

Ambient Dust Monitoring in Sugar Silos and Conveying Areas

Early warning of abnormal dust events in ATEX-classified process areas



Continuous ambient dust monitoring helps sugar producers detect dust releases around silos and conveying systems, respond faster to process failures, reduce product loss and support safer operation in areas where combustible dust may be present.



The Challenge

A European sugar plant producing more than 200,000 tonnes of granulated sugar per year wanted better visibility into dust events around its silos and conveying system. Sugar handling can generate airborne dust, making early detection important for housekeeping, product-loss control and plant safety.

Two potential release points were identified around each silo: the unloading point, where blockages could cause sugar to spill and create a large dust cloud, and secondary extraction points around the silo base, where a major leak could release dust locally. The conveyor tunnel between production and the silos was another critical area because a blockage or failure could quickly lead to material accumulation and airborne dust.



Results

Six critical monitoring points brought into continuous plant supervision.

The monitoring arrangement gave the plant continuous visibility into dust conditions at locations where process failures could lead to product loss and sudden dust releases.

- ➔ Earlier indication of abnormal dust releases around silos and conveyors
- ➔ Faster response to unloading blockages, spills and local leaks
- ➔ Integration of dust alarms into the plant DCS and fire alarm system
- ➔ Better support for systematic housekeeping and combustible-dust risk management



The Solution

The plant installed six Sintrol Dumo ambient dust monitors at the identified risk points, including silo areas and the conveyor tunnel. The monitors were used in an ATEX-classified environment to provide continuous indication of changes in ambient dust levels.

The 4-20 mA signals were connected to the plant DCS, which was interfaced with the fire alarm system. This gave operators a direct alarm path for abnormal dust events and supported faster response to blockages, spills or local leaks.

Today's Sintrol solution

Ambient dust monitoring: DumoPro is Sintrol's current continuous workplace and ambient dust monitor for industrial environments. It provides 24/7 real-time trend monitoring of total suspended particles (TSP), with Auto Setup, two independent alarm relays, an isolated 4-20 mA output and RS-485 Modbus RTU connectivity.

Hazardous dust areas: DumoPro Ex is ATEX-, IECEx- and US/CAN hazardous-location approved for ambient-air use in Zones 20, 21 and 22, making it directly relevant to combustible-dust applications in sugar and other bulk-material handling environments.

Configuration and diagnostics: DumoPro includes automatic Zero- and Span-checks and can be configured with Sintrol DustTool 2. Its relay, 4-20 mA and Modbus outputs allow alarms and dust trends to be integrated into plant monitoring and control systems.

Centralized monitoring and reporting: For sites with multiple supported Sintrol monitors, DustCloud brings measurement trends, device status and alerts into one cloud-based environment, supporting remote oversight and faster response across multiple monitoring points.

How it works

DumoPro uses Sintrol's Inductive Electrification technology to monitor total suspended particles in ambient air. Signal processing and filtration convert the sensor response into a continuous dust trend that can be used for real-time monitoring, alarms and follow-up of changing conditions around silos and conveying systems.

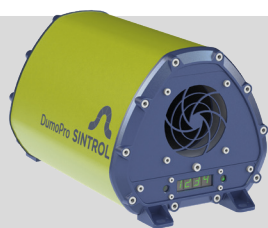
Key monitoring points in the sugar plant

Silo unloading points: Monitoring helps identify abnormal dust releases if sugar flow is interrupted and material spills from the unloading area.

Silo base and extraction points: Local ambient monitoring provides early warning if a leak or extraction-system failure releases dust around the silo.

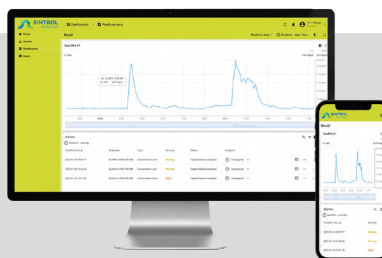
Conveyor tunnel: Continuous monitoring helps detect dust events associated with blockages, material accumulation or conveying failures between production and the silos.

Product portfolio for the case



DumoPro / DumoPro Ex

Ambient dust monitoring



DustCloud

Centralized access to trends and alerts



Sintrol Oy
Ruusilantie 15 | 00390 Helsinki | Finland
Tel. +358 9 561 7360 | info@sintrol.com
sintrol.fi/international

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and manufactured in Finland**

Local Sintrol distributor