

Y-Tool ESP Bypass System Enables 900+ Days of Production with Simultaneous Downhole Logging

CHALLENGE

The operator needed to be able to log two wells, but could not afford to stop production and pull the ESPs every time they wanted to log.

SOLUTION

Deploy a Y-Tool bypass system and a SlimLine ESP in each well.

RESULTS

- Maintained required production rates in both wells
- Enabled reservoir logging without having to pull the ESPs and incur related downtime
- Delivered 916 days and 746 days (and counting) of uninterrupted production on the two wells

To Produce or to Log—That is the Question

An operator in the Middle East had two wells that needed production logging and reservoir logging runs at various stages of each well's life. They didn't want to have to pay the price for stopping production, pulling the tubing, and replacing the electrical submersible pump (ESP) every time they needed to log the wells. They reviewed multiple companies and ESP bypass technologies they hoped would solve the problem.

The Only Y-Tool Solution for 7-in. Casing

They soon learned that only Novomet has equipment that can reliably deliver ESP bypass capabilities in 7-in. casing. The operator decided to install our [Y-Tool ESP bypass system](#) in conjunction with our [3.19-in. SlimLine ESP system](#) to give them the ability to run a production logging tool anytime they wanted without having to stop production and pull the ESP. The Y-Tool system accommodates the ESP in one conduit of the tool while leaving a second conduit available for logging tools to pass through and gain access to the wellbore below the ESP. This advanced configuration enables logging at any time without killing the well or negatively impacting production.



The Y-Tool ESP bypass system and SlimLine ESP were used to enable ongoing downhole logging without having to pause production or pull the ESP.

Proving Performance Over Time

One of the two wells was designed to produce 1,200 BPD (190 m³/d) through 7-in. casing in a vertical wellbore. The 3.19-in. (81 mm) SlimLine ESP was run on 3½-in. (89 mm) production tubing and set in the Y-Tool bypass system at 3,896 ft (1188 m). The second well was designed to produce 3,500 BPD (556 m³/d) through 8¾-in. (222 mm) casing in a vertical wellbore. The same design was used for this well, seating a 3.19-in. SlimLine ESP on 3½-in production tubing in the Y-Tool system at 3,900 ft (1189 m).

Tracking the Results

The combination of the Y-Tool ESP bypass system and SlimLine ESPs enabled the producer to achieve desired production rates without having to pause and pull the ESP every time they needed to perform a logging run. Multiple logging runs have been carried out during the life of both wells without affecting production rates or requiring workovers.

At the date of publication, the first well has been in uninterrupted production for 746 days. The second well has been operating uninterrupted for 916 days. While the actual number of logging runs is much higher on both wells, conservatively assuming one logging run per year the operator would have had to perform two workovers on each well and replace the ESP systems twice in the same period of time. At an estimated \$80,000 USD per workover, the total saved across both wells is \$320,000 USD in the past two years.

About the Technology

Y-tool bypass systems are run on production tubing and consist of two conduits. One conduit is offset and houses the ESP, keeping it firmly positioned in the wellbore. The other conduit provides a path for access to the wellbore below the system.

Common applications include conducting production logging, reservoir analysis, and well tests below the ESP. Coiled tubing can be used to push logging tools deeper into laterals, to engage and actuate flow control devices, to set plugs for water shutoff operations, and other coiled tubing intervention jobs. The bypass conduit can also be used to run an additional ESP below the Y-tool system to add additional production from nearer the production zone.

SlimLine ESP systems use a permanent magnet motor and high-efficiency pump stages to produce wells with casing sizes as small as 4 and 4.5 in. (102 and 114 mm). Available in 2.72-in. (69-mm) and 3.19-in. (81-mm) sizes, our SlimLine systems are ideal for use in wells with high dogleg severity and when accessing sidetrack laterals. Built on proven PowerSave ESP system technology, these slim ESPs reduce power consumption by 25–30% compared to the most efficient ESPs driven by induction motors.