Particulate

Continuous particulate emission monitor by beta ray attenuation

Model BETA 5M

Applications:
• Municipal and hazardous waste incinerators
• Large electrical plants
• Paper mills
• Glass industries
• Fertilizer plants

Exclusive features:
• Complies with EN 13284-2. QAL 1 certified.
• Isokinetic sampling in compliance with French NF-X 44052, international ISO 9096 and US EPA (CFR 40, Part 60, Appendix A, Methods 5 & 7) standards
• Mass measurement method in compliance with betra gauge standards NF-X 43017 and ISO 10473: the measurement is not affected by particulate size or colour changes.
• Sampling probe and all wetted parts made of 316L stainless steel (sampling probe made of Hastelloy for wet applications), thermo regulated at 170°C (140°C for version BETA 5M/H)
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Specifications:
- Ranges:
  - particulate: 2 to 4 000 mg/Nm³
  - velocity: 4 to 40 m/s
- M lower detectable limit: 0.1 mg/Nm³
- Accuracy: 10% from 0.1 to 30 mg
- Autonomy: 5 000 measurements (approx 6 months)
- Beta gauge assembly:
  - very low activity Carbon 14 source (1.6 MBq±15%)
  - Geiger-Müller detector
- Housing: IP55 polyester tight box
- Dim.: 750 x 300 x 750 mm (W x D x H)
- Weight: approx. 60 kg (without probe)
- Operating temperature: -10°C to +45°C
- Communication:
  - serial: RS 232 or 422
  - analogue: 2 to 8 outputs (0-1V or 0-20mA or 4-20mA)
  - alarms: 1 general alarm dry contact

Utilities:
- Power supply: 230V, 50 Hz (4 kVA max.)
- Dry, oil-free air: 6 bars, 30 Nm³/h (peaks)

Options:
- Flexible or rigid sampling probe (several lengths are available)
- Support unit (for flexible probes)
- Suspended support unit (for rigid probes)

Operating principle:
Model Beta 5 M is an automatic analyzer for measuring the concentration of particulate emitted in the flue gas from industrial installations.

Particulate are sampled isokinetically into the flue gas and deposited on a filter strip, which is weighed before and after the deposit.

Isokinetic sampling is achieved thanks to the regulation of the sample flow rate according to the flue gas flow rate in the stack.

The mass of particulate deposit on the fibre glass filter is measured, independently of particle size, chemical composition and physical properties, using the beta gauge principle (weighing method in compliance with ISO 10473 standard).

The measurement is made using a differential method, which takes into account the tare of the blank filter.

The flue gas flow rate and the stack cross-section being known, the dust concentration can be converted into an hourly dust mass emission into the atmosphere.

A microprocessor-controlled computer displays the results as mg/Nm³.

Description:
Model Beta 5M system is composed of three main subsystems:
- a sample probe (rigid or flexible), equipped with an automatic shut off valve to protect the nozzle when not in use.
- a measurement unit, designed to withstand hostile environments, including the following components:
  - mobile nozzle, designed to allow the automatic advance of the filter tape, and the vacuum seal needed during the sampling cycle.
  - filter tape feed: a motor, working with an optical marking device, allows the precise positioning of the filter tape.
  - pneumatics, which include a venturi for flow rate measurements, and the eductor with a motor-driven valve, to maintain the sample flow rate via compressed air flow to the eductor.
  - beta gauge assembly, designed to measure the particulate mass by differential measurement before and after sampling.
- a specially designed support unit, to install the measurement unit at the stack sampling point, made of a suspended stainless steel frame mounted on the stack or fixed on the platform.