

Application Notes – Continuous dust monitoring to assure flour mill hygiene

A local Finnish flour mill produces flours, flour mixes and pre-mixes from rye, wheat and oats for export and local bakeries. The capacity is about 400 tons per day and the distribution to local bakeries and to export is frequent

The milling process consists of several stages including storage, cleaning, crushing, milling, sifting and mixing. The product is moved through the different stages of the process with pressure transfer. As in any milling process a lot of dust is produced and must be managed carefully to limit any dispersion into the facility. Good housekeeping and a clean environment are most important to the plant manager to avoid any microbiological contamination. The fear is that a filter leak causes product to be emitted into an unseen place such as the roof which in turn could cause an accumulation of product. If accumulated product isn't cleaned up immediately it could cause unwanted microbiological growth or attract rodents or insects. Places of measurement are found after the filtration systems in the mill as well as bakeries.

Expected Benefits:

- Assures mill and bakery hygiene in unmanned areas
- Give real time alarms of any filter leakage
- Early detection of small filter leaks



Process Conditions:

- Non-ATEX environment after filtration
- Flow rates: up to 25m/s
- Humidity: below dew point
- Temperature: -20 to +40 °C

Solution:

- In total 21 Instruments were installed to critical positions after the filters.
- This project was one of the first projects, realized with the new Snifter line and contained Data logging and comparison to the older versions.
- Due to the higher resolution the customer decided to complete the factory with the new Snifter line.
- The Instruments were wired by the mA loop to customers DCS and for the test via RS485 to Sintrol's Dust Log 8 Data logging Software.

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.

Comment of the End User: *"For future extensions of the factory Sintrol dust meters will be an integer part of the specification"*

ProDetec Pty. Ltd.

P. +61 (02) 9620 8700
 E. info@prodetec.com.au
 A. 17/38 Powers Rd, Seven Hills NSW 2147
 PO. PO Box 3184,
 North Parramatta BC, NSW 1750