

Food Manufacturer Reduces Operations Costs and Improves Availability with Guided Wave Radar

RESULTS

- Decreased operations costs
- Increased availability of silo
- Reduced risk of shut down
- Increased safety
- Reduced start-up time



APPLICATION

Shelled corn silo

CUSTOMER

Food Manufacturer in United States

CHALLENGE

A food manufacturing facility had difficulty monitoring the inventory of their shelled corn silos. The shelled corn is unloaded from railcars and stored in 80-ft. (24.4 m) silos for later processing into corn based food products. If the level of the corn gets too high, they risk overfilling and loss of corn. If the level of the corn gets too low, they risk a process shutdown. Previously this customer had tried a phase tracking device to measure the corn level in the silos. This device was unreliable and too erratic to utilize for inventory monitoring. Instead of continuously tracking the corn level during filling and emptying, the phase tracking device showed instantaneous step changes as large as 40-ft. (12.2 m) making the measurement unusable. In addition, the mechanical components could not withstand the silo environment, and the phase tracking cable eventually broke.

Without a usable level measurement, the plant incurred additional labor expenses. Several times a week, maintenance personnel needed to put on safety harnesses and climb to the top of the silos to manually measure the corn level. If the silo went empty between measurements, production would be stopped. Conversely, if the silo overfilled, corn would be wasted and the area would need to be cleaned. Lastly, the lack of level information prevented this customer from optimizing the schedule for unloading corn railcars.



Figure 1. Rosemount 5303 in 80-ft (24.4 m) tall silo successfully monitors level of shelled corn.

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SOLUTION

This customer installed a Rosemount 5303 Guided Wave Radar with an 68-ft (20.7 m) flexible single lead probe. The Direct Switch Technology within the Rosemount 5303 provides a stronger signal that enables reliable measurement in low dielectric products over long distances. To further insure signal integrity, the probe was furnished with a Long Stud to center it in the 10-in (25.4 cm) high nozzle and prevent contact with the wall of the nozzle. Finally, Probe End Projection was activated as a backup measurement in case the surface signal was to drop below the threshold. This customer purchased start-up services, so skilled Emerson technicians installed and configured the device. Upon start-up the surface signal was strong, and the accuracy was within 0.5-in (12.7 mm) on the 68-ft (20.7 m) measuring range.

This customer experienced many positive business outcomes from the success of the Guided Wave Radar level measurement. Operations costs were reduced, because plant personnel no longer make routine manual measurements. Safety risks were minimized by eliminating maintenance trips to the top of the silo. In addition, the reliable level measurement allowed for increased utilization of the silo capacity and reduced risk of process shutdown. Lastly, the start-up services made for hassle-free commissioning which reduced start-up time. This customer was pleased with the solution and immediately ordered two more 5303 transmitters for additional silos.

RESOURCES

Emerson Process Management Food & Beverage Industry

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

Rosemount 5300 Series Guided Wave Radar

<http://www.emersonprocess.com/rosemount/products/level/m5300b.html>

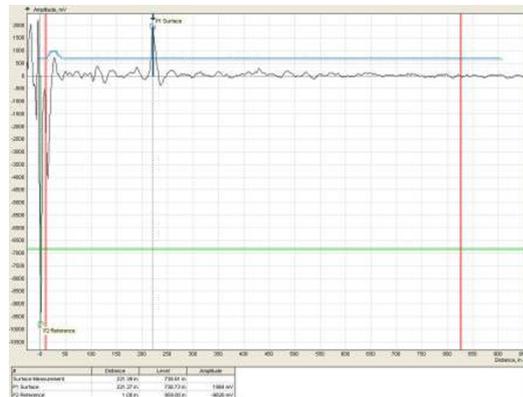


Figure 2. During start-up, the Emerson technician took an echo plot to confirm surface level and saved it for future reference.



Figure 3. Rosemount 5300

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