

Solution to extend runlife of artificial lift equipment by 60% in gassy wells

Challenges

- Free gas in well
- Unstable operation of the equipment
- Premature failure risks
- Production decline
- Higher power consumption

Results

- Reduction in gas-related shutdowns up to 45%
- Increase runlife of equipment up to 60% and more
- Stable operation of equipment with gas content up to 75%

An increase in the volume of free gas at the pump intake significantly reduces its efficiency, leading to pump delivery failure and the entire artificial lift system.

We have developed Jet ESP technology, the solution to prevent the risks of shutdowns and equipment fault risks, based on Lex Ultra-High-Speed ESP, for gassy wells, ensuring the trouble-free operation of submersible equipment.

70% of wells in the world are complicated by free gas. The reasons are a gas cap or a high saturation of the liquid with gas, bleeding when the reservoir or bottom hole pressure drops below the saturation point pressure.

The resulting troubles may be the unsteady operation, premature failure of the submersible equipment, gas block, intermittent feed, local pump heating after a gas intrusion, cavitation, a decrease in daily production, additional maintenance cost, higher power consumption.

Usually, to solve the problem, the booster equipment is used to either separate the oil-well gas or break gas bubbles to a quasi-homogenous state to prevent the formation of gas blocks inside the pump. Both these methods are not valid enough, since when the volume of free gas reaches more than 50%, the standard devices prove no longer effective operation. Another way out may be the control station protection-specific settings. Still, this approach protects the equipment by shutting down only at a critical emergency, leading to downtime and potential production loss.

Our solution makes use of the

Ultra-High-Speed pumps by Lex.

The **UHS ESP™** by Lex comprises a high separation efficiency gas separator obtained due to the operating speed of up to 12,000 rpm. High frequencies steady the running of equipment when the intake free gas reaches up to 75%, which avoids the voluntary stops leading to production losses.

The **Jet ESP** artificial lift system operates in gassy wells, remote fields with high line pressure, and wells with the inoperative (missing, frequently freezing, blocked, etc.) check valve. The technology comprises a **UHS ESP™** with a high-efficiency gas separator and a jet pump mounted on one string. Technology returns separated gas into tubing from behind the annulus, including from under the packer, reducing its amount and preventing the harmful effect of gas on the ESP.

The above solutions provide oil companies with up to 45% reduction in gas-related shutdowns and an increase in equipment run-life of more than 60%.