

Carbon in Fly-Ash ONLINE Measurement



Application

There are two main reasons for an online determination of the carbon content in the fly ash of coal fired thermal power stations:

■ Burner control

If combusting with a lack of oxygen the carbon of the coal is not totally burnt. However, too much oxygen generates environment hazardous NOX in the exhaust. Furthermore, the efficiency of the combustion is optimised by controlling the ratio of oxygen and carbon. The optimal content of the carbon in fly ash is in the range of 2 to 4 wt.-%. An ONLINE determination and control of the carbon in fly ash protects the environment and saves fuel and money.

■ The use of fly ash as raw material

To use the fly ash as an ingredient of construction material the carbon content must be below a limit specified by law. Furthermore, fly ash with a carbon content above a defined limit has to be costly deposited as hazardous waste. The online determination of the carbon content in fly ash effects, that the fly ash can be sold instead of expensive depositing.

Solution

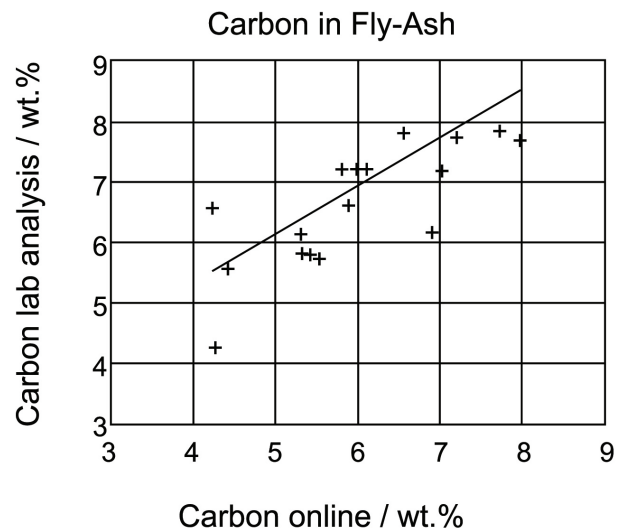
An exact ONLINE measurement of the inhomogenous distributed carbon in fly ash needs a representative amount of material. This is realized by collecting the material falling from the electrostatic filter in the measuring chute, which is equipped with two valves to control the material flow with a cycle of about 120 seconds. If the measuring chute cannot be installed as a replacement of an existing shaft, a bypass is available, at which the measurement can easily be done.

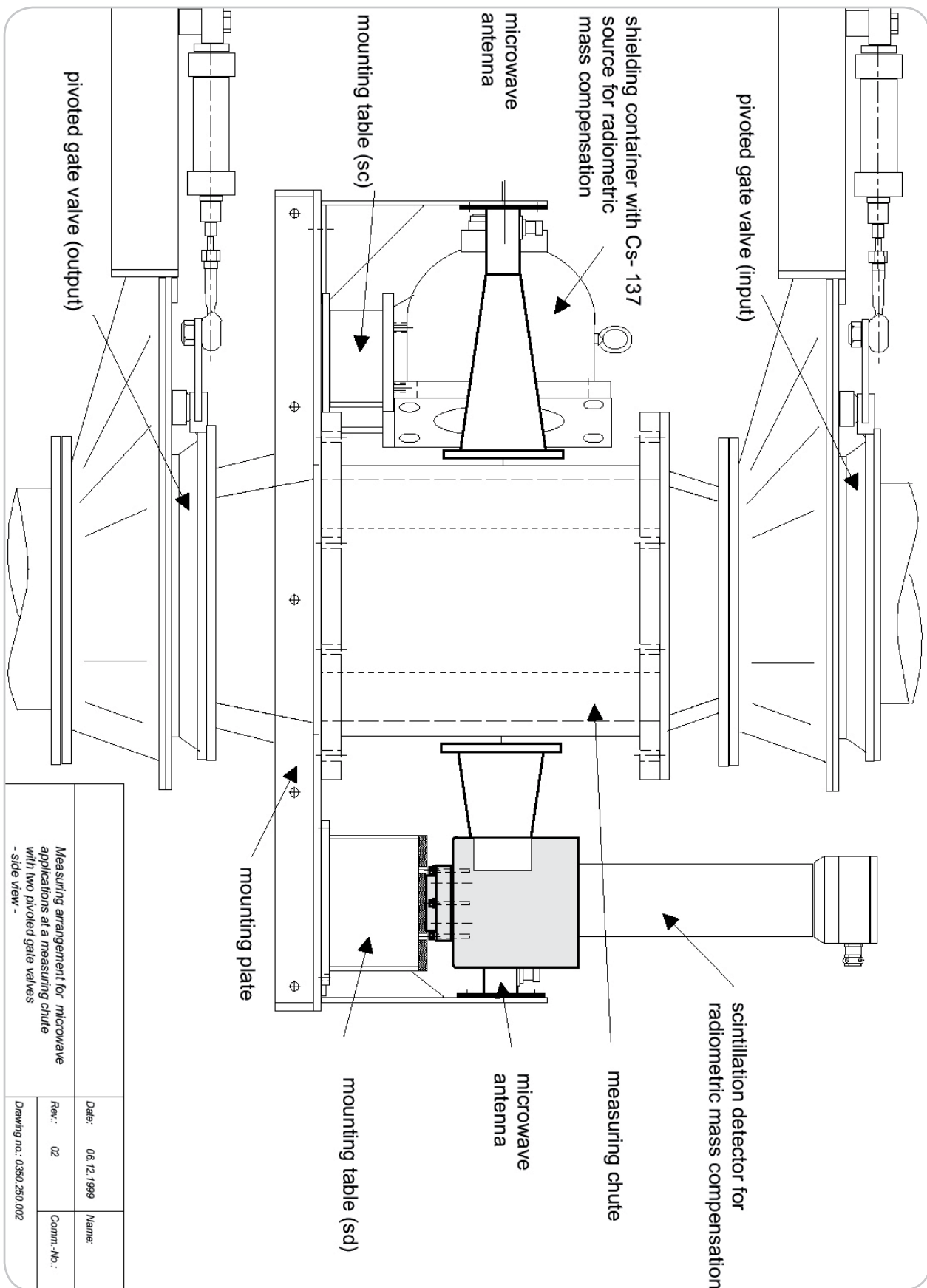
The measurement works contactless with the microwave meter PMD-2450. Hereby the chute is transmitted with microwaves and the attenuation and phase-shift caused by the fly-ash is measured. The microwave antennas are installed outside the chute. As an option a compensation of varying bulk density is provided.

A scetch of the setup is on the backside. Taking in account the sampling error according ISO/DIS 15239

an accuracy of better then ± 0.2 wt.-% is achieved (one standard deviation).

Detailed technical data are available in the prospect of the PMD-2450.





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