

Molasses Inventory in Large Storage Tanks

Measurement of this large volume commodity presents several unique problems. Aside from the obvious viscosity (similar to API 10 crude oil) and variable density of this by-product of sugar milling, there is the fact that it ferments. The fact that it is produced in tropical climates certainly does nothing to inhibit this characteristic!

The consequence of this fermentation is a thick layer of heavy foam that forms on top of the commodity. This foam has a density of about ¼ of the liquid. Since it cannot be sold, the owners prefer to measure the liquid without the foam. The old fashioned way of measuring this commodity was to use a pressure transmitter or (even older) a manometer connected at the bottom of the storage tank. Aside from the classic problem of variable density, this approach inherently includes the weight of unsellable foam, and is worthless for preventing overflow.

In recent years, there have been numerous attempts to use non-contact level transmitters in this application. Since the foam is so dense and somewhat conductive, it produces a nice reflection with either sonic or radar instruments. Of course this has no relation to the amount of sellable liquid in the tank. Even TDR (known as "guided radar" to some) can't penetrate the conductive foam to find the liquid level.

The Drexelbrook answer to this measurement is a precisely selected combination of RF probe and operating frequency. The capacitance value of the probe insulation is the key element in its performance, and Drexelbrook can produce a wide range of capacitance. The instrument is chosen to have complete independence of the liquid conductivity. At the same time, it will have minimal sensitivity to the lower conductivity of the foam. This requires knowledge of the conductivity in the particular liquid molasses. It is best to check the conductivity of a molasses sample for each processor, to maintain the best foam rejection.

While this approach handles the liquid in the tank, there is still the question of how much the tank will hold. Because the foam layer is thick and variable, the choice is either to waste storage space by allowing extra margin, or taking a chance on a messy and unsafe overflow of the foam layer. Drexelbrook specializes in level switches to prevent overflow in all kinds of tanks. Our RF probes are preventing spills in thousands of tanks, from liquefied gasses to lime slurries, and catsup to sewage sludge. Our Ztron III product is the most inexpensive version of our famous Coteshield technology. It will safely indicate the presence or absence of the molasses foam, even when thickly coated with molasses. There are no moving parts to foul up, and coating will not cause false hi level alarms like an ordinary capacitance probe. Just mount the probe horizontally through a ¾ NPT half coupling, at the maximum height in the tank, and run the power and signal leads to the integral electronics.

Ask you local Drexelbrook sales representative for a demonstration of our Coteshield performance on your own product. You will be convinced that Drexelbrook knows level.

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