

Productinfo: Power Plant Probe

Plane filter in heated probe

Probe special for the use in power plants.

The probe can be used in power plants with high concentration of sulphuric acid droplets in the flue gas. The filter can be heated above the dew point of the sulphuric acid and avoid wrongness dust measurement. Because the collected sulphuric acid droplets on the filter can sham up to 10 mg/m³ dust.



One exchangeable plane filter holder is in the front of a heated probe. Around of this plane filter holder and the conical entry is winding a second high performance heater cartridge. This avoids condensation at the filter (gas temperature above dew point).

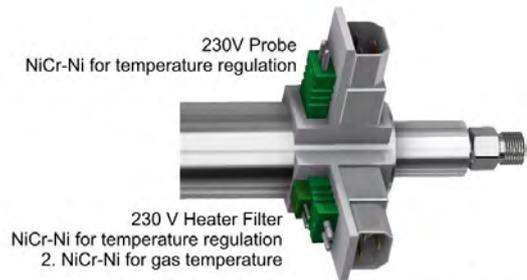
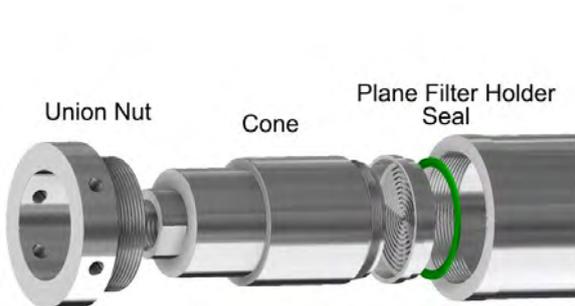
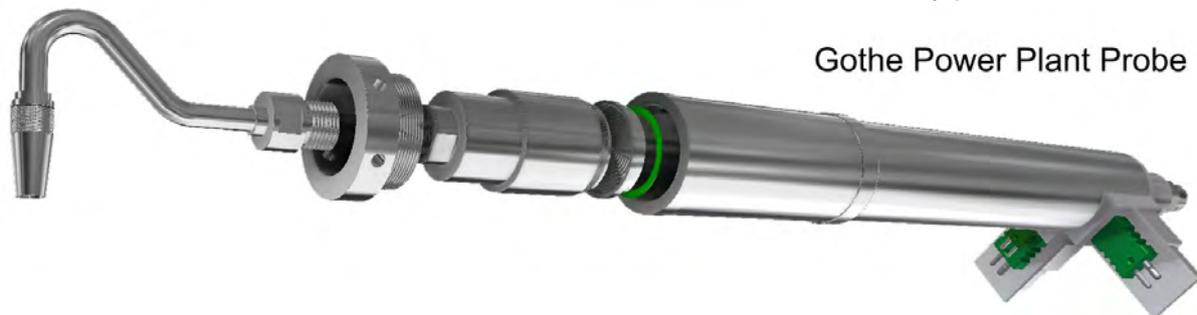
At the exit can screwed extensions

Three thermocouples for optimal controlling and monitoring:

1. Thermocouple for temperature controlling at heater cartridge filter
2. Thermocouple for temperature controlling at heater cartridge probe
3. Thermocouple directly behind plane filter device in gas flow. With this thermocouple can control the gas temperature to avoid condensation at the filter.

The development and validation take place in numerous tests at the power plant Herne . Germany-.

Available filter variation: Plane filter with Ø 45 mm or tubular filter with safety plane filter:



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Measurement of dust concentration in flue gases with sulfuric acid aerosols

The preliminary tests in a fired with brown coal power plant with wet flue gas outlet and a broad range of coal-fired power plants with flue gas reheating shown that in the presence of sulfuric acid aerosols online registered light-optical operation instruments indicates significant higher dust concentration.

In the gravimetric calibration in addition to solid particles even sulfuric acid droplets are deposited on the filter surface, with chemical reactions. Furthermore, sulfuric acid remains in the filter pores, whereby high temperatures of up to 180°C are necessary for the equilibration of the filters to remove the free sulfuric acid almost quantitatively. Complete evaporation of sulfuric acid is not always guaranteed.

The definition according to DIN EN 13284-1 exclude clearly the measurement of sulfuric acid aerosols.

