FLEXPumpER technology increased production 20%, managed gas entrained in the production stream

An operator in East Texas had a well that experienced frequent electrical submersible pumping (ESP) system shutdowns, sometimes multiple times a day, as a result of gas slugs and elevated bottomhole temperatures. Gas/oil ratios (GOR) and water cut varied daily, which led to downthrust issues and poor reliability rates.

The operator approached Baker Hughes, a GE company (BHGE), for an ESP system solution to increase reliability and handle flexible flow rates with frequent gas slugs. BHGE installed a CENesis™ ESP system with FLEXPumpER™ technology, WellLIFT™ H sensor, MVP™ gas handling pump, Electrospeed Advantage™ variable speed drive, and vortex gas separator. Production rates began at 2,000 BFPD with 60% water cut. Reliable operations continued even when production dropped as low as 800 B/D.

The ESP system maintained operations and provided superior downthrust-handling capabilities. Gas averaged 650 MCF with some significant slugging but operations continued. WellLIFT H sensor monitored discharge pressure as dynamic reservoir conditions changed frequently.

The CENesis ESP system with FLEXPumpER technology maintained steady drawdown while running at a slow speed of 46 Hz. Production averaged 1,034 BFPD, which represented a 20% production increase over the previous ESP system.

The operator was so pleased with the performance of the FLEXPumpER technology that two additional systems were installed within six weeks. The CENesis ESP system handled changing densities in the well fluid, variable flow rates, and frequent gas slugs while production rates increased 20%.

Challenges
- Well’s water cut and GOR fluctuated from day to day and caused problems related to downthrust
- Operator’s ESP system had frequent shutdowns, sometimes multiple times a day, due to gas-related and heat-related issues
- Density of well fluid changed frequently in this dynamic reservoir

Results
- FLEXPumpER technology maintained 800 B/D at 50% water cut
- ESP system handled average of almost 1,000 Mcf/d with significant gas slugging
- Production increased from an average of 860 BFPD to 1,034 BFPD or 20% with new pump technology
- ESP system handled varying flow rates and gas-related issues including gas slugs