

Indicative Particulate Emissions Monitor

PROCESS & EMISSIONS MONITORING SYSTEMS



ELECTRODYNAMIC™
INSIDE

SPECIFIC FEATURES:

- Reliable indicative measurement of particulate emissions using unique *ElectroDynamic®* Probe Electrification technology
- Satisfies indicative monitoring and recording requirements for dust collectors, according to Local Authority PPC Process Guidance Notes for Part B installations
- PRO version permits multichannel networked system for plant-wide monitoring of emissions (for up to 32 sensors)
- Inbuilt data logging for long-term emissions and alarm data

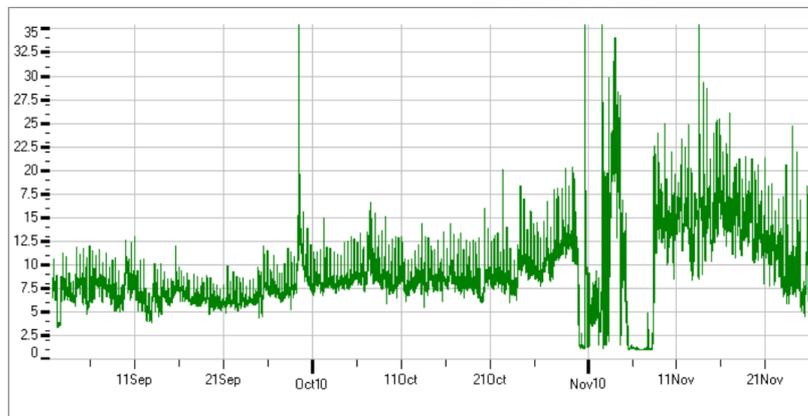


TECHNOLOGY

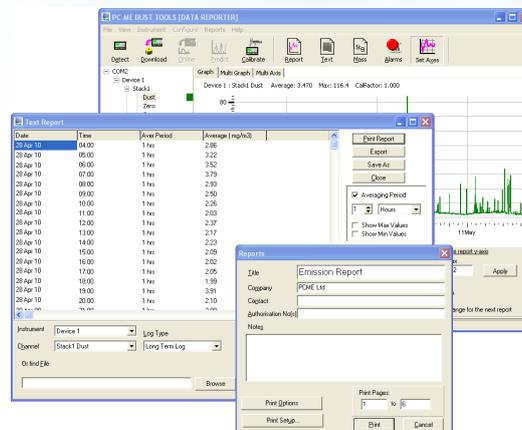
SYSTEM DESCRIPTION AND PRODUCT RANGE

The PCME VIEW 273 is designed for indicative particulate emission monitoring for long-term process trending and analysis, where performance approvals are not necessary. Emissions can be scaled to a known reference level, such as during normal bagfilter operation, which allows easy analysis of changes in bagfilter performance and corresponding settings for instant and average alarm levels.

The inbuilt long-term data logging calculates and stores emissions averages (uncalibrated) and alarm event data, for satisfying the indicative monitoring and recording requirements for dust collectors, as specified in Local Authority Pollution Prevention and Control (PPC) Process Guidance Notes for Part B installations.



Long-term process trend and emissions analysis using the PC-ME DUST TOOLS software tool



Data Reporter module in the PC-ME DUST TOOLS software suite enables text reporting of long-term emission averages

Alarm Data

The inbuilt alarm log stores all defined alarm events. This data can be viewed "on-screen" or downloaded to a PC and enables storage and reporting of:

- Emission alarms (both instant and average)
- Bag-leak detection warning alarms.
- Broken bag detection alarms.

Emissions Reporting

The inclusion of an inbuilt LT data logger allows for:

- Reporting of emission averages for environmental compliance (using PC-ME DUST TOOLS software with the Data Reporter module).
- Long-term process trend analysis for process optimisation and reduced emissions.

Emissions and alarm data is displayed at the control unit and additionally via optional PC-ME DUST TOOLS PC software tool with powerful graphing and reporting tools, and remote configuration and backup for single-channel or multi-channel systems.

PRINCIPLES OF OPERATION

The instruments use ENVEA's unique and patented ElectroDynamics® Probe Electrification technology. The sensor electronics measure the current signature created by particles interacting with the grounded sensing rod which protrudes into the stack. The electronics extract a specific frequency band of this signal and electronically filter out the DC current caused by particle collisions. This signal may be correlated to dust concentration by comparison to the results of an isokinetic sample for those types of industrial stack applications for which the instrument is designed (see Application Conditions).

