Reliable Measurements of Coal Silo Levels Improve Inventory Management

Results

- Improved level measurement ensures optimal use of silos
- Adding air purge system eliminated measurement errors
- Reduced transportation costs with less frequent silo refills

Application

Level measurement of coal in storage silos using the Emerson Rosemount™ 5408 Non-Contacting Radar Level Transmitter with parabolic antenna and air purge system

Customer

A global supplier of lime, limestone, and clay products

Challenge

Coal used to heat kilns is stored in 112 ft. silos requiring a level measurement to monitor the inventory to ensure the kilns are always supplied with fuel. Coal is pulled from two silos simultaneously, and level measurements are used to determine when to order more coal. With no place to store surplus coal, good inventory management is essential.

Previously, the company used an ultrasonic level sensor; however, that device would occasionally lock up for no discernable reason. Despite many work orders to investigate a possible cause, none was found.

Because of the unreliable level measurements, there was a reluctance to empty the silo to less than 40%. The result was that the company was not utilizing the volume of the storage and required more frequent fillings with extra transportation costs. Receiving a partial load is costly, and with the endless rounds of maintenance and not fully utilizing the volume of the silo, the company needed a better solution.

Solution

One of the key features of the Emerson Rosemount 5408 Level Transmitter is its standard built-in data historian, which automatically collects and stores data for up to seven days, making troubleshooting much easier. Using the data historian and its accompanying tank radar echo spectrum, large signal peaks were found close to the antenna area that corresponded to the times it locked on high readings. This insight into the change in process conditions was not available with the previous ultrasonic unit. During one of these peaks, an inspection

Rosemount 5408 Non-Contacting Radar Level Transmitter

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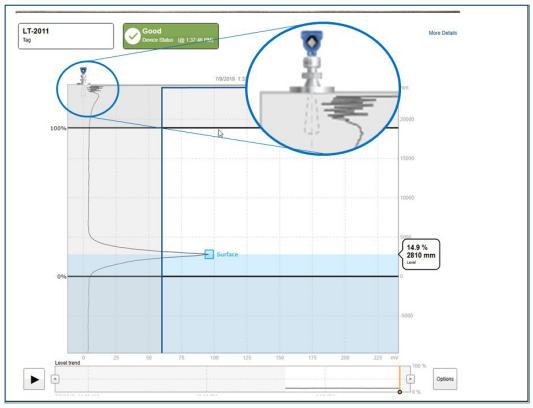
of the device revealed that moisture was condensing on the antenna and causing the high-level readings. This information made it possible to solve the “locking up” problem by installing an air purge system

After that, the radar worked well, providing accurate and reliable measurements. Ultimately, the company purchased and installed a second Rosemount 5408 Level Transmitter to place on the other coal silo, adding both a parabolic antenna and air purge system. Optimized production and improved reliability are the main benefits the company realized.

Resources

Emerson Automation Solutions Industries
Emerson.com/Chemical

Rosemount 5408 Non-Contacting Radar Level Transmitter
Emerson.com/Rosemount5408



The Rosemount 5408 data historian provides a visual record of the measurements over time. Extra echo signal peaks appeared near the top of the coal silo due to the presence of moisture.

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