

Guided Wave Radar Helps Ethanol Producer Increase Throughput

RESULTS

- Increased operating span of the surge bin measurement allowed greater throughput
- Reduced clogging and production stoppage
- Increased detection of dry solids resulted in a reliable level measurement

APPLICATION

Level of corn surge bin

APPLICATION CHARACTERISTICS

Dry corn solids, abrasive, dusty

CUSTOMER

North American Ethanol producer

CHALLENGE

A new, 60 MGY, dry-grind corn ethanol plant needed a reliable level measurement in a 17-foot tall, corn surge bin. This bin is located a short distance downstream of the corn scalper, which removes cobs and other materials from the individual corn kernels. The corn kernels are held in the storage bin, then they are sent to the hammer mills at the front end of the dry-grind, ethanol process. The company needs to optimize throughput by increasing the volume of corn stored in the bin. If the bin is too full, or the volume/height of the corn is not accurately measured, the grain leg upstream becomes clogged, causing the scalper to stop production.

The company was only running at the middle ten-percent of the bin's span. If they could increase the reliable operating span of the corn bin, they could increase the throughput. The larger the operating span of the surge bin, the better the product throughput.

The company installed a guided wave radar unit from a different vendor, but the stainless steel cable snapped after a few weeks of operation and wrapped around the auger, causing production to stop.

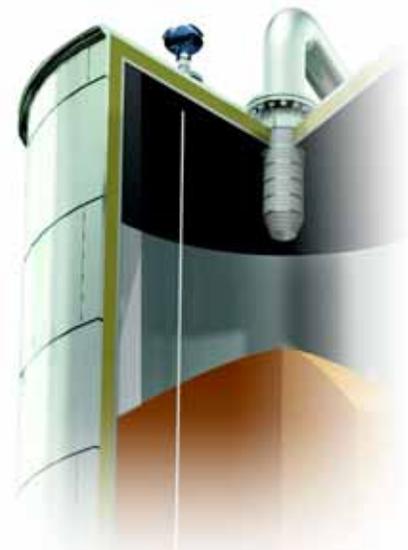
SOLUTION

The company chose the Rosemount 5303 High Performance Guided Wave Radar because it utilizes a Direct Switch Technology function that provides a return radar energy signal two to five times stronger than conventional guided wave radar transmitters. The Rosemount 5303 unit is available with a stronger 6.0 mm flexible single probe which they chose to anchor to the bottom cone of the bin. Combined with the improved signal-to-noise ratio, the 5303 was able to detect the corn more reliably over a longer range than the previous unit.



“The Rosemount 5303 tracks very reliably. The operators can depend on it to maximize our production at the front end of the ethanol process”

Plant Maintenance Manager



The Rosemount 5303 measures solids with dielectric constants as low as 1.4. The measuring range is up to 160 ft. (50 m). Applications include powders and granules, silicon, plastic pellets, cement, fly ash, corn and many more.

ROSEMOUNT

For more information:
www.rosemount.com


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SOLUTION (CONTINUED)

With the Rosemount 5303, the operator is able to increase the control range of the surge bin from a ten percent range to an 80 percent range of the vessel's height. The larger span allows the scalper to do a better job of removing the cobs and allows the plant to increase throughput.

The plant's maintenance manager felt that the Rosemount 5303 tracked the corn level reliably, and operators could depend on it to maximize production at the front end of the ethanol process.

RESOURCES

Rosemount 5300:

<http://www.emersonprocess.com/rosemount/products/level/m5300.html>

<http://www.emersonprocess.com/rosemount/document/notes/00830-0100-4530.pdf>

<http://www.emersonprocess.com/rosemount/document/notes/00840-2300-4811.pdf>

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