



Radar Instruments
Improve Chemical
Inventory Control



chemical

SIEMENS

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Challenge

A company located near Houston, Texas, is a global manufacturer of oil well chemicals, emulsifiers and anti-corrosive agents used by the drilling industry. These chemicals are vital to the efficient extraction of oil through a ground well.

In the production process, constant supply of raw materials is key. Process interruptions from lack of raw materials are costly.

For level measurement on its chemical storage vessels, the company used a strain gauge differential transmitter with an output to a panel meter and then to a PLC. Over the years, problems with these transmitters required frequent recalibration. The operators could not trust the level readings, and they used manual gauging for verification. Manual gauging requires an operator to climb the 16-ft vessel and open a hatch for measurement. This takes time and has safety concerns with chemicals such as di-N-butylamine.

Without reliable level measurement, operators tracked level by usage throughout the day and ran the vessel empty. Then they reordered material, sometimes incurring process delays while waiting for deliveries. The company needed reliable level measurement to more accurately manage inventory and reordering.

Solution

In March 2003, the company tested a new level measurement transmitter, the Siemens SITRANS® LR 200. It is a 2-wire, loop powered pulse radar instrument designed for liquid bulk storage or simple process vessels. This plant uses a 2-wire approach throughout the plant so no additional conduit and wiring were required.

The chemical in this vessel has a nitrogen blanket to suppress vapor emissions. SITRANS LR 200 is not affected by changes in specific gravity or vapor pressure. In addition, a SITRANS LR 200 has patented Sonic Intelligence® signal-processing technology for superior reliability, along with Auto False-Echo suppression software that detects and suppresses false echoes from tank obstructions. Its special Uni-Construction rod antenna has a threaded connection, shield and wetted parts all made of the same polypropylene material to simplify chemical compatibility and then hermetically sealed to prevent chemical ingress. The non-contacting radar technology is virtually maintenance free.

SITRANS LR 200 is easy to install and program using just a few parameters. The instrument was mounted on a 4" diameter stand-pipe that is 10" high. They chose a 250 mm shielded rod antenna to eliminate the effects of the stand-pipe, and threaded the antenna into the flange. In this case, it was programmed using SIMATIC® PDM software from ground level. The unique design allows you to program the radar unit without opening the lid, even in hazardous areas, using the infrared, Intrinsically Safe

handheld programmer. The analog 4 to 20 mA DC output is connected to a digital meter at the bottom of the vessel and also brought into a Siemens SIREC D recorder. The plan is to later run the analog output into the PLC system.

Benefits

Reliable level measurement from SITRANS LR 200 means accurate monitoring from fill to empty without manual gauging. This has improved inventory control to ensure raw material availability and avoid process interruptions. Eliminating manual gauging saved time and money, and freed operators for other important tasks, while enhancing safety.

The plant now has reliable level measurement the operators can trust. It has been tracking flawlessly since installation and matching usage information. The company plans to outfit the remaining vessels with this radar transmitter.