

Permian Basin Operator Improves ESP Productive Time by 94% in Depleted, Slugging Well—Without a Workover

PCL and Lift IQ services help operator manage multiphase flow with expert analysis and remote, real-time changes to variable speed drive settings

A Permian Basin operator managed unstable multiphase flow from a depleted unconventional well—without a workover that would have challenged project economics.

Boost production from a depleted well

After more than 600 days in an increasingly gassy and depleted Permian Basin well, a REDA* ESP was suffering gas lock every 10 minutes. Because of the advanced gas lock protection in its Instruct* acquisition and control unit, the ESP adjusted its operating parameters each time, but the cycling meant the ESP delivered only about 32% of productive time. Meanwhile, oil prices fell, and the small, independent operator needed to improve profitability—fast.

Use ESP data to analyze flow rates and reservoir pressure

PCL* production composite log service enables real-time production flow rate analysis and helped the operator determine depletion rates and reservoir pressure for the well. Although the analysis had some uncertainty, engineers determined that an ESP downgrade would significantly improve performance. However, a workover was not economically feasible.

Optimize variable speed drive (VSD) performance in real-time

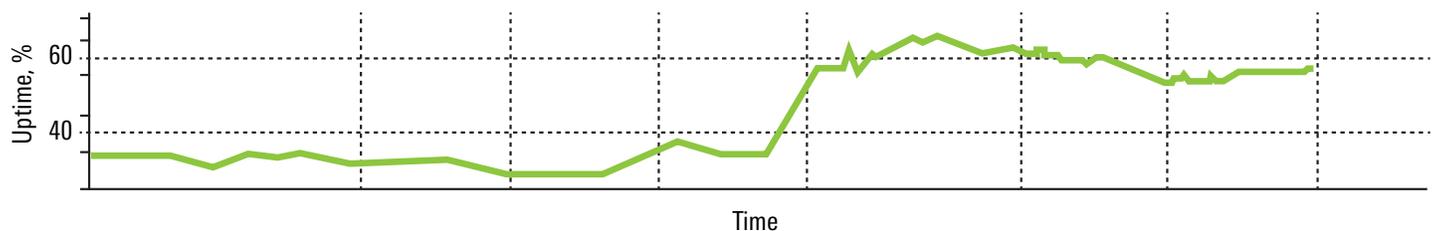
Schlumberger domain experts recommended Lift IQ* production life cycle management service to analyze ESP trends and optimize operational settings for the VSD.

Improve drawdown and ESP uptime

The data acquisition rate for the ESP was increased to 1 min, and downhole and surface data trends were analyzed using Lift IQ service domain expertise and workflows. New VSD settings were recommended and, with operator approval, applied using the Lift IQ service remote control capabilities.

New ESP operation trends were analyzed and the VSD settings optimized further. After one week of iterative cycles of analysis and optimization, ESP uptime increased to 62% from 32%, which amounted to a 94% improvement in productive time. After three weeks of further iterations, uptime stabilized at 56%, and drawdown improved from 385 to 335 psi, with the pump intake pressure (PIP) later stabilizing at 350 psi.

The operator continues to rely on Lift IQ services to manage the unstable multiphase flow and maintain higher ESP uptime as depletion continues and gas/oil ratio increases.



PCL and Lift IQ services delivered the expert analysis and remote, real-time adjustments the operator needed to improve ESP uptime to 62% from 32% before it stabilized at 56%.