

Specialty Chemical Plant Reduces Safety Risks and Increases Throughput with Guided Wave Radar

RESULTS

- Eliminated safety risk to operators
- Reduced operation and maintenance costs



APPLICATION

Level control for water in a stilling well

APPLICATION CHARACTERISTICS

A small vacuum tank with water temperature of 250 °F (121 °C)

Rapid pressure and level changes

CUSTOMER

A specialty chemical plant in South Carolina, USA

CHALLENGE

The plant had challenges properly controlling the supply of water from the vacuum type receiving tank to the storage tanks. To eliminate overflow in the receiving tank, the level of the water is maintained by operating the pump and discharge valve manually. The pump and valve were located and operated from below the tank. The receiving tank level needed to be manually monitored on a timely basis to prevent overflow or running the pump dry.

The level of the tank is monitored using a sight glass mounted on the side of the vacuum tank. Due to condensation, the sight glass can be difficult to read giving operators poor visibility to the process level. Maintaining an appropriate level required the operator to have clear visibility to the actual level, and to be physically located at the bottom of the tank when the discharge valve and pump needed to be operated. The discharge tank is a very dynamic part of the process with large level turbulence. This added to the difficulty of obtaining an accurate level measurement.

Product overflow presented a high safety risk to personnel standing near the tank. Maintenance costs increased due to excessive wear to pump components and seals if the pump ran dry while emptying the tank. The pump required rebuilding on a monthly basis.

Accurate level measurement eliminated operator risk and monthly pump rebuilds.



Figure 1: Installed Rosemount 3301

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SOLUTION

To address these challenges, the customer installed a Rosemount 3301 Guided Wave Radar in a chamber coupled with a variable frequency drive (VFD) to better control the discharge from the receiving tank. Monitoring and control is done remotely through the DCS system. Placing the loop in automatic control eliminated the need for the operator to be present to control the transfer process. The variable frequency drive further reduced the risk of running the pump dry by reducing discharge flow at low tank levels.

By installing the Guided Wave Radar transmitter and automating the monitoring and control through the DCS system, the risk of tank overflow and operators safety risk was eliminated. In addition, the risk of running the pump dry and damaging the pump was eliminated, greatly reducing maintenance cost and increasing the upgrade's ROI.

RESOURCES

Emerson Process Management Chemical Industry

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

Rosemount Guided Wave Radar

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

Rosemount 3300 Series

<http://www.emersonprocess.com/rosemount/products/level/m3300.html>

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