

Terminal increases safety with unique 2-in-1 Radar Level Gauge

RESULTS

- Improved safety and control of inventory
- Lower installation and maintenance costs than traditional solutions
- Frequency of manual proof-testing reduced
- Improved tank utilization



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 Voranol3943A, 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 revenues. Activities are automated, overfill prevention systems are installed and old mechanical instrumentation is being replaced with new and modern equipment.

The existing servo-gauges require frequent maintenance, and exchanging them to 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-prohibited. Therefore it is required that the new measurement devices – level, temperature and overfill – fit existing tank connections.

SOLUTION

This specific tank only had two tank connections available: one nozzle and one 8-in. pipe. The nozzle was already occupied with a multi-point temperature sensor.

The terminal discovered early that it was impossible to fulfill all of their requirements with traditional tank gauging technology. The facility therefore turned to Emerson Process Management. After evaluation, a solution based on the Rosemount Rosemount Tank Gauging System was proposed:

- Level and overfill: Rosemount 5900S 2-in-1 Radar Level Gauge with Array Antenna for pipe-measurements
- Temperature: Re-use of the existing 6-point RTD-sensor with Rosemount 2240S Multi-input Temperature Transmitter
- Local read-out: Rosemount 2230 Graphical Field Display
- Operator Interface: Use the existing Rosemount TankMaster Software

The 2-in-1 radar gauge reduces installation and maintenance cost considerably.



Rosemount Tank Gauging System on tank TK3740.



Rosemount 2410 Tank Hub.

TANK GAUGING

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-in. pipe could therefore 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.

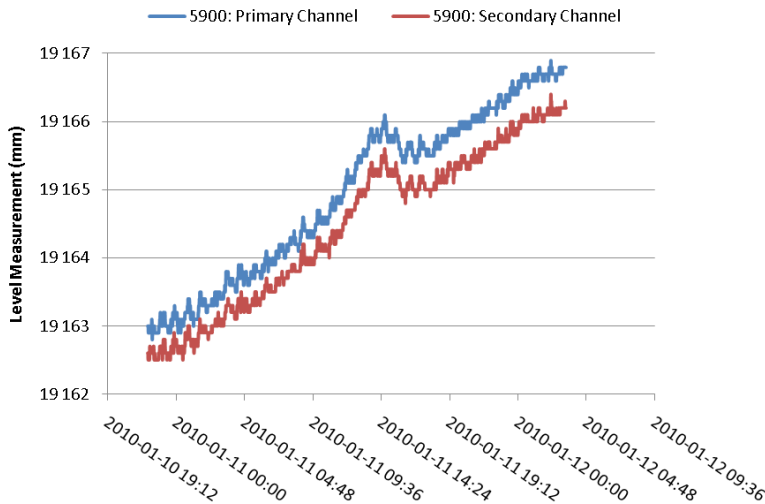


Rosemount 5900 2-in-1: Two radar units share the same antenna and enclosure.

The 2-in-1 gauge met the customer's requirement for independence between the level and overflow 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 also the overflow measurement is continuous and highly accurate, as opposed to traditional 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 intervals have increased 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.



Trend: Rosemount 5900S 2-in-1 Radar Level Gauge (offset between the measurements added for illustrative purposes).



Rosemount 2230 Graphical Field Display.



Rosemount 5900S Radar Level Gauge.

Emerson Process Management

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