Slim-line CENesis PHASE System Eliminated Shutdowns and Non-productive Time
Location: Oklahoma

An operator in Oklahoma had a well that was completed using 5½-in. casing and was equipped with a standard electrical submersible pumping (ESP) system. After several months on production, the pressure in the well declined, releasing gas slugs from the reservoir into the wellbore. The gas slugs created a situation in which no fluid was moving past the motor for long periods of time, causing cycling and daily ESP system shutdowns due to motor overheating.

The repeated cycling and system shut downs reduced the daily production rate from the well and negatively impacted well economics. Plus, motor overheating and repeated shutdowns can be detrimental to ESP system longevity.

After evaluating the well conditions, the Baker Hughes engineering team determined that the CENesis PHASE™ multiphase encapsulated ESP system for smaller casing sizes was the best option to solve the gas slugging issue. The system design encapsulates the pump for natural separation of the gas to prevent pump-off conditions and recirculates fluid past the motor to prevent overheating.

The system also features the newest addition to the FLEXPump™ series pump line. The 300 series FLEXPump6 pump is the industry’s first slim-line, mixed-flow pump design, which significantly improves gas and solids handling in smaller cased wells. The FLEXPump6 design covers a flow range from 20 B/D to 800 B/D.

In addition to the new pump, the system includes an optimized motor design to improve reliability in smaller casing sizes.

Baker Hughes solution
- CENesis PHASE multiphase encapsulated ESP system for 5½-in. cased wells
- Slim-line, mixed-flow FLEXPump6 pump
- Optimized motor design for smaller casing sizes

The CENesis PHASE system completely eliminated cycling and shutdowns associated with gas slugs as well as mitigated potential reliability concerns due to elevated motor temperatures. By eliminating non-productive down time, the system steadied the production rate and improved the operator’s well economics.

Results
- Eliminated ESP system cycling and shutdowns
- Improved production by eliminating non-productive time
- Mitigated potential reliability issues due to motor overheating

Challenges
- 5½-in. cased well
- Gas slugs in the production stream
- Declining production rates
- Frequent shutdowns due to motor overheating and system cycling caused by gas slugs