Reduce Maintenance Costs and Risk of Shutdown with Advanced Guided Wave Radar Diagnostics

**POTENTIAL RESULTS**

- Reduce risk of process shutdown
- Reduce risk of tank overfill
- Minimize risk of pump cavitation and damage
- Improve process control
- Decrease maintenance costs
- Reduce safety risks

**APPLICATION**

Level measurement of sticky materials or slurries

**CHALLENGE**

In process tanks with sticky materials or slurries, measurement equipment can quickly become coated. If the device gets coated, it may not perform as expected. For level measurement devices, this coating may result in loss of the actual level measurement. Plant personnel might use non-contacting measurement technologies to minimize the exposure to process coating. In applications where use of non-contacting technology is not possible (i.e. certain installation constraints, interface, angled or slanted surfaces) then Guided Wave Radar or Displacer technology may be used. Displacers are a mechanical technology. Process coating can quickly disable the movement of the displacer leading to the loss of the process variable. Guided Wave Radar is a superior alternative as no moving parts are exposed to the process materials. However, excessive probe coating may reflect a signal stronger than the actual process surface leading to an incorrect process variable. To prevent this, operators usually monitor the radar signal quality manually and interpret when the probe needs cleaning.

The challenges of process coating can lead to several negative business results. If the level measurement is lost then there is a risk of the tank overfilling or running dry. Overfilling a tank can result in a spill and lost product. It may also lead to extensive clean up and potential environmental penalties. If the tank runs dry, the process may shut down, and pumps can be damaged resulting in repair or replacement costs. A measurement device failure leads to unplanned maintenance and a possible process shutdown. Lastly, risk of overfill or a false reading can lead to safety risks.
SOLUTION

To address concerns of process coating, the Rosemount 5300 Guided Wave Radar with Signal Quality Metrics can continuously monitor signal quality. The signal quality can be reported as a process variable. A value of 10 represents a clean installation with no process noise. As the value of the signal quality decreases, the risk increases of misidentifying noise or process coating as the true level. With this diagnostic functionality, the condition of the probe can be checked while remaining in service.

Figure 2. This tank plot demonstrates a strong surface signal which corresponds with the high Signal Quality value.

Figure 3. This tank plot demonstrates process noise due to build-up on probe which corresponds with the decrease in Signal Quality value.
Customers can experience a variety of positive outcomes with the unique functionality of the Rosemount 5300. Plant personnel are able to continuously monitor level and prevent costly tank overfills, pump cavitation and damage, and unplanned shutdowns. Signal Quality Metrics simplify coated probe diagnostics, eliminate the need to interpret tank plots, and provide information that supports a preventative maintenance program. And lastly, safety risks are reduced by preventing unnecessary maintenance and tank overfills.

RESOURCES
Rosemount 5300 Series Guided Wave Radar
http://www.emersonprocess.com/rosemount/products/level/m5300b.html