Case study: Canadian county, Oklahoma

Intelligent gas lift optimization system increased oil production by 10%

An operator with a large footprint of gas lifted wells in North America's major basins wanted to improve production. However, traditional gas lift optimization is labor intensive, requiring production engineers to conduct nodal analysis to determine optimal injection rates and field operators to change valve settings and monitor production results. The process must be repeated for the life of the well as the well conditions change.

With a clear understanding of the need for production efficiency, Baker Hughes suggested the customer trial its new **Intelligent gas lift optimization system**.

The Intelligent gas lift optimization system can help you achieve your production goals efficiently and predictably. This surface system uses artificial intelligence and machine learning to automatically determine and adjust the optimum gas injection rate over time using readily available, real-time data at the wellsite.

The customer selected a typical gas lift well in the Anadarko basin STACK play in Canadian county, Oklahoma. This test well had been on gas lift for eight months with stable production and was thought to be optimized. The customer was primarily interested in seeing how the optimization process can be automated, and not expecting uplift from the well.

Baker Hughes installed the Intelligent gas lift optimization service on the well site in June 2017. The site was already fully instrumented with measurement devices and control valves. The Intelligent gas lift system was directly connected to the remote terminal unit (RTU) via Modbus communication to pull the required measured parameters needed to perform an analysis.

Shortly after installation and optimization, a production increase was observed. One month later, the software was updated with advanced algorithms and the optimization target was set to maximize based on net revenue.

With the advanced algorithms, production improved by 10% versus the expected baselinel.

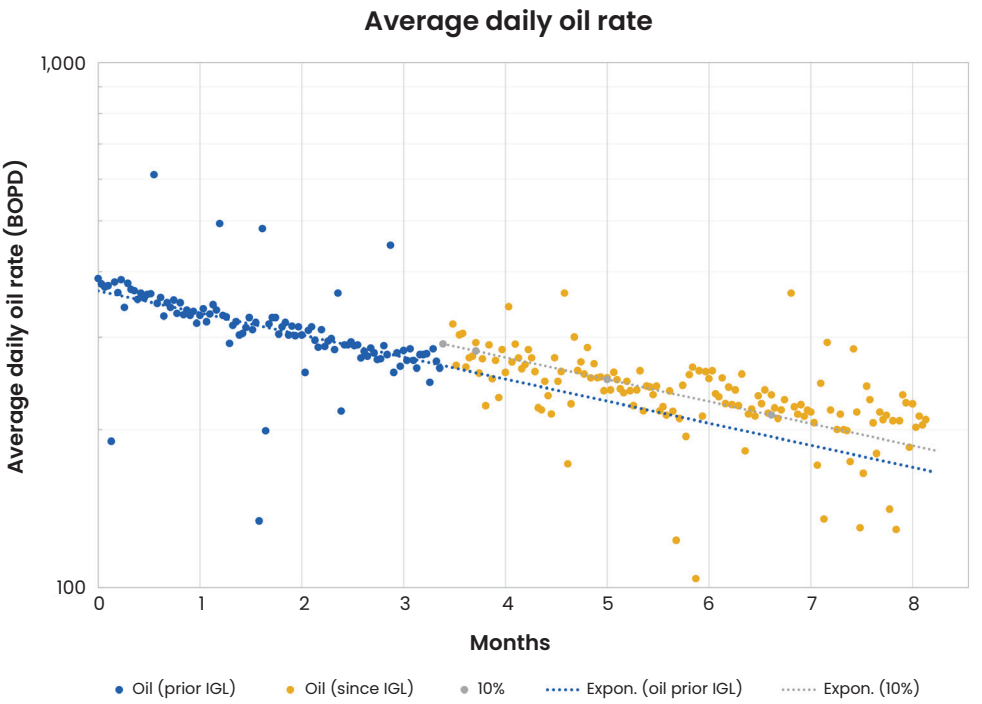
"We were pleasantly surprised to see the substantial production increase and corresponding revenue gain from intelligent gas lift," says the operator's production engineer. "More importantly, this was done in a completely automated manner. We saw this as a huge opportunity to optimize our gas lift wells on a large scale with no additional human resources."

Challenges

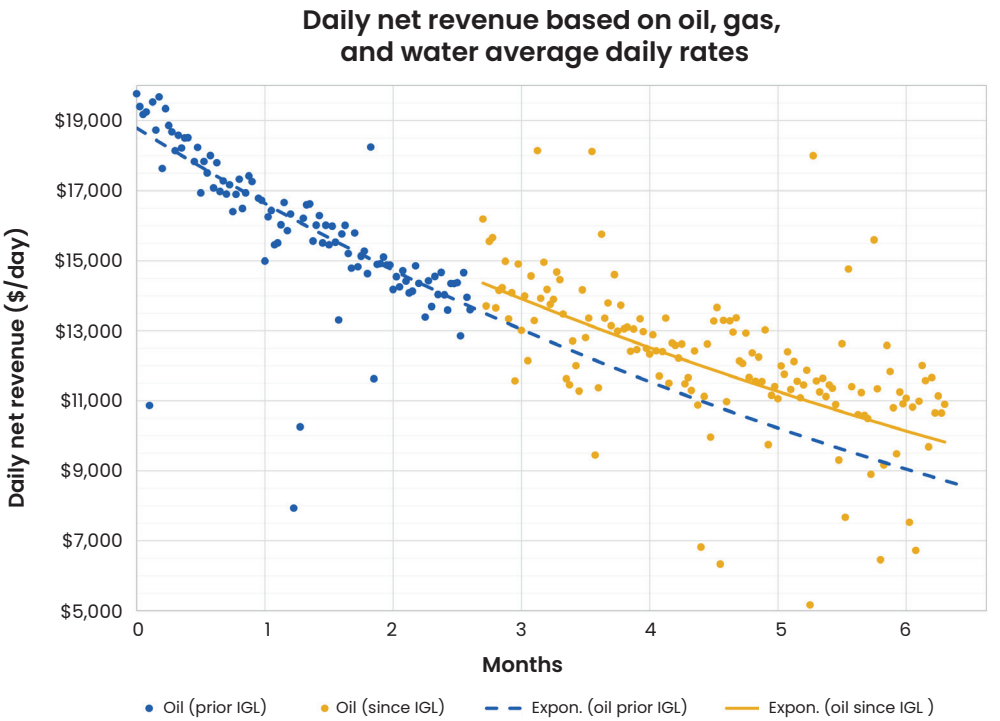
- Costs associated with traditional gas lift optimization
- Bringing additional production to a well considered to be already optimized (nodal analysis had indicated no uplift potential)
- Implementing a solution compatible with existing SCADA system

Results

- Increased oil production by 10%
- Reduced decline rate of well by 38%
- Achieved complete automated optimization



Average daily oil rate prior to, and after, installation of the Intelligent gas lift optimization system.



Daily net revenue prior to, and after, installation of the Intelligent gas lift optimization system.

Baker Hughes