

New: Black Carbon with CARUSSO

Protection by Air Pollution Control

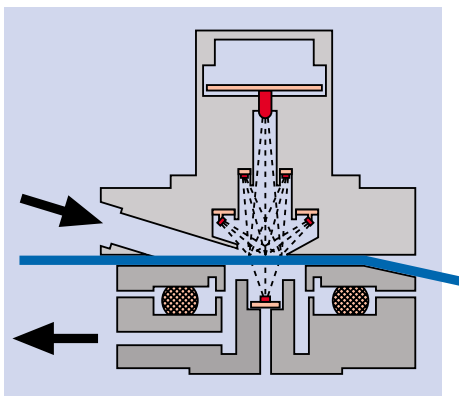
The new CARUSSO measures continuously and monitors the particulate pollutant species black carbon expressed as mass concentration of elemental carbon (EC) (ng/m^3) in ambient air.

Among all pollutants that are caused by or related to traffic, black carbon is to be considered as one of the most important substances producing cancer.

Especially due to the extremely small distance between the combustors being responsible for the black carbon pollution and the human beings, the measurement of this pollutant is particularly important with regard to keep the hygienic conditions of the air at a high standard.

Operating Principle

The ambient air is taken by a speed controlled pump through a sampling inlet or a flexible pipe and pulled through the tape. Particles are deposited on the filter. The Single Filter Spot principle is used. A new cycle starts when a clean section of the filter tape moves into the measuring position.



The monitor determines the fraction of elemental carbon suspended in the ambient atmosphere. The principle of determination is based on a combination of the reflectometer method at certain defined scattering angles and the transmission. With this method, also multiple scattering is taken into consideration.

The differential pressure principle is utilized to measure the air flow rate. After passing the filter tape, the air to be measured passes through an orifice plate. The flow rate is then calculated from the pressure drop measured at the orifice plate.

Features and Properties

- Continuous measuring principle with a multi-angle photometer: combination of the reflectometer method at certain scattering angles and the transmission.
- Permanent, internal check with log-book.
- Maintenance-free, change of the filter tape after 3-4 months (normal ambient air conditions).
- Functionality check possible via serial interface.
- Status messages.
- Adjustable flowrate, default value is $1 \text{ m}^3/\text{h}$.
- Reference made to operating flow rate at the sampling head or to standard flow rate.
- Two serial interfaces ensuring a measuring network and printer or maintenance PC to be simultaneously connected to the monitor on site.

Technical Data

Method:

Multi angle photometer

Limit of detection:

2 min. base: $< 100 \text{ ng}/\text{m}^3$

10 min. base: $< 50 \text{ ng}/\text{m}^3$

30 min. base: $< 20 \text{ ng}/\text{m}^3$

95% confidence niveau,

1000 l/h

Filter change: at 20% transmission (ca. $30 \mu\text{g}$)



Active measurement time: $> 98\%$

Air flow regulation:

deviation $< 1\%$ (PID type)

Filter tape: glass fiber type GF 10

Data output:

serial interface RS 232

analog output: $0/4\text{mA} \dots 20\text{mA}$

or $0\text{V} \dots 10\text{V}$

Data memory:

18,560 concentration values, log book

with 1,632 entries, 385 daily averages

Operating temperature: $-10 \dots 40^\circ\text{C}$

Power supply:

100 to 240V, 50 to 60 Hz ($\pm 10\%$)

Pump type:

RPM regulated rotary vane pump

Size: Width 483 mm (19")

Height 310 mm (7 HU)

Depth 320 (400) mm

Weight: approx. 25 kg

