

level measurement

featured columnist

Measure inventory levels and prevent overflow in a single device? I'd rather not.

A reader emailed me after my last column and indicated that the company he works for is considering ultrasonic technology for 80 to 100 liquid bulk tanks. He stated the goal was "to prevent overflow and hopefully provide inventory information." Specifically the extent of the email was as follows:

"I read your recent column in *Processing* with interest. My company is in the process of deciding on level measurement to prevent overflow and hopefully provide inventory information on probably 80 to 100 liquid bulk tanks. We are looking at ultrasonic transmitters, but would like to make an informed decision among the types of instruments currently available. Can you point me toward any information that might help with this?"

I replied back by email and I have since blogged about this inquiry at the *Processing* magazine industry expert blog I write (www.ProcessingMagazine.com). I did provide a list of other technologies to consider and the choice depends on several factors that I was not aware of. What I want to talk about here is the fact that many times it is a common goal to both measure the material level (for inventory information) and to monitor the condition of the vessel to prevent overflow. These really are two different functions, done for very different reasons and I do not recommend that they be combined in a single device, even though they are in many cases.

It is important to understand the use and value of "continuous" level measurement versus "point" level monitoring. Notice I also used two terms, "measurement" and "monitoring" and they are not used synony-

mously. Let's define the terms.

Measurement is defined in Wikipedia (www.wikipedia.org) as "the process of estimating the magnitude of some attribute of an object." Monitoring is defined as generally meaning to be aware of the state of a system, which is why I use this term in regards to point level because in point level you are looking at the state of the material at a predetermined point (material presence or absence) and not the magnitude of the material in the vessel (continuous level for inventory purposes).

Preventing overflow in a tank or other vessel is a typical application and use for a point level monitor. The purpose of overflow prevention is to eliminate a spill that can have major cost ramifications and can also be very dangerous with injury and even death resulting in some situations, depending on the material. For this reason alone, a device separate from the inventory continuous measurement system should be used, even if it does seem to be redundant.

The cost of spills can be so substantial, even with clean benign materials, that a dedicated sensor to detect a high level condition is worthwhile even if it is considered a backup to the primary control function provided by the continuous level measurement system. These point level sensors are not expensive, usually a few hundred dollars at the most, and I prefer not to "jump over dollar bills to pick up nickels" by risking a spill if the primary level measurement transmitter fails or has a hiccup.

And if the vessel is a part of a Safety Instrumented System, both the level measurement and high level sensors should be

certified for use for the appropriate SIL. Several manufacturers have devices rated for this type of application, including Magnetrol in Downers Grove, Illinois. In fact, Magnetrol has a great resource if you want to understand more about Safety Instrumented Systems and overflow prevention. I strongly urge everyone to consider a secondary device for emergency overflow prevention rather than relying singly on the same level transmitter that reports your inventory or continuous level data. This will only cost you a few hundred dollars but can save you thousands.

Want to speak out about any of the things mentioned above? You can email me at jlewis@monitortech.com or visit the *Processing* Web site and post some replies in the Industry Expert Blog area. There are some interesting discussions going on.



Joe Lewis

VP Sales & Marketing,
Monitor Technologies LLC