

New Production Tech Averts Failures

By Corinne Westeman

Unscheduled downtime in oil and gas production operations is a double whammy that results in lost revenues and added costs to repair problems, which erodes bottom-line margins. But in times of low commodity prices especially, any equipment failure or downhole operating condition that disrupts the flow of hydrocarbons to the sales line can be a profit killer.

Consequently, operators are zeroed in on improving the efficiency and economic performance of producing assets in all types of plays. The key metric is cost per barrel of oil equivalent produced, and although every producer has contingencies in place to deal with the unexpected, a well failure is not an option. This is particularly true for resource plays with multiwell pads, where one problem can take production from four or more wells off line and potentially upset operations at downstream processing facilities.

Right on cue, the latest innovations in production technology—from mechanical downhole tools to digital well site monitoring and analysis software—are designed to maximize efficiencies and production flows while minimizing cost and preventing well failures.

A case in point is Multilift Welltec LLC's SandGuard™, a tubing-string tool designed to be installed above an electrical submersible pump to protect it from sand fallback, which Chief Executive Officer Paul Shotter says is the leading cause of ESP failures in unconventional horizontal wells.

When an ESP cycles off, he observes, previously pumped sand falls back and col-

lects on it, clogging the pump and damaging internal components when it restarts. "Sand fallback can damage upper stages, cause broken shafts, and burn out motors, forcing operators to replace their ESPs three to four times a year, in some cases," Shotter remarks. "The labor and equipment costs to replace the pump, plus the loss of time and revenue during lost downtime, can be as much as \$400,000."

However, with the SandGuard tool in place, fallback sand is quarantined away from the pump, allowing for trouble-free restart. The sand trapped in the SandGuard goes back into the production flow when the pump restarts, and is produced to the surface.

"Anytime the pump shuts down, the SandGuard seals the ESP from sand intrusion and possible damage on the restart," Shotter says. "This is a \$20,000 solution to a \$400,000 problem."

Shotter says SandGuard lowers an operator's lease operating expenses by protecting downhole equipment in sandy wells (including those with proppant fallback) and increasing ESP run days. The best part, Shotter adds, is the product has proven highly reliable because it has no moving parts, making it invisible to the ESP and completely fail safe.

SandGuard diverts falling, solids-laden fluid to an inner chamber that, in turn, allows the fluid to drain back through the



Multilift Welltec LLC's SandGuard™ is a tubing-string tool designed to be installed above an electrical submersible pump to protect it from sand fallback. Instead of sand falling back onto the pump and clogging it, the tool allows the sand to go back into solution and be produced to surface along with the fluid stream.



pump while capturing sand and solids in the chamber. When the pump is restarted, these captured sands and solids are expelled by the flow action of the pumped fluid and are carried to surface, he confirms.

The system can be cycled endlessly, eliminating potential damage to the pump. “Most importantly, there are no ports to the annulus, making pumped recirculation impossible,” he adds.

The SandGuard was designed specifically to withstand sand’s erosive potential over long periods down hole. However, Shotter recommends the SandGuard be replaced with every replacement ESP

“for maximum optimization.”

According to Shotter, Multilift and its partners developed the technology over four years, and successfully tested it in the North Sea before bringing it to the United States in 2014. He says the system has been used in several hundred wells, both overseas and domestically, specifically in the Mid-Continent and Permian Basin. However, he clarifies that any well with an ESP is a candidate, especially unconventional wells.

“The U.S. market is crying out for this technology,” Shotter emphasizes. “Before, an ESP might last only 30 days at a time in a sand-producing well. That was expect-

ed. Operators planned for that when they really should not have had to. With this technology, operators are seeing their ESPs last more than 400 days without any sand fallback-related issues.”

SandGuard is available for both 5½- and 7-inch wells, with 2⅞-inch connections. “With SandGuard, operators can keep their ESPs down hole longer, thereby reducing the cost of production and the number of well failures,” Shotter concludes. “Early ESP failure has become an ingrained expectation among unconventional well operators, but the SandGuard’s success illustrates that it does not have to be.” □