

# Guided Wave Radar Successful in Liquid Propane Accumulator Level Application

## RESULTS

- \$350,000 savings in upgrade costs
- Provided a reliable measurement for a problematic application
- Accurate level measurement was detected immediately

## APPLICATION

Distribute liquid propane, which is used as a refrigerant, to several coolers.

**Application Characteristics:** Propane accumulator; turbulence, low dielectric, variable density, temperature variations;

## CUSTOMER

Chevron Phillips® Chemical Company, Borger, Texas

## CHALLENGE

Chevron Phillips Chemical Company is a specialty chemical processing facility that creates over 400 different chemicals that are used by various industries. The Commercial Products Unit (C.P.U.) of the facility has some measurement applications that require special application engineering. One of the difficult level measurements is a propane accumulator used in their refrigeration system.

The intent of the design was to distribute liquid propane, which is used as a refrigerant, to several coolers. To control the distribution and ensure its availability, the propane was collected in accumulators. Once a sufficient level was obtained in the accumulator, the propane could be diverted to other coolers.

Unfortunately, because of the turbulence, low dielectric, variable density, and temperature variations of the propane, it was difficult to obtain a reliable measurement on the secondary accumulator. Since the level appeared to be insufficient, the valves were never able to send propane to the other coolers.

## SOLUTION

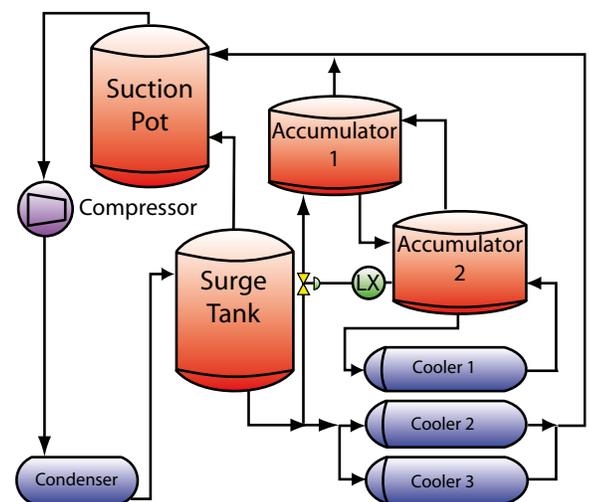
Emerson Process Management presented Rosemount 3301 Guided Wave Radar (GWR) technology as a possible solution. The radar was a possible solution because it works well in applications where density and temperature changes are common. With GWR, a radar signal is



*“Emerson worked with us, presented a solution, and now our control system is working for the first time.”*

Gerald East

Instrument/Electrical Reliability



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For more information:  
[www.EmersonProcess.com/Rosemount/products/level/m3300.html](http://www.EmersonProcess.com/Rosemount/products/level/m3300.html)

  
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sent down a probe within a concentrated area. The range of measurement is more contained and the signal to noise ratio was much higher, allowing it to work better in low dielectric, turbulent environments.

Chevron Phillips agreed to try a field test version of the Rosemount 3301 with a coaxial probe. Using existing process connections, a bridge was constructed to allow the installation of the Rosemount 3301, replacing a sight glass and differential pressure transmitter. A coaxial probe was used because of its ability to maximize the signal-to-noise ratio for this dielectric fluid. The overall range of the measurement was approximately 5 feet (1.5 m).

The propane level was detected immediately. The Rosemount 3300 has made accurate measurements for several months and Chevron Phillips considers the problem solved.

Since the Rosemount 3300 was able to make this measurement, the accumulator was found to be functioning correctly. Plans for an upgrade to the accumulator was cancelled. The upgrade cost was estimated to be \$350,000.

Gerald East, Instrument/Electrical Reliability, said his confidence in Rosemount products has reached a new level because of the Rosemount 3301. "When Rosemount beta products come in, they are just expected to work whereas with new technologies from other companies, expectations are not nearly as high." Mr. East has never been able to rely on any type of level measurement in this particular application and tried to work with other vendors to find a solution but was never presented with any. "We looked at all of our choices and tried to work with a vendor who could present us with a reliable solution. They either never came through or their representative would say one thing and their literature would say another. Emerson worked with us, presented a solution, and now our control system is working for the first time." Referring to their trend charts, Mr. East can clearly see the changes in his tank and is confident that what he sees on his screen is what is really happening in the tank.

Phil Moran, C.P.U. Operations Director, said the transmitter has worked perfectly in an application that has been nothing but problems. "We have never had a reliable measurement out of that tank. This is the first time that system has worked effectively and we have other applications that we'd like to try that unit on too when it becomes available."

### RESOURCES

#### Rosemount 3300

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



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