The mobile filter diagnosis device PFM 14 K is a highly sensitive system for tribo-electric in-situ monitoring of dusty emissions. Thereby a qualitative monitoring of the exhaust gas is done.

The device is a complete measuring system which is designed as a portable case. It consists of a measuring case with an integrated operating unit and an electronic recorder for graphic presentation and storage. The embedded power bank offers the possibility of an offline power supply for up to twelve hours.

The lower segment of the case is a combined box with all necessary accessories (e.g. probe, connecting cables).

**Application**

The PFM 14 K serves the temporary control of dust emissions. Applied as filter monitoring device it is an effective implement to detect and localise damages at filtering precipitators at early stage. Configured as dust measuring device it can be used for continuous monitoring of clean gas contents and dust contents of filtering precipitators.

By the device visible and invisible exhaust plumes can be avoided. The monitoring furthermore enables directed maintenance procedures and serves the avoidance of product losses.

**Function**

The measurement with the PFM 14 K is carried out via the tribo-electric measuring method.

For that matter the measuring gas in the exhaust gas flow is gathered by means of the probe rod. By the passing as well as impinging dust particles a charge exchange takes place between these and the probe rod.

From the discharged current a signal is generated which depends on the mechanical and electrical characteristics of the dust. The dust-proportional signal which is generated by the microcontroller integrated in the device is the degree for the dust content of the exhaust.
Technical data

Housing: complete measuring system designed as portable measuring case (incl. electronic recorder) and accessories box; IP 54; protection class 1

Dimensions: approx. 500 mm x 450 mm x 250 mm (w x h x d)

Weight: approx. 12 kg

Probe:
- tribo-electric probe consisting of probe head with mountable probe rods
- IP 65; protection class 1
- probe rod: electrically isolated from housing, variable length though combinable parts
- immersion depth: dependent on application
- probe connection cable: 5 m (max. distance to measuring case)

Display/operating:
- operating unit with graphic display (128 x 64 Pixel) and 4 operating keys
- switches at signal module of the probe

Registration:
electronic recorder with graphic display; internal storage, SD card slot, USB connection

Ambient temperature: -20...+50 °C

Relative humidity: no special sensitivity

Dew-point spread: min. +5 K

Measuring gas temperature: max. 280 °C

Flow velocity: min. 3 m/s

Measuring range of dust: 0...100% (qualitative) resp. 0.1...1000 mg/m³ (quantitative, dependent on adjusted amplification, dust type and measuring gas characteristics)

Amplification levels: 16 (4 via operating unit, 4 via probe)

Operational availability: immediately after switch-on of power supply

Calibration: by gravimetric comparison measurements (for trend measurement and filter analyses not required)

Digital outputs (only internal):
3 status signals max. 24 V DC at 0.1 A (for failure, maintenance, maintenance request, limit value 1 and 2); load capacity: max. 60 Vp, max. 75 mA; forward resistance: max. 10 Ω

Process connection: 1” welding sleeve with inside thread (standard, not part of the scope of supply), alternatively applicable for ½” welding sleeve or Tri-Clamp adapter DN20

Power supply:
230 V AC, 50-60 Hz, 15 VA; offline power supply by power bank possible, operation time approx. 12 h

Highlights of the device

- design as portable case → easy and safe handling of the complete system
- immediate monitoring of the clean gas dust content after filter systems
- comfortable measuring design by variable length of the probe rod
- graphic presentation and storage by integrated recorder
- offline power supply by power bank
- easy mounting
- first-class price-performance ratio

Special models are possible on request.