

Intelevate™ Team Uses Set Frequency Mode to Improve Electric Submersible Pump (ESP) Uptime

TEAM MONITORS AND OPTIMIZES ESP SPEEDS IN REALTIME TO ACHIEVE TARGETED PRODUCTION GOALS AS RESERVOIR DECLINES

NORTH AMERICA

OVERVIEW

At any fixed motor frequency or other constant parameters, an ESP system will produce less fluid due to the natural decline of the reservoir.

CHALLENGE

When production declines, and pump intake pressure increases, low fluid rates around the motor are inadequate for proper cooling, and the system moves away from the designed best efficiency point (BEP).

CHALLENGE

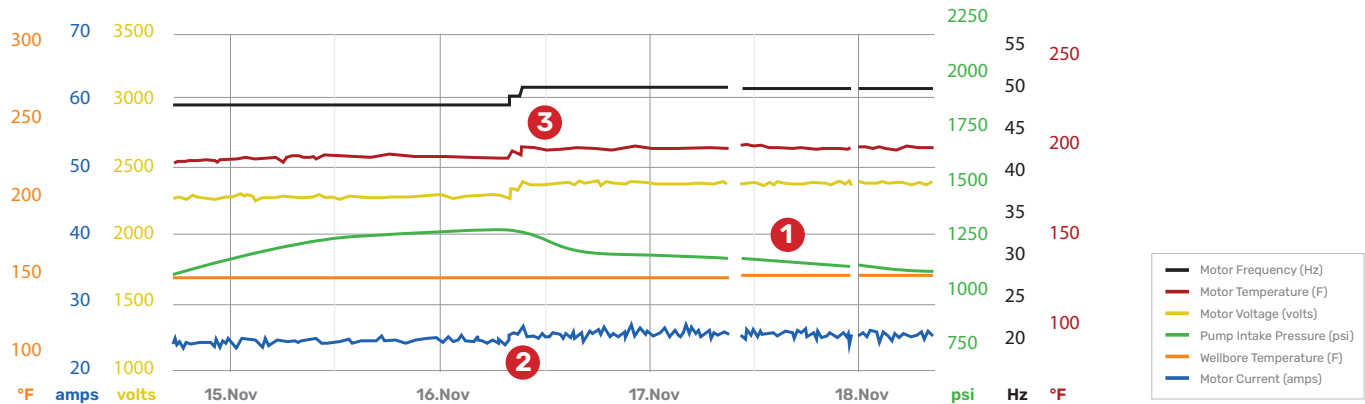
Fixed ESP operating parameters do not allow for optimal production as the reservoir naturally declines. This problem is exacerbated in unconventional wellbores where initial production drops off rapidly.

SOLUTION

- Increase the set frequency of the VSD
- Check on all parameter limitations
- Monitor changes across all parameters

RESULT

- Improved production rates
- Continuous reservoir drawdown
- Improved uptime and run life



RESULTS:

In the case shown above of an increase in frequency:

1. Improved drawdown rate by decreasing PIP at a higher rate.
2. Increased motor load due to higher fluid influx into the pumps.
3. Moved operating point closer to BEP rates due to higher speed and fluid rates.



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SOLUTION

To generate performance evaluations, Summit's Intelevate team monitors the trends of various ESP and wellbore performance parameters, such as over/underload, motor temperature, and tubing/casing pressures. Meeting with the customer to discuss findings, recommendations are made to optimize performance. The Intelevate team determines the system's operating point on the pump curve and coordinates changes with the field to determine any possible restrictions in the facilities. Once the analysis is completed and communicated, the set frequency is optimized remotely on the variable speed drive (VSD). Monitoring continues, and adjustments are made as needed, remotely or in the field.

RESULT

When the Intelevate team optimizes the set frequency mode, the customer can see improvements in drawdown rate by decreasing pump intake pressure (PIP) at a higher rate. ESP uptime and run life also improve as a higher fluid influx into the pumps increases motor load and moves the operating point closer to the BEP with the higher speed and fluid rates.

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