



## Radar to the Rescue



# chemical

**SIEMENS**

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## Challenge

A chemical company located near Dallas, Texas, operates a solvent and chemical waste management site that processes waste solvents, chemicals, and oils from customers across the USA. Some chemicals are refined to a component level, treated and properly disposed of. Other liquids are refined and sold to end-users.

On site, the plant has five 6 m (20 ft) high storage vessels that have a 2-stage blade agitator inside. The company wanted an automated solution to reliably measure level and transmit the data to the control system with notification of upset condition, even during off hours. The company also wanted a reliable automated process for emptying and filling to increase their production levels.

Over the years, the company tried several level measurement technologies without good success. Because the liquids have different chemical properties and temperatures vary from night to day, capacitance transmitters required constant recalibration. Chemical vapors and temperature swings adversely affected ultrasonic readings. The company had to rely on manual measurements taken several times a day.

## Solution

In March 2003, the plant agreed to test a new level measurement instrument, the SITRANS® LR 200. It is a 2-wire, loop-powered pulse radar designed for liquid bulk storage or simple process vessels. It features 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 and agitator blades. The non-contacting technology requires virtually no maintenance.

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 hermetically sealed to prevent chemical ingress. The rugged construction, with a polyester powder coated aluminum enclosure, provides a high level of protection from aggressive environments. The encapsulated design protects against extreme shock, vibration and chemical attack. The compact electronics are mounted on a rotating head that swivels to line up with conduit or wiring connections, and adjusts after installation for easy viewing.

The test unit was installed through a 4" (10 cm) diameter standpipe, which is 10" (25 cm) high. They used a 250 mm shielded rod antenna to eliminate the effects of the standpipe, and threaded the antenna into the existing flange. It was easy to program from ground level using SIMATIC® PDM software. The radar instrument's unique design allows you to program it 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 the PLC network. The plant operators use

the visual indication for recording level readings.

## Benefits

SITRANS LR 200 provided accurate and reliable real-time level measurement, tracking liquid level from fill to empty. Having stable, reliable readings improved plant operation by increasing throughput and allowing the plant to keep more liquid in inventory for truck dispensing. Eliminating the manual measurements saved time and money, and freed the operators for other important tasks.



The SITRANS LR 200 radar transmitter provides reliable level measurement in these vessels containing chemicals, solvents, vapor temperature swings and agitator blades.