

# PARTICULATE EMISSION MONITOR



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## WHAT IT DOES

- Continuous monitoring of fabric filter baghouses outlet emissions
- Provides dual alarm relays (early warning and set maximum limit)
- Allows easy setting through a built-in digital display and keypad interface
- Has a 4-20mA fails-safe output to feed a PLC or other devices
- Features a Modbus Real Time U (RS485) output
- Guarantee maximum data integrity thanks to automatic short-circuit check
- Allows true measurement of  $\text{mg}/\text{m}^3$  through reference isokinetic testing
- Manual zero and span checks can be performed
- It's ATEX Zone 22 (Dust) and IECEx certified
- Compliant to US-EPA MACT
- Wide range of dust level response starting from below  $0.1 \text{ mg}/\text{m}^3$
- Acts as a preventive maintenance tool



## PRODUCT DESCRIPTION

The Goyen | Mecair PEM is the best option when it comes to process or environmental emissions monitoring. Featuring a robust yet compact design, it combines sensor and a powerful user interface in a single transmitter. Its impressively wide operating range and certifications, makes it the perfect choice when dealing with tough to threat applications. Thanks to the 4-20 mA output combined with an RS485 Modbus, Goyen | Mecair particulate emission monitor can easily be integrated in other systems.

The PEM utilizes a unique probe electrification technology which provides much better performances than conventional DC triboelectric systems as well as alternative AC systems. This allows extending the velocity range over which the system has no cross sensitivity to changing velocity. Thanks to that technology, the PEM is also unaffected by build-up of particulate on the sensing rod, thus eliminating signal drift concerns.

A charge signature is induced by particulates in the airstream interacting with the sensing rod. The PEM extracts a specific frequency band from the induced AC current signature and filter

out the DC current generated by direct particle collisions. In order to reject signals falling outside a pre-defined frequency range, the so resulting signal is electronically filtered. Thanks to that, Goyen | Mecair filter failure alarms are less susceptible to changes in particle velocity and are not affected by any particulate contamination on the sensing rod.

Also this technology, not relying on particles colliding with the probe, is able to measure a more representative area of the stack and eliminate the need of long sensor probe rods.

Thanks to the digital averaging of readings in combination with the alarm delay feature, by properly setting the delay period, the system will exclude short term signal increases associated with pulse cleaning of filters. This translates into a much lower likelihood of having false alarms.

## OPERATIONAL RANGE

- Suitable for a wide range of dust collectors designs and configurations
- Dust level response:  $<0.1 \text{ mg}/\text{m}^3$  to  $500 \text{ mg}/\text{m}^3$  ( $<0.003 \text{ mg}/\text{ft}^3$  to  $14 \text{ mg}/\text{ft}^3$ )
- Flue gas velocity from 4m/sec
- Flue gas temperature up to  $+250^\circ\text{C}$  ( $+482^\circ\text{F}$ )
- Ambient temperature from  $-20^\circ\text{C}$  to  $+55^\circ\text{C}$  ( $-4^\circ\text{F}$  to  $+131^\circ\text{F}$ )
- Duct sizes from 0.5m
- Hazardous area ATEX II 3D and IECEx

## BENEFITS

- Reduce plant downtime thank to real-time emission monitoring for preventive maintenance
- Data averaging and alarm delay user selectable to avoid false alarms
- Two alarms levels can be independently set by the user
- Password protected user interface
- Quality assurance and self-test
- Suitable for all particles regardless of composition
- Extremely wide range of concentration and mass flow
- Seamless interface into industrial controls systems, such as PLC