A calibration of the light scattering techniques can only be used when the operating dust measurement is not influenced by acid aerosols. The Gothe power plant probe includes a gravimetric measurement method for the determination of dust in flue gases behind REA (in front of chimney), in which the influence of sulfuric acid aerosols can be completely eliminated.

By safe and controlled increase in the temperature of the sampling filter up to 180°C above the dew point of sulfuric acid, the sulfuric acid condensation can be prevented on the sampling filter.

Experiments in power plant Lippendorf and Scholven, Block B confirm that with the Gothe power plant probe no deposits of sulfuric acid aerosols take place on the filter material.

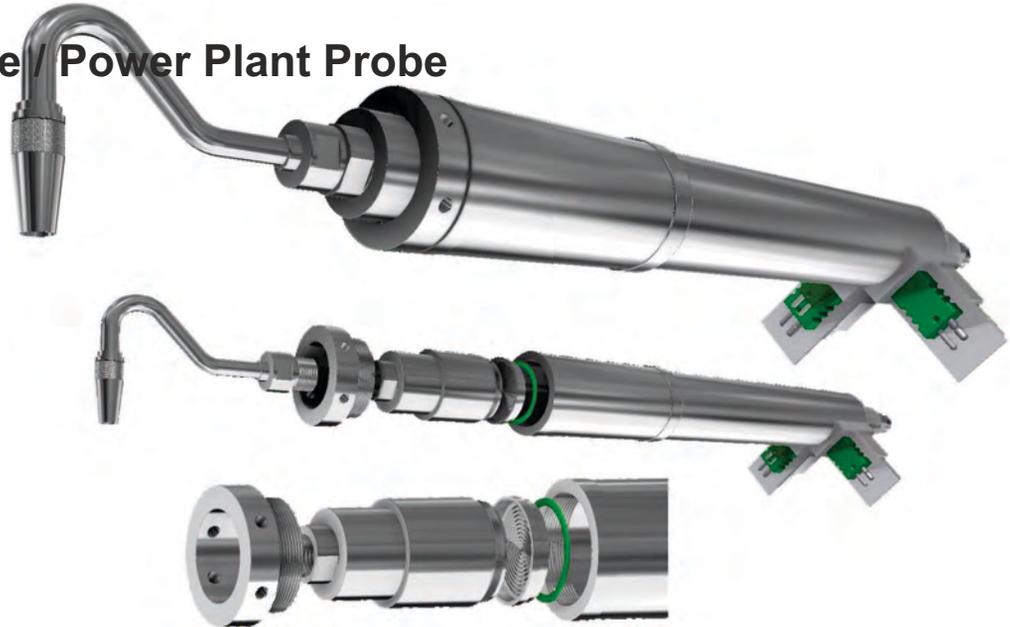
In summary, the following statements can be made:

- A reliable calibration of flue gas measurement devices is only possible by the use of Gothe power plant probe with a heated filter of 180°C.
- Because of the possibility of condensate return flow, especially in a flue gas sample from the top, is generally the heating from the probe necessary.

Additional literature:

1. Gefahrstoffe-Reinhaltung der Luft, 64 (2007) Nr. 4
2. Merkblatt Powertech VGB-M 301 (2008)

Kraftwersonde / Power Plant Probe



Kraftwerksonde
Version mit Planfilterhalter
entsprechend VDI 2066 / EN 13284

Heizung / Heater
↓ ↓ ↓ ↓ ↓

Power plant probe
Version with plane filter holder
according to VDI 2066 / EN 13284



Planfilterhalter (rot)
Plane filter holder (red)

↑ ↑ ↑ ↑ ↑
Heizung / Heater

Kraftwerksonde
Version mit Hülse und Planfilter
entsprechend VDI 2066

Power plant probe
Version with tubular and plane filter
according to VDI 2066



Hülse / Cartridge

Planfilterhalter
Plane filter holder

Heizung / Heater
↓ ↓ ↓ ↓ ↓

Eingangsteil
Entry part



Hülse / Cartridge

Planfilterhalter (rot)
Plane filter holder (red)

↑ ↑ ↑ ↑ ↑
Heizung / Heater

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Kraftwerksonde Versionen

Be/Rd

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