

Corn Refinery Saves over \$200K Annually In Corn Stock and Improves Byproduct Quality with Guided Wave Radar

RESULTS

- Over \$200K annual savings in corn stock
- Increased byproduct quality
- Reduced operations costs



APPLICATION

Vetter feed bins: 3-ft. tall

APPLICATION CHARACTERISTICS

Mixture of water, corn fiber, and starch

CUSTOMER

Corn Refinery in United States

CHALLENGE

A corn refinery process engineer was tasked with improving the process of steeping corn fiber into usable starch (free starch). Feed bins funnel a mixture of water and corn fiber into the Vetter screw presses which squeeze out water with usable starch and leave behind a corn fiber byproduct. If the feed bin levels get too high, they risk a messy spill and lost product. If they get too low, the mixture inconsistently feeds into the Vetter screw press.

Previously this customer had tried another manufacturer's non-contacting radar transmitter. The geometry of the small bins combined with limited mounting options made it difficult to get a good return signal. As a result, operators resorted to manual operation of the variable frequency drive (VFD) which drove the speed of the Vetter screw presses.

Without a reliable level measurement, the mixture would inconsistently feed into the Vetter screw press leading to a reduction in recovered starch. The corn refinery compensated by purchasing more corn stock to meet process demands. Furthermore, their byproduct had a high moisture content that did not meet internal specifications. Lastly, they experienced increased operations and maintenance costs due to manual operation of the Vetter screw presses.

“Annually we save a days worth of corn by installing Guided Wave Radars on our wet feed bins.”

Process Engineer

SOLUTION

To solve their problem, this customer installed Rosemount 5301 Guided Wave Radars on their four supply bins feeding the Vetter screw presses. Guided Wave technology is well suited for small bins, because it is less constrained by installation geometry. The Direct Switch Technology allows the use of a single lead probe which can handle significant amounts of coating while providing a strong signal to the surface. They used the level measurement to control the speed of VFD thereby providing a consistent feed of mixture into the Vetter screw press.

This corn refinery experienced excellent business results from the success of the Guided Wave Radar level measurements. By controlling the speed of the VFD, they optimize the functionality of the Vetter screw press. This process improvement saves them over \$200K annually in corn, and increases on spec wet byproduct by more than 30%. With a reliable level measurement, the VFD is now controlled automatically resulting in reduced operations and maintenance costs.

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 1. Rosemount 5300 with single rigid probe.

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