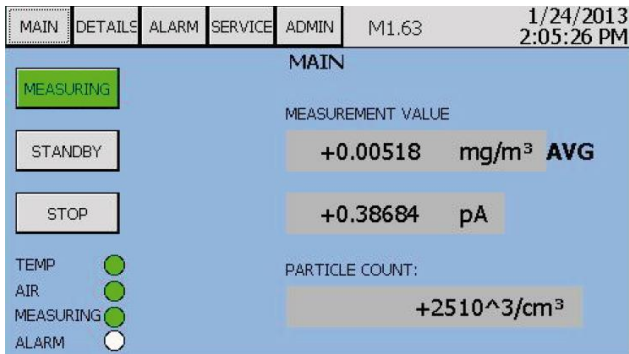
AIM5000 MAINTENANCE

	<5mg/m ³ PM	<100mg/m ³ PM
Inlet Cleaning	Once in two months	Once a month
Sensor Cleaning	Once in six months	Once in three months
Sample Flow Check	Automatic	Automatic
Zero Point Check	Automatic	Automatic
Reference point Check	Automatic	Automatic
Corona Current Check	Automatic	Automatic
Impedance (Contamination) Check	Automatic	Automatic
Calibration	Once a year	Once a year

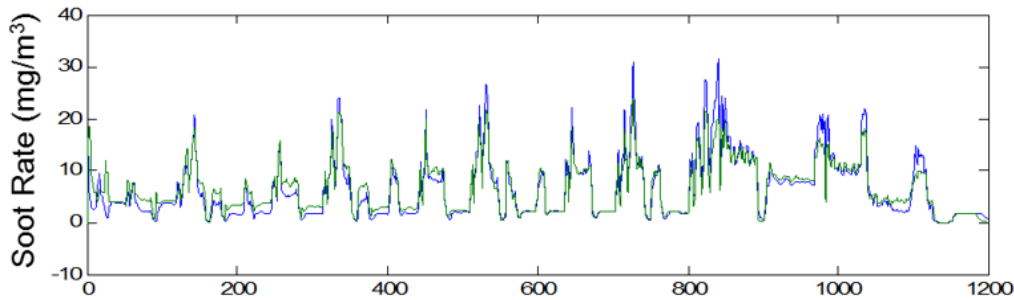
SPECIFICATION

Measuring Principle	Electrical Charging of Particles	Sampling Temp.	392 °F (200 °C); 1562 °F (850 °C) is optional
Measuring Range	1 µg/m ³ - 250 mg/m ³ 10 µg/m ³ - 500 mg/m ³	Sampling Humidity	> 100% R.H.
Resolution	0.01 µg/m ³	Sampling Pressure	1 to 10 bar
Ambient Temp.	-4 °F to 131 °F (-20 to 55 °C)	Sampling Flow	8 to 10 L/min
Respond Time	0.s Depend on sampling line length	Probe Material	Stainless Steel 316L
Analyzer Power	230 VAC, 50/60 Hz, 400 W	Probe Flange	DN100, PN6
Heater Power	230 VAC, 50/60 Hz, 100 W/m	Protect for High Dust	Bypass for High Dust
IP Rate	IP65		
Output	4 to 20mA @ 600 Ω; RS 485 Modbus; USB 2.0, wifi, LAN	Instrument Air Requirement	No water, No oil, -10 °C dew point; Pressure 3 to 10bar

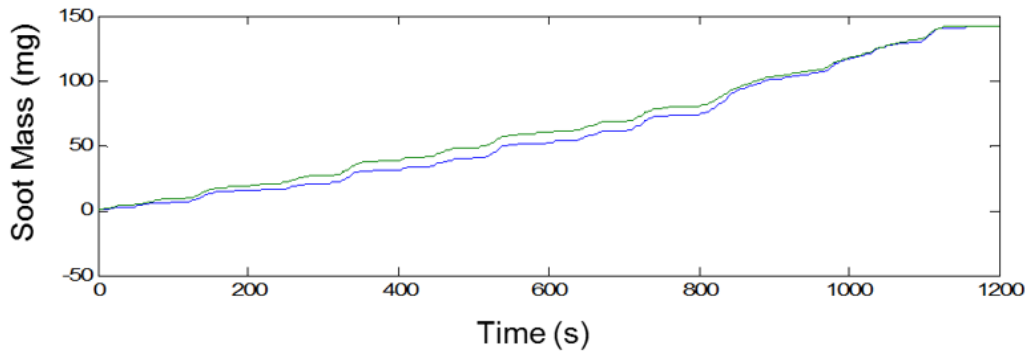
DISPLAY INTERFACE



Correlation with Microbalance Measurement



■ = Microbalance
 ■ = AIM5000



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