

Production Center of Excellence Boosts Production

Case study: Advanced ESP Lifting Services optimize performance adding USD 500,000 revenue in first year

Challenge

Identify underperforming artificially lifted wells to ensure optimized production.

Solution

Conduct continuous surveillance and diagnostic analysis to identify underperforming wells.

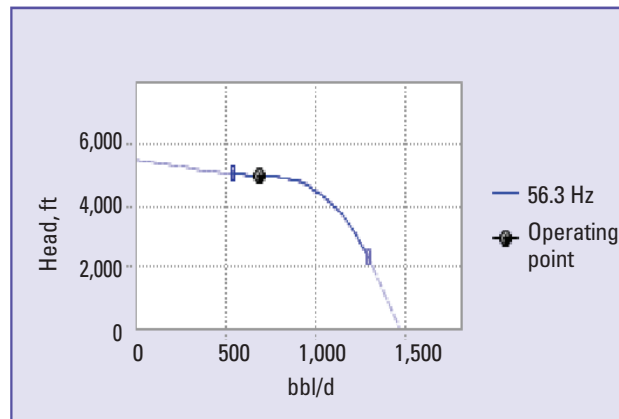
Results

Increased production by 30% to over 1,000 bbl/d, adding USD 500,000 in revenue the first year.

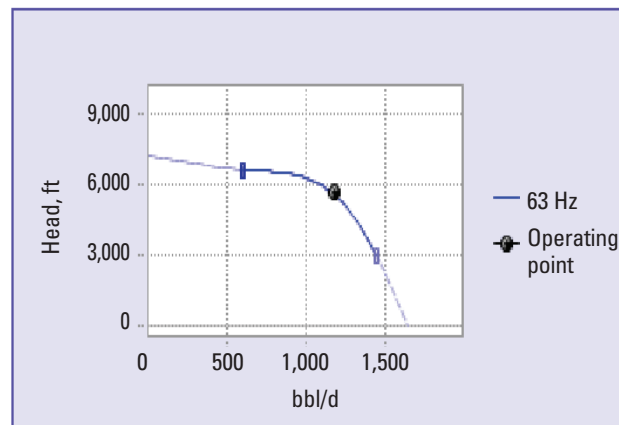
Optimize pump performance

An Oklahoma-based operator wanted to optimize production in wells lifted with electrical submersible pumps (ESP). Wells lifted in this way are generally operated in large numbers, often with a high water cut. The number of wells makes it difficult to optimize the performance of every well, while the high water cut makes it important to produce as much liquid as possible.

The operator engaged Schlumberger Data & Consulting Services (DCS) to provide a plan for identifying underperforming wells to ensure optimized production.



Pump performance analysis—initial condition.



Pump performance analysis—post intervention.

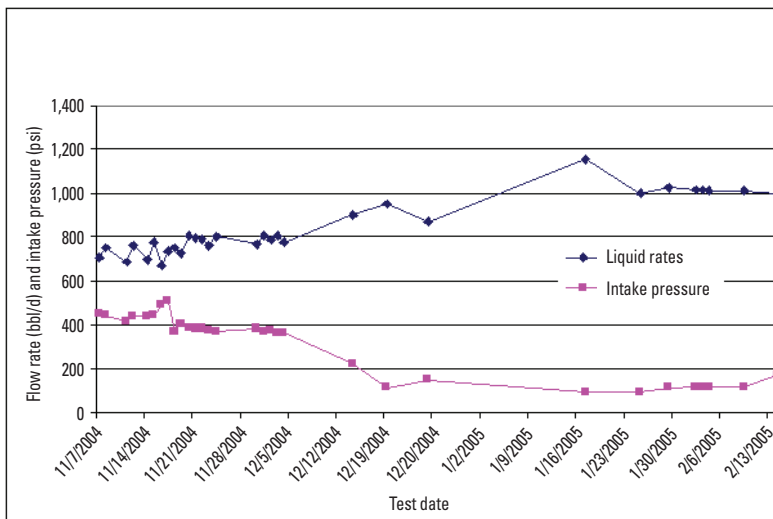
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Identify underperforming wells

Through the Production Center of Excellence knowledge hub, Schlumberger experts use proprietary software to perform continuous surveillance on a large number of producing wells. These wells are categorized as green—producing within normal limits; red—not producing; or yellow—producing outside of the expected range. Using this methodology, underperforming wells can easily be identified and targeted for further diagnostic analysis.

Decreasing intake pressure caused a yellow alarm on one of these wells. The pump was operating at a speed of 56 Hz with a flow rate of 675 bbl/d. The lift system diagnostic analysis indicated that while the pump was operating within its normal range, it was not operating as efficiently or moving as much liquid as possible; i.e., the operating point was closer to the left-hand limit of the operating range.

The LiftPro XP software system analysis demonstrated the importance of continuous surveillance and diagnostics of the lifting system.



Results of pump performance optimization—production rates.

Increase production

The Schlumberger experts recommended speeding up the pump to 63 Hz, moving the operating point toward the center of the range for a higher production rate and more efficient performance.

The pump performance optimization plot shows trends in intake pressure (pink) and liquid flow rates (blue). The frequency is gradually increased in steps, which accounts for the gradual increase in drawdown and flow rate that is observed here.

This small change in the way the pump was operating yielded an increase of more than 300 bbl/d in production from 675 bbl/d to over 1,000 bbl/d for a revenue increase of USD 500,000 in the first year.

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