RFID Technology
Is Beginning To Impact U.S. Oil Operations

I came across an article the other morning that highlighted radio-frequency identification (RFID) technology use in the oil field. RFID is all around us in our everyday lives, and it has been making its way into the oil patch during the past several years.

As the name implies, radio-frequency identification uses electromagnetic fields, or “radio waves,” to transmit information from one device to another. This system uses tags that are attached to objects that are intended to be identified by the reader. The reader is a two-way radio transmitter that sends a signal to the tag and reads its response. The reader decodes this information and acts according to its designed task, which can include things such as identifying inventory, tracking athletes’ times at sporting events, and even opening your hotel door.

Because tags are small—sometimes as little as a grain of rice—and are not required to come into physical contact with the reader to be read, applications for use in common devices are almost endless. In fact, RFID technology surrounds us all. The day I read the article over coffee, my new “per-cup” coffee maker used RFID technology to identify its own unique cups, and won’t work with others. As I headed out for the day in the busy traffic, my RFID Ez-Tag opened the gates on the tollway and charged my account so I could avoid traffic. Back home, even our little pooch is implanted with an RFID chip that we can use to find her if she ever gets lost.

In the Journal of Petroleum Technology’s April issue, Special Publications Editor Adam Wilson highlights how RFID technology is being evaluated to handle deepwater drilling and completion challenges. Sourced from a paper titled, “Leveraging RFID Technology for Deepwater Drilling and Completions Challenges (SPE 181012),” Wilson discusses how RFID tags can be attached to individual sections of drill pipe to track inventory, joint dimensions, and inspection information. These tags also can be used to create an automatic pipe tally as sections on their way down hole are scanned with a reader mounted below the rotary.

Wilson also highlights how RFID technology can be used during the offshore completion process, where its use is complicated by high pressures, fluid debris, and fluctuating temperatures. In this application, an RFID-controlled stimulation sleeve is used in the proppant/fracture environment. The tool is activated when the atmospheric control module is actuated by means of an RFID tag.

According to another article in the Oil & Gas Journal, RFID technology has been slow to move into the oil field, with offshore operations being the first to embrace it. The article goes on to suggest that the offshore environment is more open to new technology because incremental improvements in safety and efficiency often can have immediate payouts. Generally, as these components become more commonplace and basically more affordable, they become more attractive to onshore operations. Essentially, they need to be cheap, reliable, and easy to use. Over the last several years, RFID is proving this to be a reality.

In The American Oil & Gas Reporter’s May 2012 exclusive titled, “Trends Reflect Evolving Industry Needs, Challenges,” authors Neale Johnson and Hemme Battjes discuss the ongoing technology investment that companies will need to make to create efficiencies and reduce costs as pressures rise. Johnson and Battjes assert that the key to these investments is to filter out the technologies that provide the greatest value to an organization.

They go on to say that ongoing use of wireless technology, including RFID to tag people and assets, can improve business intelligence as well as provide a safe working environment. Sensor devices that provide continuous real-time monitoring capabilities can improve the quality and efficiency of operations, and tracking and tracing of technologies and employees can increase control and reduce the amount of errors and accidents for operators.

RFID technology has been making its way into the oil field for the last several years. It is becoming a more cost effective, established solution that is being integrated into tools and products designed to create a more efficient, safe and profitable oil field. This technology is being integrated into the downhole tools used in drilling and completion. It is used to track inventory and supply chains. It’s even used to keep employees safe during operations.

The next time you check into a hotel, or zip through a toll booth, remember how RFID has evolved and changed so many things around us, and how it will continue to impact our industry moving forward.

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