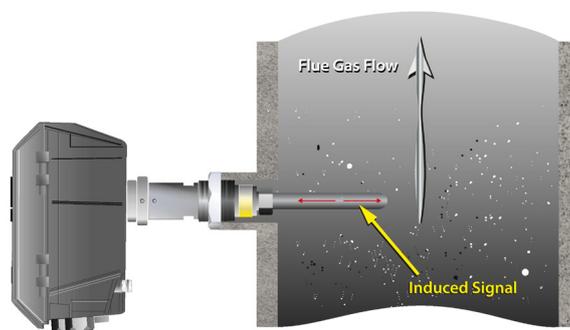
Core features of the ElectroDynamic® Probe Electrification technology are that the signal generated is:

- Unaffected by contamination on the sensor rod (which may cause signal drift issues for other systems).
- Not affected by velocity variations within typical bagfilter velocity ranges (see separate TUV approvals for ENVEA technology).
- Reliable and stable in the target applications for the instrument (see Process Conditions above). Identical ENVEA technology to this is used in the PCME QAL 991 instrument, which was the first ever probe electrification instrument to become TUV and MCERTS approved against the exacting standard of EN15267-3 for QAL1.

Technology Comparisons and Benefits

Compared to DC triboelectric systems and 'induction sensing and protected probe systems' *ElectroDynamics*® systems have the following added benefits:

- Tolerance to contamination on the rod.
- Stable results and calibrations (protected probes are not necessary in dry applications and, therefore, drift caused by electrostatic charging effects is avoided).
- Reduced sensitivity to the effects of changing velocity.



Compared to other types of AC systems, *ElectroDynamics*® systems have the following added benefit:

- An optimised frequency spectrum to extend the velocity range over which the system has no cross-sensitivity to changing velocity (see TUV approvals).

PRODUCT FEATURES

PROCESS AND APPLICATION CONDITIONS

- Indicative (uncalibrated) measurement ranges from 0-10 mg/m³ to 0-500 mg/m³ (automatic range changes).
- Long-term zero drift: < 0.1 mg/m³
- Recommended maintenance inspection frequency: every 6 months
- For stack measurement, but not suitable for electrostatic precipitators (ESPs) or applications with water droplets.
- Stack diameter: Ø100 mm to 6 m
- For use in bagfilter applications with a flow of 8-20 m/s, no restrictions.

FEATURES AND NETWORK LAYOUT

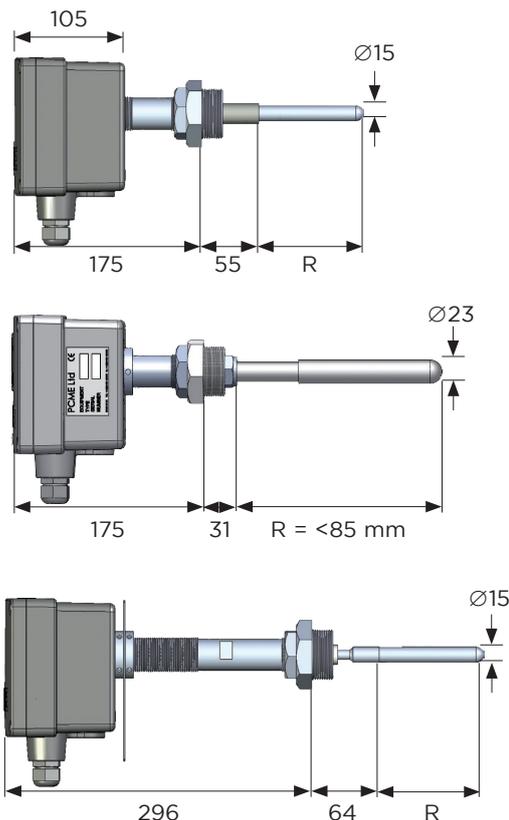
- Expandable up to 32 dust sensors digitally linked to central control unit (PRO version).
- Alarms (with configurable delay) based on both rolling average data and instantaneous data for reliable plant failure detection and diagnostics.
- Unique graphics display and data logger (for trend analysis).
- Secure data and password protection.
- Auto-ranging feature (instrument adjusts its dynamic range to track fast-moving dust pulses typically found after reverse-jet baghouses) to ensure good measurement.
- Accepts inputs from analysers for on-board normalisation (T, oxygen, P).*
- Integrates with PC-ME DUST TOOLS reporting and analysis software for on-line control and historical reporting using a PC or laptop.
- PRO version available for expansion of the system (up to 32 sensors).

*Requires an Auxiliary Input Module (AIM).



Typical multi-sensor system

SENSOR DIMENSIONS AND OPTIONS



PCME VIEW 273 Sensor Specifications		
Sensor Variants	Standard sensor	0-250°C, option: up to 400°C*
	Insulated sensor	0-250°C*
Ambient Temperature Range	-20°C to 50°C	
Enclosure Dimensions	W 184 x H 133 x D 105 mm (excl. cable glands and hinges)	
Protection Rating	IP65	
Enclosure Material	Die-cast aluminium (epoxy coated)	
Cable Entries	2x M20 cable glands	
Weight	1.8 kg (standard sensor)	
Sensor Probe Material	316 Stainless steel, insulated: PTFE-coated stainless steel	
Rod Lengths	100-1000mm (Ex versions: up to 800mm)	
Stack Connection	1 1/2 in. BSP (female) <i>Note: ensure the opening/port hole in stack wall is at least Ø45mm.</i>	
Power Supply Voltage	24V DC (via the control unit or PSR)	
Current Consumption	average load: 35 mA	
Local Output	RS-485 connection (to control unit)	
Air Purge Requirements	May be required on some applications. Requires air purge fitting and external supply of 5-10 litres/minute of dry, clean instrument air.	
Cable type	4-core, screened (10 m supplied as standard)	
Hazardous Zone Classification	ATEX / IECEx Dust zones 20/21 (Cat.1D) and 22 (Cat.3D)	

*Non-Ex versions only.

