

Success story

Prevent grain dust ignition
in bulk silos

**How to secure plant
and personnel safety?**



Our Promise

Endress+Hauser offers a comprehensive solution for multipoint temperature measurement in bulk silos, which ensures plant and personnel safety by preventing product degradation, ensuring product quality, and helping customers stay compliant with industry regulations. The multipoint temperature measurement system provides accurate and reliable temperature measurement at various points throughout the tank silo, giving customers a complete picture of the temperature distribution within the stored material. The system also offers a global stock overview at any time from anywhere, allowing customers to monitor their inventory and ensure that they always have enough raw materials on stock.



The challenge

To develop a temperature monitoring solution for a challenging application in the food industry, especially for monitoring multiple silos of a single location plant.

Customer requirements:

- Precise measurement of three temperature points per silo filled with organic products such as roasted coffee beans
- Identification of a temperature increase above the defined limits in advance
- Ensure consistent product quality

Application challenges:

- Process temperature from +60°C to +80°C (140°F to 176°F)
- Environment with clouds of dust that could adhere to the probe
- Lateral load caused by movement of the coffee beans
- Small sized beans could build up at the measurement probe and cause inaccuracy or detachment of the sensor

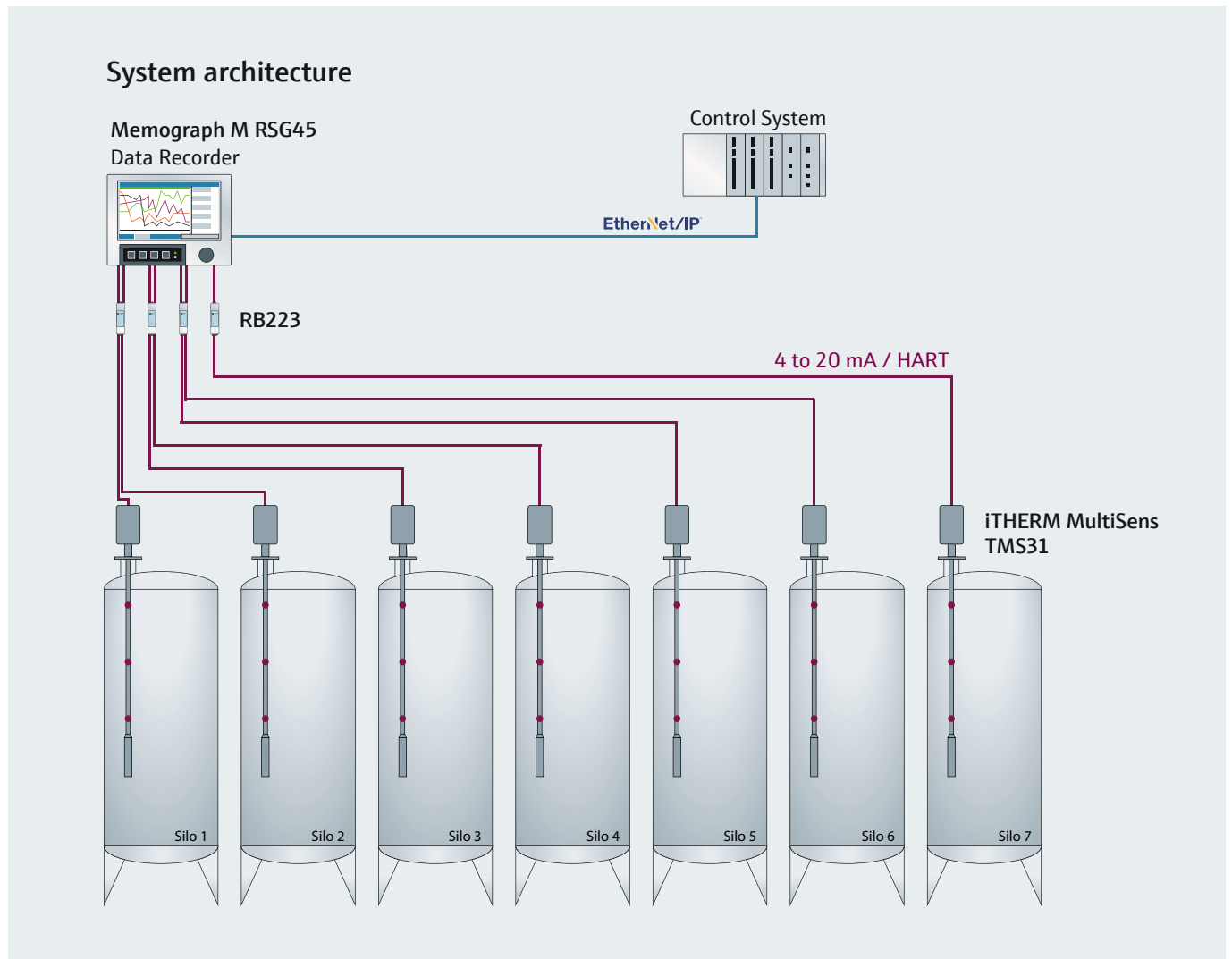
Our solution

The iTHERM MultiSens TMS31 is a customized multipoint thermometer for demanding applications. Its design is adaptable to the customer's application, guaranteeing high performance and durability. And, having only a single entry point reduces the required efforts for installation and creates fewer interferences with the thermal insulation.

Many solutions in the market use electrochemical sensors to detect ignition only when it happens but not before. To solve this problem, we use the Memograph RSG45 advanced data manager with Ethernet IP output for seamless communication to the client's control system.

The temperature signals are handled by two temperature transmitters via HART and integrated for each silo. These diagnostic functions guarantee the prevention of risks before happening.

System architecture



Conceptual architecture for the multipoint temperature measurement in seven silos



iTHERM MultiSens TMS31



Memograph RSG45

Benefits at a glance

- Automatic monitoring of the measured temperature value every second mitigates the risks of explosion
- Continuous operation and process availability can be ensured thanks to the robust design and low maintenance requirements
- Increased availability of the process equipment by preventing maintenance process shutdowns
- Reliable temperature profile measurement to detect hotspots and mitigate risks
- Potential savings in reduction of non-quality products by doing a cross-reference measurement before the grain is sent to production

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CS01823B/60/EN/01.23