

Crude Oil Cash Register

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In a business environment where so many producing companies are committed to funding operations internally through cash flow, no producer wants to have a tank of "bad oil" rejected or see what they thought was the measured tank volume "shrink" because of quality issues. Generating economic value from every drop of oil and condensate produced on a lease is where lease automatic custody transfer (LACT) units come into play, says Thomas Gentry, chief executive officer of Joshua, Tx.-headquartered UMC Energy Solutions Inc.

"The LACT unit is the cash register in the production process. No one would operate a movie theatre or restaurant without a cash register. It is really no different for a production site or pipeline," likens Gentry. "Once the producer has a properly designed LACT unit installed, they can be sure their sales volumes are being accurately measured and accounted for."

The purpose of a LACT unit is to not only precisely meter quantity, but also automatically sample and analyze oil quality while transferring the metered volume from the tank battery into a pipeline or truck, he notes. "Crude oil is sold on a calculation of temperature, BS&W, API gravity, and overall volume," Gentry observes. "Having accurate and reliable quantity and quality measurements are critical. When it comes to maximizing the value of the crude oil, quality is ultimately as important as quantity."

While LACT units traditionally have

been associated with higher-flow applications, Gentry says smaller-sized units are being routinely deployed on sites producing as few as 150-200 barrels a day. Not surprisingly, as activity levels across the Permian Basin region start to build with WTI pushing ever-nearer to \$60/bbl, so too is the demand for LACT technology, according to Gentry.

Regardless of whether the end-user is a producer or midstream or pipeline company,

the primary driver behind the demand for LACT units is the same at \$55 oil as it is at \$75 oil: improved revenue capture. "Once the producer understands the economic benefits of LACT units, they will want the technology on every site," he states.

As Gentry explains it, the traditional rule of thumb in calculating manual custody transfer measurements was to apply a volumetric shrinkage factor to account for sampling conditions, pressure and



Regardless of whether the end user is a producer or midstream or pipeline company, the primary value driver behind LACT units is improved revenue capture. LACT units automatically measure temperature, pressure, gravity, flow and other variables to eliminate the volumetric "shrinkage factor" associated with manual custody transfer measurements and increase sales revenues even in lower-volume applications.



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Because crude oil expands and contracts roughly at a rate of 2% for every temperature change of 40 degrees Fahrenheit, temperature is particularly critical in custody transfer measurements. Without the ability to accurately account for temperature dynamics, manual tank gauging commonly results in 2% shrinkage in the overall sales volume, he continues.

So, if the calculated shrinkage is 2%, a producer that gauged 1,000 barrels at a tank battery would receive credit for 980 barrels. “That may not sound like much until you look at how the losses add up on a monthly or annual basis,” Gentry remarks.

Capturing Revenue

At an oil price of \$50/bbl, those 20 barrels would equate to \$1,000 in lost revenue. On a lease that produces 1,000 bbl/d, losing 20 barrels each day to shrinkage would add up to \$7,000 a week. “You are potentially talking about more than \$350,000 a year in lost revenue from one tank battery,” he points out. “A site making 2,000 bbl/d could capture upwards of \$700,000 a year. The magnitude of the

potential losses grow even larger at oil prices above the \$50/bbl reference. There is huge value in installing a LACT unit for automatic metering and measurement.”

And that holds true even for lower-volume sites, Gentry reasons. UMC Energy Solutions’ customers are using LACT units in a range of applications, from pipeline and midstream facilities moving tens of thousands of barrels a day to individual wells making less than 200 bbl/d. While the economic benefits multiply as daily volume increases, Gentry says those benefits can be very compelling for right-sized LACT units on smaller-volume sites.

“In the shale world, where wells come on line at high initial rates, a LACT unit can pay for itself in only a few weeks. On the other end of the spectrum, let’s consider a 200 bbl/d lease,” he details. “That lease would produce about 6,000 bbl/month, so losing 2% in shrinkage at \$50/bbl would be \$6,000/month, or \$72,000 annually. In one year, the extra revenue capture could more than pay for a properly designed LACT unit.”

Return on Investment

Because LACT units can be configured to meet such a wide range of specifications and conditions, each system should be designed specific to the application to

maximize the return on the investment, Gentry offers. “There are tons of ways to design a high-quality LACT unit that will meet even the most stringent specifications and still be cost effective,” he says. “For a lower-volume site, that may mean scaling down the skid and utilizing a different meter technology, but there will still be value in capturing revenue that would otherwise be lost.”

UMC Energy Solutions’ LACT units utilize industry-leading components through its strategic partnerships with Emerson Process Management, Rosemount and Rockwell Automation, including Coriolis, density, magnetic and vortex flow measurement technologies. The company was one of the innovators of combination designs that integrate a LACT unit with a pipeline pump on a single skid, eliminating the need to maintain multiple skids at a pipeline entry point, according to Gentry.

“These all-in-one skids have the LACT, the pump for boosting pressure to pipeline specs, the electrical panels, system controls and everything else on one modular skid. The customer has to run one 480-volt power line and install the piping to hook it up to the pipeline and it is ready to go,” he offers. “The result is lower overall costs and improved efficiencies.” □