Note: Dimensions in mm. R = rod length in mm.

TECHNICAL SPECIFICATIONS- CONTROL UNITS AND NET MODULES

Network Controllers		Standard Controller	ProController
Overview	Number of sensors/channels	1	1-32
	Display	Two-tone grey, backlit graphical LCD	High-contrast, anti-glare 7" (viewable) TFT LCD
	Multiple Data Viewing	PC or RS-485	PC/RS-485/Ethernet simultaneously
	Dimensions	W220 x H124 x D80 mm	W390 x H221 x D118 mm
	Power supply voltage	100-240V AC (50/60 Hz)	85-265V AC (50/60 Hz)
	Protection Rating	IP65	IP66
	Ambient Temperature Range	-20°C to 50°C	-20°C to 50°C
Features and Functions	Navigation keys	UP /DOWN/LEFT/RIGHT/ENTER	UP /DOWN/LEFT/RIGHT/ENTER plus 5 function keys: 3x short-cut keys and 2 user-programmable keys
	Icon-driven, multilingual menus	n/a	✓
	Secure password protection	✓	✓
	Sensor system setup and configuration options	✓	✓
	Configurable emission alarm levels	✓	✓
	Sensor calibration screens	✓	✓
Data Logging*	Seamless integration with existing control units and sensors	n/a	✓
	Long-term Log**	12 months @ 15 minutes	48 months @ 15 minutes
	Short-term Log	7 days @1 minute	28 days @ 1 minute
	Pulse Log	8 hours @ 1 seconds	32 hours @ 1 second
System Outputs	Alarm Log	500 entries	500 entries
	Ethernet (RJ45)	n/a	Connection type: 100Base-T/Tx 100 Mb/s
	USB 2.0	n/a	Suitable for connecting to a local PC or laptop
	Relays	2 off (programmable)	4 off (programmable)
	4-20mA	1 off (programmable)	4 off (programmable)
System Inputs	RS-485	1	1
	Digital	1	4
	User selectable for: PLANT OFF indication, Bag-filter cleaning sequences, multiple calibrations	1	4
	4-20mA	0	2

*Data logging capacity for one sensor. Data stored varies per sensor type. Please consult ENVEA for specific data.

A The probe does not generate heat; therefore, the surface temperature is dependent upon the stack temperature, maximal 250 °C (480 °F), depending on the build.

B At monitoring point. Please note that imperial temperatures given arenominal values.

Network Accessories		Standard Controller	Pro Controller
Network Modules (can be connected to Controller Network systems to provide additional Inputs and Outputs)	Analogue Output Module (AOM) provides 8 additional 4-20 mA outputs definable to sensors/channels	1	1-8
	Auxiliary Input Module (AIM) provides 4 additional digital inputs, plus 4 additional relay outputs	1	1-8
	Relay Output Module (ROM) provides 8 additional relay outputs	1	1-8
	SPUR provides sensor network connection and local isolation during maintenance	1	1-32
	Power Supply Repeater (PSR) provides voltage and signal boost for extended cable runs and large sensor networks	1	1-8

	IECEX	ATEX
	ZONE 20	
Certificate number:	IECEX SIR 09.0126X	Sira 09ATEX9306X
Certificate code:	Outside stack (enclosure):	
	Ex tb IIIC T80°C Db IP66 Ta = -20°C to +55°C	Ex tb IIIC T80°C Db IP66 Ta = -20°C to +55°C
	Inside stack (probe^B):	
	Ex ta IIIC Da IP66 Ta = -20°C to +250°C	Ex ta IIIC Da IP66 Ta = -20°C to +250°C II 2/1D
	ZONE 22	
Certificate number:	IECEX SIR 09.0126X	Sira 10ATEX4144X
Certificate code:	Outside stack (enclosure):	
	Ex tc IIIC T80°C Dc IP66 Ta = -20°C to +55°C	Ex tc IIIC T80°C Dc IP66 Ta = -20°C to +55°C
	Inside stack (probe^A):	
	Ex tc IIIC Dc IP66 Ta = -20°C to +250°C	Ex tc IIIC Dc IP66 Ta = -20°C to +250°C II 3D

ABOUT ENVEA

As a progressive environmental Company, ENVEA specialises in particulate measurement for industrial processes. With a worldwide reputation for reliability, innovation and technological excellence, the Company produces under the trademark envea™ equipment for concentration and mass monitoring for regulatory, environmental and process control requirements. A dedicated team of qualified application and sales engineers is always on hand and should be consulted in the selection and usage of the most suitable equipment for any particulate application.



ENVEA UK
ENVEA House Rose and Crown Road
Swavesey / Cambridge - UK CB24 4RB
☎ +44 (0)1480 468200
✉ contact.gb@envea.global

