

Chemical Terminal Increases Tank Utilization and Safety With 2-in-1 Radar Level Gauge

Results

- Increased tank utilization due to improved safety and better control of inventory
- Lower installation and maintenance costs vs. mechanical gauges
- Reduced frequency of manual proof-testing



Application

Tank gauging in an 8-inch stilling well mounted in a 40 ft. (12 m) tall storage tank. The liquid in the tank is Voranol 3943A, a viscous chemical used in adhesives and sealants. The product is stored at approximately 115 °F (50 °C).

Customer

Chemical Terminal in Texas City, United States.

Challenge

The terminal is undergoing a major renovation to increase both safety and revenue. Many manual tasks are automated, overfill prevention systems are installed and old mechanical instrumentation is being replaced with modern equipment.

The existing servo-gauges require frequent maintenance and replacing them with radar gauges has been identified as an opportunity to reduce cost. However, the tanks have a limited number of openings available and adding more is cost-prohibitive. It is required that the new measurement devices – level, temperature and overfill – fit existing tank connections. This specific tank only had two tank connections available: one nozzle and one 8-inch pipe. The nozzle was already occupied with a multi-point temperature sensor.

Solution

The terminal discovered early that it was impossible to fulfill all of their requirements with mechanical gauges. Emerson proposed using radar technology instead with the Rosemount™ Tank Gauging System:

- Level and overfill: Rosemount 5900S 2-in-1 Radar Level Gauge with array antenna for still-pipe measurements
- Temperature: connect the existing 6-point RTD-sensor to a new Rosemount 2240S Multi-input Temperature Transmitter
- Local read-out: Rosemount 2230 Graphical Field Display
- Operator interface: continue using the existing Rosemount TankMaster™ Inventory Management Software

Operators have gained confidence and can now operate the tanks faster and with a higher utilization rate.



Rosemount Tank Gauging System installed on tank TK3740

The 2-in-1 radar level gauge was the ideal solution for this terminal. It contains two independent radar units in the same enclosure, sharing a single antenna and tank connection. The 8-inch pipe could thus be used for both level and hi-alarm measurements. No tank modifications were required and therefore the installation cost was considerably lower than initially expected. Installing and wiring a single device rather than two separate ones also reduced cost and complexity.

The 2-in-1 gauge met the requirement for independence between the level and overfill prevention measurements. Mainly because the two radar level gauge electronics are completely separate and galvanically isolated. Consequently, if one radar device fails, the other is unaffected. Other factors in the assessment were the antenna's mean time between failure (MTBF), safety certification and independent relay output.

Another major benefit with this solution is that the overfill measurement is continuous and highly accurate, as opposed to solutions where point-level switches are used. The operators now have two online level measurements from the same tank which they can compare. As a result, the proof-testing interval could be extended significantly compared to the previous point-level solution. Additionally, operators have gained confidence and can now operate the tanks faster and with a higher utilization rate. The terminal also expects reduced down-time, since the 2-in-1 radar level gauge effectively contains a built-in spare-part.

Resources

Emerson Automation Solutions Industries

[Emerson.com/Chemical](https://emerson.com/chemical)

Rosemount 5900S Radar Level Gauge

[Emerson.com/Rosemount5900S](https://emerson.com/Rosemount5900S)

Rosemount 2240S Multi-input Temperature Transmitter

[Emerson.com/Rosemount2240S](https://emerson.com/Rosemount2240S)

Rosemount TankMaster Inventory Management Software

[Emerson.com/RosemountTankMaster](https://emerson.com/RosemountTankMaster)

Flyer

[2-in-1 Overfill Prevention Technology](#)

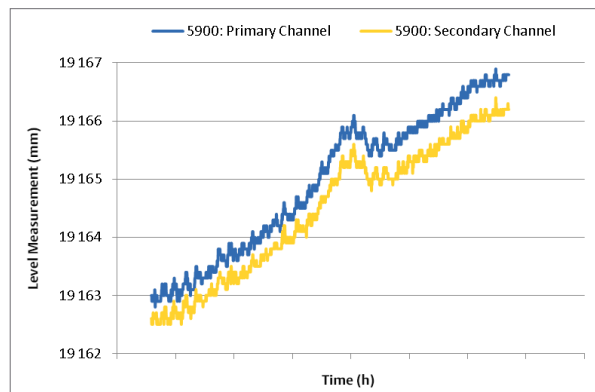
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00830-0100-5100 Rev BA

By using the 2-in-1 radar gauge, installation and maintenance costs were considerably reduced.



The Rosemount 5900S 2-in-1 Radar Level Gauge has two independent radar units in one housing



Tracking of dual level measurements from one 2-in-1 radar gauge (NOTE: an offset between measurements has been added for illustrative purposes)

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