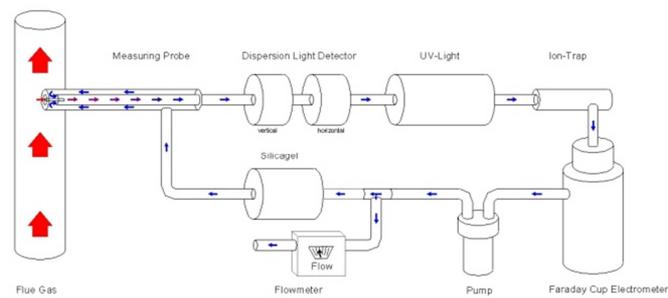


VERETA® FINE DUST MEASURING SYSTEM

A new measuring method allows the determination of dust content without extensive gravimetric analysis (weighing of a filter cartridge): The measuring results are available instantly and can be used for an optimal adjustment of an oven.

Measuring Method

This innovative measuring method has been developed in cooperation with research institutes and universities. The challenge was to enable measuring large (>1 µm) particles as well as those in the nanometer range. This phenomenon is used with the help of a dispersion light detector.



functional schematic

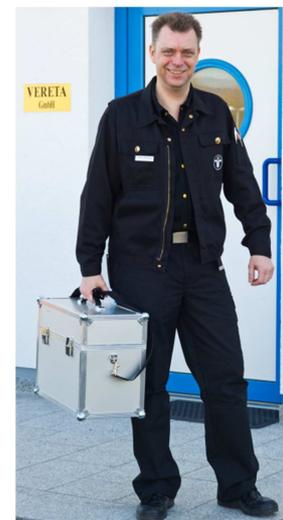
When passing the detector the dust particles generate countable light flashes. This method works for particles bigger than 1 µm. Therefore in a second step the dust will be ionized with UV light and the generated load can be measured. When the particles are ionized polycyclic aromatic hydrocarbon (PAH`s) are charged on the particles surface. This method is especially suitable for smallest particle down to 20 nm. In connection with the

stored calibration curves for different solid fuels the VERETA® measuring system can determine the dust content of the exhaust within seconds. Due to the high sensitivity of the measuring system it is possible drying out the sucked in probe gas with already measured, cleaned and dried exhaust. Due to this recirculation the dew point has no influence on the measuring.

The Dust Measuring System

The measuring system comes in a robust aluminium case and optimized for the daily work in the chimney sweepers field. Operation is possible via a dirt protected, integrated keyboard or alternatively with a connected laptop. The included special software enables recording of the fine dust content during the measuring period. Measured values are graphically displayed fast and enable an optimal adjustment of the fire place.

The VERETA® fine dust measuring unit measures according to the 1.BImSchV (Bundesimmissionsschutzverordnung / Immission regulation of Germany). Measuring time according to the 1.BImSchV normally is 15 minutes. The results can then be printed with an optional available thermo printer. The complete process for the 1.BImSchV inclusive calibration, preparation and post-processing can be completed in less than half an hour. Using of the VERETA® Fine Dust Measuring System will result in a substantial efficiency improvement. The saved time therefore can be used to advice customers in details on heating and environmental themes.



chimney sweeper

Operation

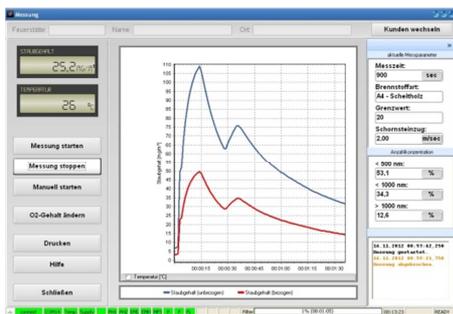
After switch-on a short test on the status of fine dust measuring system is instantly ready for measuring. The operator can select the stored adjustments such as measuring time or type of burning goods. Also selection between “BImSchV” and “manual” measuring respectively is possible. When measuring with the BImSchV selection the average value of the dust content is displayed. Changes of the dust content thus can be seen immediately. After measuring dismantling and storing

is done in a very fast way. Replacement of filters or internal cleaning will be shown before new measuring. Life times of the filters are up to 50 measurements at standard conditions.

Measuring with a Laptop

In PC operation mode changes of measuring parameters are possible via the easy to use program. Measuring time and type of solid fuel can be selected according to the stored values. The measured values are updated once in a second and displayed graphically. At the same time a measuring file containing time, actual values and measuring result is generated and stored. Those values can be further analyzed with a spread sheet program such as MS Excel.

Additional functions for Laboratories



PC Software Screen

For laboratory applications there are additional functions available, such as adjusting the suction velocity. You can set up velocities between 0.6 m/s and 7.0 m/s. In some cases it is necessary to switch the nozzle in front of the measuring probe.

Further the particle size distribution of particulate matter in the flue gas is displayed separately. The particle size distribution is shown by their percentage in three ranges (<500 nm, <1000 nm and >1000 nm).

Advantages compared to the Gravimetric Method

Electro optical measuring method offers numerous advantages with respect to the so far used gravimetric method:

- Immediate result
 - The burning adjustment can be optimized
- Reduced maintenance
 - The VERETA® System must be cleaned much fewer as only smallest exhaust probes are taken.
- No cleaning with compressed air
 - Cleaning with ambient air with the integrated pump is sufficient to prepare the unit for a new measurement.
- No time consuming weighing process
- On line system control

Technical Data

Weight:	approx. 11kg
Dimension of case:	530x260x390 mm (L x W x H)
Dimension of rod:	330 mm (Ø 12 mm)
Length of rod hose:	3.000 mm
Length of mains cable:	2.000 mm
Supply:	230 VAC or 24 VDC battery pack
Interface:	RS232 / USB (adapter)
Display:	Digital (integrated) or PC
Measuring range:	0... 375 mg/m ³
Tolerances:	50 % of selected upper range value
Resolution:	0.1 mg/m ³
Connection socket for thermo element type K	



fine dust measuring system