

Ultrasonic Contact

Ultrasonic Technology Replaces Tuning Fork for International Oil and Gas Company



One of the world's leading oil and gas companies needed a reliable low level alarm in a propane stripper. Their refinery had been using tuning fork or vibration technology, but this technology failed due to the low density of the liquid propane (429 kg/m³ or 0.429 SG). Magnetrol® proposed its Echotel® Model 961, an ultrasonic technology that is immune to low or changing density without the need for calibration or reconfiguration. It operates independent of varying density, dielectric, and thermal conductivity.

The 961 allowed for reduced wiring costs by providing an alternative to relays. It is a two-wire, loop powered device with a current output. The current output shifts from 8 mA during normal operation to 16 mA upon level alarm. If a fault condition or failure occurs, the current will go low or high per NAMUR NE 43. A failure can be simulated as well through a manual self-test that is available from the bezel. Plant personnel receive unparalleled visibility into the operation of the 961 to prevent undetected level alarms, thereby increasing the efficiencies and safety of the refinery.

Included in the safety requirements of the refinery was the need for Safety Integrity Level (SIL) 2 rated devices. Both the single-point 961 and the dual-point 962 are suitable for use in SIL 2 loops. The 961/962 has unique diagnostics to assist in troubleshooting should a failure occur. Aside from the manual self-test, the microprocessor in the electronics continuously monitors all self-test data. Should a fault occur, the microprocessor can determine whether the malfunction is due to the electronics, transducer, or the presence of environmental noise. The primary sensors in the transducer are the crystals and they are continuously monitored. For accessibility, safety, and ease of use, the electronics can optionally be remote-mounted from the transducer.

The success of the MAGNETROL ECHOTEL 961 in the low density propane stripper has opened the door for other ultrasonic opportunities, such as level detection of sour water in an acid gas knockout drum. Ultrasonic is a competitive technology that can be used as an alternative to the traditional tuning fork or vibration technologies in liquid level applications.



Magnetrol® Echotel® 961 mounted in an external chamber

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