

REMOTE

SITE & EQUIPMENT MANAGEMENT

Fall 2015

A Webcom Publication

Industrial Internet Solutions Improve Operational Efficiency for Fleet Operators

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Driving Down Your Costs with Wireless Automation

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In today's volatile market prices can fluctuate quickly. There is little we can do to effect the price of a barrel of oil, however there are many things we can do to minimize lifting costs and maximize profitability. Many operators have taken a holistic approach towards maximizing the production and minimizing the cost at the same time. Extracting maximum possible resources from the wells (tantamount to increased well-life) is of primary concern but that should be complemented with improved surface logistics. The methods of optimization have undergone a radical change in past few decades. Many lifting systems also have a real-time well monitoring system in place collecting vital data to facilitate decisions. With the rise in adoption of advanced technology, operators have innovative ways to curb issues that caused costly downtime and losses previously. With new automated production instrumentation, operators are finding a level of production optimization and safety never thought possible before. Many analysts say that implementation of Digital automation increases the value of a field by 25 percent by optimizing production and increasing the life of the field.

With oil prices for 2015 at a five year low minimizing cost and maximizing production has gone from optimal to critical. To accomplish this "Near Real Time Data" is essential. Those who have the best information can make the best decisions. Informed decisions can be defined as follows: information is simply an evolved, or more complete data set. Information is therefore derived from a collection of processed data where context and meaning have been added to disparate facts which allow for a more thorough analysis

Some of the most important data is focused on reducing downtime, preventing spills, providing real time alarms, preventing theft, accurate custody transfer and achievable data and proactive maintenance instead of reactive.

Reducing Downtime

In order to reduce downtime, an investment in monitoring and analysis equipment is necessary. The oil and gas industry has been migrating to on site monitoring and control. The points commonly monitored are tank levels, casing and tubing pressure, flow rates from turbine and/or vortex meters, plunger lift, pump off controllers, separator pressure and temperature.

As technology advances, instrumentation has allowed for more process variables to be monitored and controlled locally. Examples include: chemical tank monitoring, flare stack monitoring for environmental compliance, compressor monitoring, valve control and ESD systems

Along with the addition of new instrumentation for the oil and gas industry, one of the biggest trends has been the migration from wired technology to wireless. In the era of multi-well pads and central tank batteries a single location may have 50 or 60 instruments measuring the processes on a location. Wireless can cut the installation of that equipment from a two or three man crew working for weeks to a one man crew working hours.

Today about 50 percent of all Oil and Gas automation is done wirelessly. The economics are very compelling, installation cost are 30 percent to 50 percent less with wireless "Vs" wired. Installation times are four times faster with wireless vs wired and the equipment can be relocated as needed. Many integrators are offering to combine wireless instrumentation, Emergency Shutdown system, (ESD) with "Near Real Time Alarms" to reduce down time and allow operators to make critical decisions before a shut down. One advantage of wireless automation is all of the instruments report back to a single gateway (Data Hub) typically located in the local controller such as a PLC, RTU or EFM. This not only reduces the need for buried cable and conduit on location but allows installers to use smaller NEMA-4 boxes and have far less wiring and Panduit inside the control box.

Reducing Spills

In today's oil and gas world, liquids have become the primary goal of many producers. Along with increases in liquid production come the risk of spills and the necessity of accurate measurement. Today's wireless tank level instrumentation is compatible with all RTU, PLC and EFM manufacturers control equipment. This provides the user with High level alarms, and High-High level shut down. Additionally many manufacturers have built in the ability to independently close a valve when a high tank level threatens to cause a spill.



Accurate Measurement

Oil tanks come in many sizes but one thing is universal, Oil is expensive and improperly measured oil can cost a producer a huge amount of money. An oil tank 15 feet tall and 10 feet wide holds 210 barrels of oil. That's about 1.2 barrels per inch. If we assume oil is selling at \$90.00 per barrel and there is an error of 1 inch on the sale on every truck load, that's a loss of \$108.00 per truck load. With directional drilling and multistage fracturing it is not unusual to see a well produce 1,000 barrels per day. That's

5 truckloads. Now add in a multi-well pad with 10 wells at 1,000 Bbls per day that's 50 truckloads a day with a loss of 1 inch per load per day and the losses are \$38,000 per week, or \$2 million per year.

The three critical components of liquids measurement on a production facility whether it is a single well pad or a central tank battery are: top gauge, interface level and temperature.

There are as many electronic tank measurement devices as there are stars in the sky, but when making a selection there are only a few critical considerations that matter, unfortunately many of the devices on the market cannot meet these simple "deal breaker" requirements. They are as follows:

- Top gauge measurement must be accurate and repeatable to within 1/4 inch, 1/10 of an inch is better, but 1/4 is custody transfer quality.
- Must be able to measure oil water interface consistently and provide repeatable readings to within 1/4 inch
- Must be able to read interface level to the bottom of the sales line, the lower the better.
- Must be able to measure product level to the bottom of the sales line
- Must be able to measure temperature continuously during a sale to account for temperature differences in the volume.

Summary

Today there is much talk about what is the breakeven price for oil, are we approaching a point where some wells are no longer fiscally viable? No one can predict the future; there are many global changes that are out of our control. But what can be done is optimization of wells and reduction of down time through automation. In addition automation increases safety, and reduces environmental impact.

Most major producers and many of the technological advanced operators are moving to the use of wireless automation and taking advantage of the lower costs, and decreased implementation times.

With the price of oil at a five year low the economics are stacked in favor of the producer who is getting the best data on his operation, and is able to do the most economically. Wireless instrumentation used in conjunction with a automation control system offers a high return on investment, and an opportunity to increase the profitability from the same amount of production.

For more information visit www.oleumtech.com.