

TPS-Line ESP System and Lift IQ Service Increase Production Fourfold for Zhaikmunai

Stable production continues for more than a year despite unstable power delivery, pipeline distance, and operator's lack of prior experience using ESPs, Kazakhstan

CHALLENGE

Increase oil production in a remote well with declining reservoir pressure, unstable electrical power delivery, and a long pipeline to the separator.

SOLUTION

- Install a TPS-Line* electric submersible pump (ESP) system.
- Monitor and control the ESP performance using the Lift IQ* production life cycle management service.

RESULTS

- Increased liquids production from 27 to 111 m³/d.
- Stabilized ESP operation for more than a year.
- Minimized downtime related to problems during commissioning and restarts.

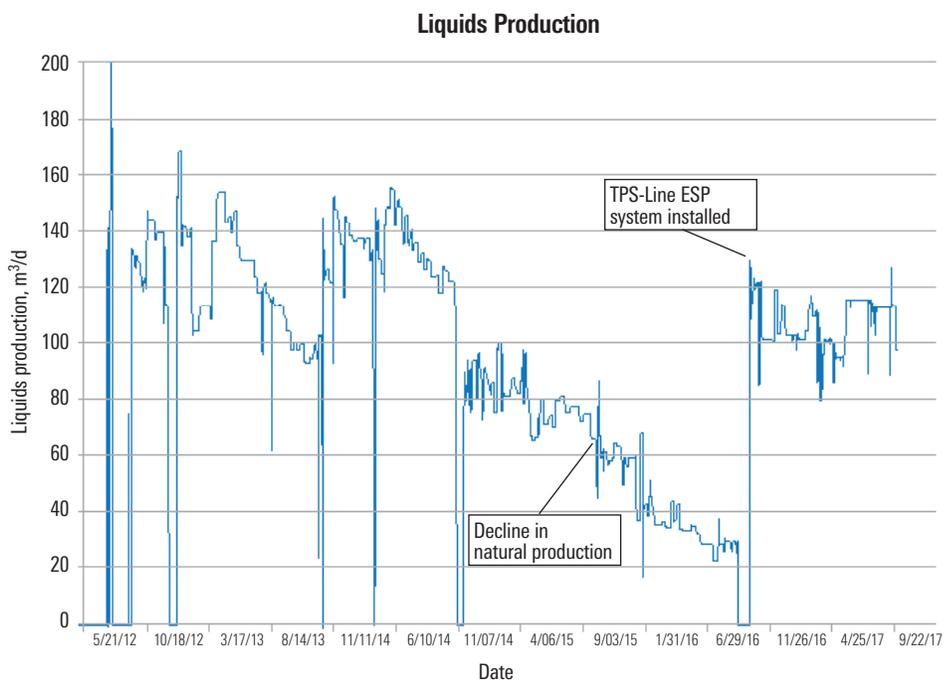


Power concerns and challenging restarts

Almost all wells in the Chinarevskoye oil field produce with natural flow. In particular, one well flowed naturally after completion in early 2012 and continued to produce as reservoir pressure declined and water cut increased from 0 to 60%.

By the middle of 2016, liquids production decreased from approximately 130 to 27 m³/d, signaling a need to switch the well from natural flow to an appropriate artificial lift method. Zhaikmunai engineers determined that progressing cavity pumps and rod lift pumps would not work because of the well depth. This left gas lift and ESPs as options, and engineers determined that the ESP far outperformed gas lift in terms of efficiency and economics.

Zhaikmunai had no prior experience using ESPs, and the 4-km distance between the well and test separator was expected to cause significant and unstable backpressure on an ESP, especially during restarts. This was a particular concern because the power available for the ESP was also unstable, which was expected to lead to periodic restarts. Zhaikmunai asked for recommendations about how to minimize deferred production and maximize ESP run life.



Using the Lift IQ service to remotely monitor and adjust a new TPS-Line ESP system helped Zhaikmunai produce liquids from the well for more than a year despite power fluctuations and pipeline backpressure incidents.

Engineered ESP system and remote monitoring

Schlumberger recommended installing a TPS-Line ESP system designed to suit the expected well conditions. The wellsite package also included gauges and a communication system to transmit real-time ESP data for analysis.

This state-of-the art equipment enabled the operator to use the Lift IQ service to monitor and remotely adjust or restart the ESP. The service taps into Schlumberger engineering, manufacturing, and surveillance expertise with 24/7/365 access to the global network of Artificial Lift Service Centers (ALSCs). ALSC engineers review alarm events and data summaries for all measurements at the wellsite and then make recommendations to the operator to optimize production performance.

Efficient production for more than 1 year

The TPS-Line ESP system increased liquids production from the well more than fourfold, from 27 to 111 m³/d.

The real-time surveillance rapidly detected and corrected well and ESP problems that would have gone unnoticed, in some cases, for weeks between visits to the test separator. For example, during the critical ESP commissioning period, the Lift IQ service engineers adjusted ESP parameters to eliminate many unnecessary shutdowns, which can create stress in the system and reduce its run life. In addition, by operating remotely, the surveillance engineers eliminated time-consuming staff mobilization and troubleshooting activities for ESP restarts.

Furthermore, the service enabled remote monitoring of setpoints, which also helped extend ESP run life beyond 1 year. In contrast, a third-party ESP installed in an offset well without monitoring ran for less than 1 year before failing and requiring expensive replacement.

slb.com/liftiq