Guided Wave Radar Transmitter Improves Oil/Water Interface Detection Reliability

RESULTS

- Reduced maintenance
- Measured interface accurately
- Easy retrofit of existing displacer technology

APPLICATION

Oil and water separator interface measurement

Application Characteristics: Low dielectric (dielectric < 3) oil on top of high dielectric water; frequent density changes

CUSTOMER

A major refinery in the U. S.

CHALLENGE

The refinery had several oil/water separators which used displacer based transmitters for interface detection. The goal was to allow the oil and water to separate and then send the water to the wastewater facility and the oil back to the refinery stream. The oil in the separator came from various sources which caused varying oil density.

The displacer based transmitters were adversely affected by the changing process density, resulting in an inaccurate interface measurement. This resulted in oil occasionally being sent to the wastewater facility. An alternative technology which was not affected by varying densities and offered reduced maintenance was sought.

Cost was a key factor in the choice for a more reliable solution. Ideally the refinery wanted to re-use the existing displacer cages and to find a technology that avoided the need for density compensation.

SOLUTION

Emerson offered the Rosemount 3300 Series Guided Wave Radar Transmitter as the solution. This measured the interface with no affect from the changing oil density, thus providing an accurate and reliable measurement. The refinery was also able to re-use the existing cages resulting in a simple and low cost retrofit.

The Rosemount 3300 was chosen as a best fit for this application in part because configuration was simple. This configuration involved setting the

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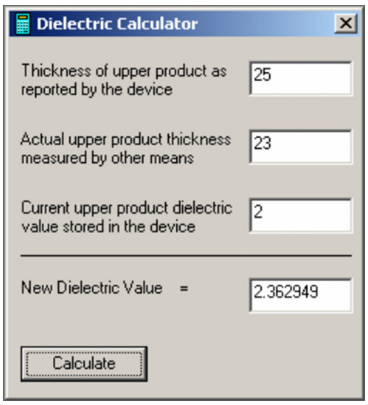
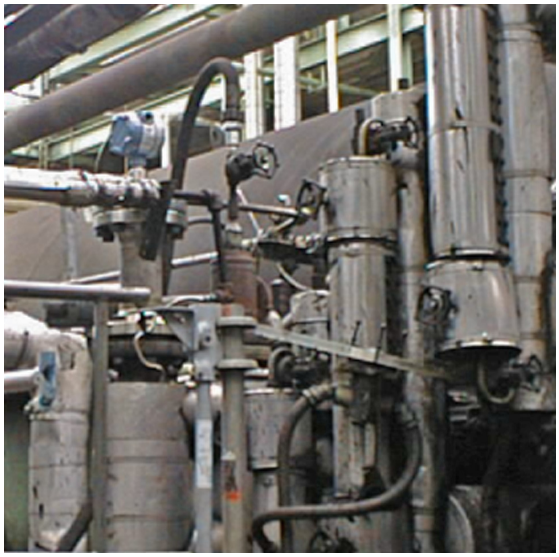
measurement mode, the probe length, the range values and the dielectric of the oil. To determine the fluid dielectric, the water was temporarily removed and the chamber was flooded with oil. While in this condition, the peak created by the end of the probe (a known distance) and the dielectric calculator in Radar Configuration tools were used to determine the dielectric.

When first installed, the Rosemount 3300 was mounted next to the displacer so both devices detected the same interface. Through trial and error, the refinery found the Rosemount 3300 to be more accurate for tracking the interface. They since switched to the 3300 for control of their separator.



The dielectric calculator in the Radar Configuration Tools



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RESOURCES

Rosemount 3300

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

Rosemount Technical Note - Replacing Displacers with Guided Wave Radar

Document Number: 00840-2200-4811

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00830-0200-4811, Rev AB