## FEATURES

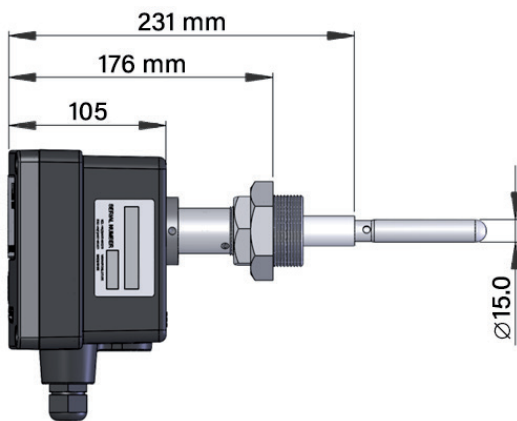
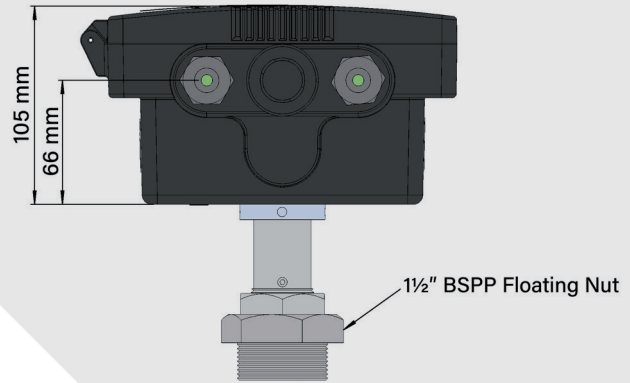
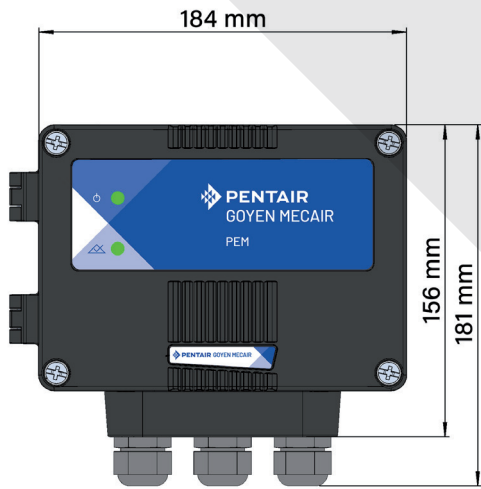
- Instrument drift and minimum detection level below 0.1 mg/m<sup>3</sup> with leak monitoring to 500mg/m<sup>3</sup>
- Scaling factor (mg/m<sup>3</sup>)
- Keypad and digital display within instrument
- Intuitive multilevel user interface (user/engineering) with password protection
- Tri-color external status LED (power/fault alarms)
- Short-circuit automatic check to detect insulator contamination
- Manual zero and span check
- Modbus Real Time U (RS485) output
- Dependable 4-20 mA output
- Sensor sensitivity adjustment
- Unique probe electrification technology
- ATEX II 3D and IECEx rated
- US-EPA MACT compliant

## PROCESS AND APPLICATION CONDITIONS

Stack temperature range	-20 to 250°C (-4 to 480°F)
Application conditions	Suitable for measurement in non-condensing flue gases. <b>Note:</b> not suitable for use downstream of ESPs or in applications with water droplets.
Minimum detection level	<0.1 mg/m <sup>3</sup>
Measurement range	up to 500 mg/m <sup>3</sup>
Scaling method	Scaling Factor (mg/m <sup>3</sup> )
Ambient temperature C	-20 to 55°C (-4 to 130°F)

## SENSOR SPECIFICATION

Sensor variant	Standard sensor: 0-250°C (up to 480°F)
Sensor type	Ex dust stack monitor with Mk5 enclosure with stainless steel probe.
Enclosure dimensions	W 184 × H 181 × D 105 mm (7.2 × 7 × 4 in., nom.), incl. cable glands
Enclosure rating	IP66 (with hinged lid closed)
Enclosure material	LM6M (epoxy coated)
Outputs	<ul style="list-style-type: none"> <li>• 4-20 mA output (isolated, 500Ω)</li> <li>• Fault alarm relay (SPST 1 A @24 V DC), fail safe</li> <li>• RS-485 output (Modbus)</li> </ul>
Inputs	
Power requirements	115-240 V AC, 50/60 Hz, 32 mA
Cable entries	3 × M20 cable glands
Stack connection	1.5" BSP
User controls	4 × Setup keys (internal keypad)
External indicators	2 × LEDs (for power and fault alarms)



**PROBE ROD LENGTH** 300mm | 600mm | 1000mm

**ORDERING CODES** Please note that along with the PEM code you must always order either the P300, P600 or P1000 (respectively for the 300 mm long rod, the 600 mm long rod and the 1000 mm long rod)

**NOTES** Imperial temperatures given are nominal values