

Application Notes – Emissions Monitoring Bioethanol Industry

At Sintrol, we are committed to implementing solutions for our customer's problems. Our products are based on our unique Inductive Electrification technology and developed using a flexible modular based platform that allows us to tailor our products for the customer. While many dust monitoring systems are tailored towards the government regulated emissions limits, there are intermediary measurement points that can be just as critical to the costs and regulatory compliance of the end user. Managing the filtration systems is not only good for emissions, but also a strong indicator to help with maintenance and overall plant costs.

Objective

Develop a continuous emissions monitoring system for four stacks to measure and report dust concentrations.

Problem

An Italian bioethanol production plant wanted to have a single solution to measure dust emissions in its four stacks. Since the output values needed to be reported continuously to the authorities, the monitors needed to be TÜV certified meeting the QAL1 requirements.

The measuring points were the following:

CEMS 1 Incinerator:

Temperature 180°C, Diameter 1.5 m

CEMS 2 Boiler:

Temperature 160°C, Diameter 0.8 m

CEMS 3 Thermo Oxydator:

Temperature 250°C, Diameter 0.7 m

CEMS 4 Straw Crusher:

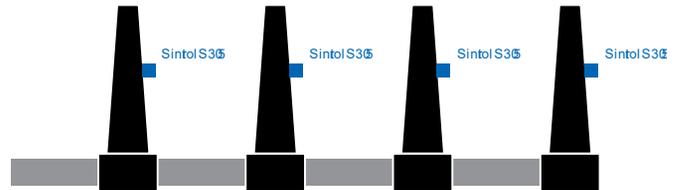
Temperature 90°C, Diameter 0.5 m

Additionally, the customer wanted to have a single back up unit in case a monitor needed to come down

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.



for maintenance. This way, there would be little to no downtime in the plant.

Solution

The customer installed a Sintrol S305 monitor in each of its four stacks. The monitor for CEMS 1 Incinerator was supplied with a one-meter long probe, while the other three were fitted with a 0.5m probe. Additionally, the plant took a single Sintrol S305 unit as a backup unit with a one-meter probe. Each Sintrol S305 monitor is TÜV certified meeting the QAL 1 requirements so the plant operator was able to provide official emissions readings to the authorities. Due to the sensitive nature of the process, the emissions control was very strict and the Sintrol S305 provided the necessary highly accurate reading. Using Sintrol S305 monitors, the operator was able to save on installation time and costs compared to the alternative opacity solutions.

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