

Application Notes – Silo Application in a Sugar Plant

This European sugar plant supplies over 200.000 tons of granulated sugar each year. The sugar processing plants are large complex processing plants where dust accumulation is inevitable. Good housekeeping practice and safety issues initiated a need to improve.

Dust monitors are installed in the skirt of each silo. Each silo has two potential major leak points.

1. **FAILURE OF UNLOADING POINT:** occasionally a sugar clump or clumps will block the conveying of sugar towards the process causing the flow of sugar coming from the silo to disperse onto the floor and causing a large amount product loss and emitting a large dust cloud.
2. **MAJOR LEAK:** Around the base of the silo there are secondary extraction points which have a potential to burst. Even though this is extremely rare a local dust monitor will raise an alarm and plant workers can act quickly and accordingly.

The other point of installation is in the long **CONVEYOR BELT TUNNEL** between production and the Silos. If there is a blockage or failure along the way, the sugar will quickly accumulate once again causing product loss and unwanted dust clouds.

The Solution was to install 6 DUMO ambient dust monitors into areas of concern to monitor ambient air in an ATEX environment. The 4...20mA output is brought to the DCS which in turn is interfaced to the fire alarm system.

Key Features

- Cost effective reliable monitoring
- Sensitive particulate readings
- Technology not prone to sensor contamination
- Unique automatic set-up feature
- Low maintenance
- Continuous monitoring
- Atex approval for hazardous atmospheres

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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