ProDetec
Measure . Prevent . Protect . Control

Application Notes – Power Plant Emissions Monitoring

The IED (Industrial Emission directive), article 32 gives member states a right to require power plants to decrease their emissions linearly between2016 and 2020. The Regulation applies to solid, liquid or gaseous fuel burning energy production units with a nominal power output between 5MW and 50 MW. In Finland this directive has been applied since MAY 2010.The Regulation shall apply to new plants immediately and to existing plants no later than 01/01/2018. The plants need to provide emission monitoring information to the authorities regarding O2, CO and DUST.

One of the first applications was about 8 Dust monitors which has been installed into the stacks of one of the biggest Scandinavian power producers. The company's main areas of operation are the Nordic and the Baltic countries, Russia and Poland. Their expertise is in CO2-free and efficient electricity and heat production. All of the supplied instruments are operating free of failure since 2010.

Sintrol created for this application a whole CEMS package which contains particulate measurements, O2 and CO measurements with the following options:

Particulate Measurement:
Robust and maintenance-free dust monitors Sintrol S300 Series.

- S303 trend measurement with a mA output
- S304 which can be additionally calibrated to mg/m3

Oxygen (O2) measurement:

- ZrO-based oxygen measurements
- Electrochemical cell or a paramagnetic measurement, coupled with IR measurement of CO.

Carbon monoxide (CO) Measurement:

- NDIR-based sample taking devices, which can be combined with oxygen measurement.

The delivery includes in Finland documentation, commissioning, operation guidance, maintenance contracts, and if necessary, installation services, with the exception of the metal work. The scope of delivery for other countries is subject of discussion.

Principle of Operation

Sintrol dust monitors are based on a unique Inductive Electrification technology. The measurement is based on particles interacting with an isolated probe mounted into the duct or stack. When moving particles pass nearby or hit the probe a signal is induced. This signal is then processed through a series of Sintrol's advanced algorithms to filter out the noise and provide the most accurate dust measurement output.

Classic triboelectric technology is based on the DC signal, which is caused by particles making contact with the sensor to transfer charges. Compared to DC based measurements, the Inductive Electrification technology is more sensitive and minimizes the influence of sensor contamination, temperature drift and velocity changes. By using the Inductive Electrification technology, it is possible to reach dust concentration measurement thresholds as low as 0.01 mg/m3.

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