Chevron Phillips Chemical Eliminates Lost Production Time on Processing Tank by Updating Level Installation

RESULTS

- Elimination of lost-production time
- Reduced risk of tank spill-over and environmental fines
- Reduced maintenance costs

"We have had no lost production and better on-stream operation since installing Electronic Remote Sensors"

Tim Anderson
I&E Reliability Team Leader

APPLICATION

Holding Tank

Application Characteristic:

30 foot (9 meter) vessel

Ambient and process temperatures: 0 to 100 °F (-20 to 40 °C)

Process pressure: 7 to 10 PSIG (500 to 700 mbar)

CUSTOMER

Chevron Phillips Chemical, Borger, TX USA

CHALLENGE

Chevron Phillips' Borger, TX facility is a large-scale chemical refinery that makes a variety of products ranging from high-purity hydrocarbons to heat-resistant polymers. At one of the processes, plant engineers were increasingly getting frustrated with maintenance and production issues with a chemical holding tank.

The root cause of the difficulties stemmed from Chevron Phillips' inability to accurately measure the level in the holding tank. A bridle with a magnetic float was used to make the measurement. Because of wide-varying ambient temperature swings that would often go below freezing, electric heat tracing was required along the sensing element on the bridle. However, this proved to be an unreliable solution. The heat tracing would often fail and the magnetic float would freeze, resulting in a false level measurement.

Rosemount 3051S ERS™ System

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Process Management

A false level measurement on the holding vessel posed a significant risk from an environmental standpoint. Process would continue to fill in the tank, but the level measurement would not change. If a tank spill-over were to occur, extensive fines could be mandated from government environmental agencies. The unreliability of the level measurement was also causing unplanned process shutdowns on the vessel. This occurred approximately 4-5 times per year on the one tank alone and required immediate action by maintenance personnel. Finally, the inability to control the process level was causing the vessel to run at less than full capacity.

SOLUTION

The entire bridle assembly was replaced with a 3051S Electronic Remote Sensor system. The 3051S ERS system consisted of two pressure sensors linked together digitally. Differential Pressure was computed in one of the two sensors and sent back to the DCS via a 4-20 mA / HART® signal. Each sensor was ordered with a flanged remote seal to facilitate easy retrofitting to the existing process flanges on which the bridle assembly had been mounted. The digital architecture of the ERS system eliminated the need for the complicated heat tracing that had previously been required with the magnetic float technology, and there were no mechanical components that could potentially freeze and cause a loss of measurement.

After retrofitting the vessel with the 3051S ERS system, Chevron Phillips has been running the process for over 2 years without an unplanned shutdown or disturbance, resulting in less maintenance costs. Because process control engineers now have access to a reliable level measurement, Chevron Phillips eliminated the risk of tank spill-over. Additionally, engineers are also able to better control the process in the vessel, resulting in increased throughput. Overall, Chevron Phillips is extremely pleased with the 3051S ERS technology and has identified other vessels at their Texas facility where they hope to achieve similar improvements by upgrading their level instrumentation.

RESOURCES

Rosemount 3051S Series of Instrumentation
http://www.rosemount.com/3051s

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