

Confectionary Manufacturer Eliminates Unscheduled Shutdowns with Guided Wave Radar Cacao Nibs Level Measurement

RESULTS

- Eliminated unscheduled shutdowns
- Increased production
- Reduced maintenance cost



APPLICATION

Chocolate nibs feed tank level measurement

APPLICATION CHARACTERISTICS

Large amounts of fine cacao particulates in the air, frequent sensor coating

CUSTOMER

A leading confectionary manufacturer in North America

CHALLENGE

The confectionary manufacturer processes cacao beans into chocolate liquor which is then used in a variety of products at multiple manufacturing sites. The cacao beans are roasted, cracked and converted into dry cacao nibs. The nibs are then fed pneumatically into three holding tanks. These tanks feed the chocolate liquor production process. Reliable feed tank level measurement is required in order to ensure uninterrupted processing. Suspended cacao dust in the tanks creates a difficult measurement environment.

Capacitance probes were tried first but were unable to reliably measure the level in the dusty conditions. Next a non-Emerson non-contacting radar gage was tried. It was also unable to reliably measure the level in the dusty process conditions. The antenna would become coated with cacao powder leading to loss of measurement. This happened two to three times a week. When this happened, the process was shut down and the antennas in all three tanks were removed and cleaned, then re-installed, and the radar transmitters recalibrated.

Lost production cost \$100,000 per hour and occurred several times a year. The Rosemount 5303 Guided Wave Radar level transmitter has eliminated shutdowns due to chocolate liquor shortages.

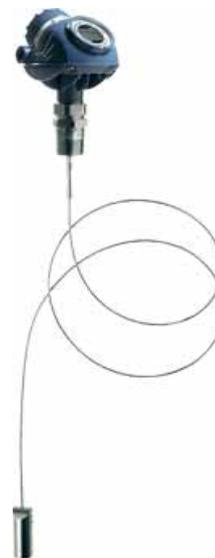


Figure 1. Rosemount 5303 Guided Wave Radar

The cost of maintaining the radar transmitters averaged \$1,120 per week, or almost \$60,000 per year. It also took an average of two hours to perform this maintenance, and an additional one to two hours to restart the process. This resulted in a production loss of six tons of chocolate liquor per week. The liquor is valued at \$20,000 per ton. Without sufficient chocolate liquor in stock to maintain confection production, the manufacturing process was shut down. Lost production cost \$100,000 per hour and occurred several times a year.

SOLUTION

Due to the high concentration of particulates in the air, Rosemount 5303 Guided Wave Radar level transmitters for solids were installed on two of the three feed tanks on a trial basis. The Direct Switch Technology of the GWR made the received signal stronger, resulting to superior ability in handling probe coating and dusty environment, allowing a more robust and reliable measurement. After three months, there were no measurement related shutdowns and additional units were ordered for the 3rd tank. The units have been in operation for over a year now and have been problem-free.

Maintenance cost savings of almost \$60,000 per year have been realized. In addition, chocolate liquor production capacity has increased by over 300 tons per year with a potential value of \$20,000 per ton. This eliminated lost production due to chocolate liquor shortages at both the local and remote sites. This has a potential value of \$100,000 per hour of avoided downtime.

RESOURCES

Emerson Process Management Food & Beverage Industry

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

Rosemount 5300 Series Guided Wave Radar

<http://www2.emersonprocess.com/en-US/brands/rosemount/Level/Guided-Wave-Radar/5300-Series/Pages/index.aspx>

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