

Absolute Energy LLC Increases Plant Availability and Reduces Energy Costs with Reliable Guided Wave Radar

RESULTS

- Increased plant availability
- Decreased energy and utilities costs
- Reduced maintenance costs
- Lowered risk of equipment damage



APPLICATION

Water levels in condensate receiver for sieve dehydration process

APPLICATION CHARACTERISTICS

Temperature: 296 °F (147 °C) and Pressure: Vacuum to 50 psig (3.45 bar)

CUSTOMER

Absolute Energy LLC in St. Ansgar, Iowa

CHALLENGE

The Maintenance Manager at Absolute Energy LLC, Travis Rosenberg, recognized the need to improve the reliability and availability of the condensate receiver tank on their steam heat exchanger. The availability of the condensate receiver is critical to continuous operation of the heat exchanger and of the molecular sieve dehydration process. If levels get too high in the condensate receiver, temperatures in the heat exchanger drop, which can cause wet ethanol to enter the molecular sieve beds. When that happens, the process has to be shutdown and the ethanol-water mixture has to be reworked.

Previously the condensate receiver measurement was made by DP level transmitters mounted on wet-legs. The high vacuums to low pressure excursions make it challenging for DP technology to reliably monitor the levels in the tank. Since they were mounted on wet-legs, the fill heights in the legs would vary widely, making the measurement inaccurate by 20% at best. DP technology is dependent on density changes, which impacts the reliability in pressure swing applications.

“Our condensate receiver levels went from being a constant headache to hardly noticeable because the GWR is so reliable.”

Travis Rosenberg
Maintenance Manager



Figure 1: Rosemount 5301 Guided Wave Radars mounted on Rosemount 9901 chamber for condensate receiver level control.

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ALTERNATIVE FUELS

As a result of unreliable level measurements, Absolute Energy experienced negative business results. When the condensate levels got too high, the upset led to a molecular sieve dehydration process shutdown. A production shutdown results in a loss of \$20,000 per hour. If temperatures drop in the heat exchanger and the upset occurs before wet process is sent into the sieve beds, the heat exchanger has to be pulled down and restarted. It takes 20-30 minutes to get the process running full speed, resulting in decreased throughput and increased energy costs. This type of upset occurred every other week. If the upset occurs and the sieve beds get wet, the process shutdown lasts between 36 to 48 hours as the beds are pulled down, regenerated, and restarted. While these upsets are uncommon, wet sieve bed occurrences eventually lead to extensive equipment damages that combined cost over \$200,000.

SOLUTION

To address these challenges, Absolute Energy installed a Rosemount 5301 Guided Wave Radar (GWR) combined with the Rosemount 9901 Chamber. As a single point solution, it was mounted on the existing process connections. GWR technology is not dependent on density changes and manages changing pressure conditions without compromising the reliability.

At Absolute Energy, both Travis Rosenberg and the Plant Manager, Tim Hauge, agree they have experienced many positive business results since the GWR installation. The Rosemount 5300 controls reliably levels in the condensate receiver, so this measurement point is no longer a maintenance headache. As a result, they have increased plant availability, decreased energy and utilities costs, reduced maintenance costs, and lowered the risk of equipment damage.

RESOURCES

Emerson Process Management Refining Industry

<http://www.emersonprocess.com/solutions/refining/>

Rosemount 5300 Series - Superior Performance Guided Wave Radar

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

Rosemount 9901 - Chambers for Process Level Instrumentation

<http://www2.emersonprocess.com/en-US/brands/rosemount/Level/Guided-Wave-Radar/9901-Chambers/Pages/index.aspx>



Figure 2: This is the 3-in. diameter Rosemount 9901 Chamber prior to adding insulation.



Figure 3: Rosemount 5301 (GWR) with Rosemount 9901 Chamber.

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