

Food Manufacturer's Regular Maintenance Cost and Production Downtime Reduced by Wireless Solution

RESULTS

- Increased roaster availability
- Faster roaster startup
- Higher production throughput
- Improved quality
- 10,000 USD saved in maintenance costs



APPLICATION

Temperature measurement of product inside a rotating roaster

APPLICATION CHARACTERISTICS

Roaster rotating at 30 to 35 rpm

CUSTOMER

Food Manufacturing Company in Asia

CHALLENGE

Accurate and reliable temperature measurement is important in maintaining quality of roasted products. The Instrumentation Engineer of this food manufacturing plant wanted to eliminate regular maintenance of the slip ring assembly used to measure product temperature inside a rotating roaster. Reducing downtime due to maintenance would mean increased roaster availability and thus increased production throughput.

Two thermocouples wired into a slip ring assembly were used to measure the surface temperature of the rotating roaster. The slip ring converts the temperature reading into resistance and sends it to a Distributed Control System or DCS. Due to high temperature and high humidity of the roasting process, the slip ring contacts began to oxidize sending out erratic readings.

Without accurate temperature measurement, the product would get over-roasted and affect quality. In addition, a fire could potentially occur due to unchecked high process temperature once the slip ring assembly oxidizes. To mitigate this risk, the roaster needed to be turned off so a replacement assembly could be installed. Since it takes about four production days to finish surveying the roaster and mold a new slip ring assembly, frequent oxidation of the slip rings not only increased maintenance cost, but lost four days of production as well.

The Rosemount 648 Wireless Temperature Transmitter enabled an estimated savings of 10,000 USD by eliminating the need to maintain a slip ring assembly prone to oxidation.

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SOLUTION

The Instrumentation Engineer replaced the slip ring assembly with a Rosemount 648 Wireless Temperature Transmitter. This eliminated the need to use a slip ring assembly which was prone to oxidation. The existing thermocouples were connected to the wireless transmitter, which transmits surface temperature measurements to a Smart Wireless Gateway. The wireless network is then integrated into a DCS with OPC to allow data tracking to maintain product quality. The Rosemount 648's Transmitter-Sensor Matching feature eliminates sensor interchangeability error, improving accuracy of measurement for better quality control.

By replacing the slip ring assembly with a Rosemount 648 wireless solution, the plant was able to save an estimated 10,000 USD on maintenance cost. They were also able to improve production throughput as the roaster downtime due to maintenance of the slip ring assembly was eliminated. And with a robust and accurate temperature measurement integrated into a DCS, product quality can be easily monitored and maintained.



Rotating roaster drum with a Rosemount 648 Wireless Temperature Transmitter

RESOURCES

Emerson Food and Beverage Industry

<http://www.emersonprocess.com/foodandbeverage/>

Emerson 648 Wireless Temperature Transmitter

<http://www2.emersonprocess.com/en-US/brands/rosemount/Temperature/Single-Point-Measurement/648-Wireless/Pages/index.aspx>



Rosemount 648 Wireless Temperature Transmitter

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