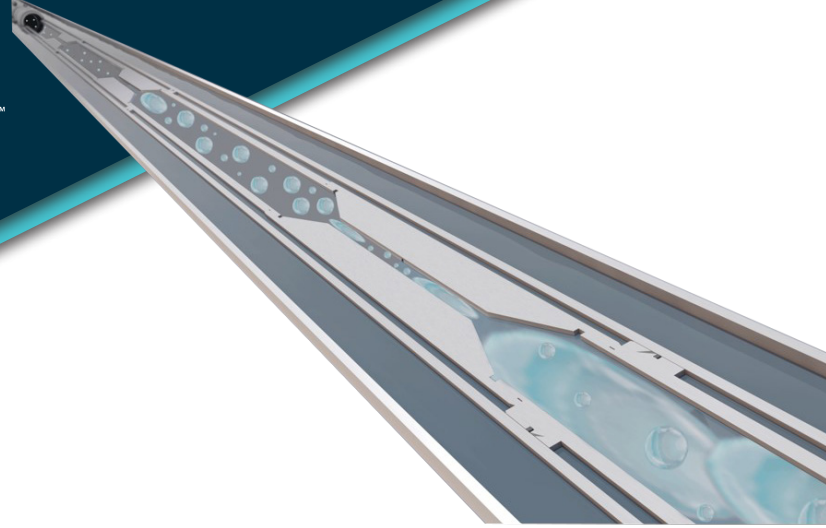


CASE STUDY



GasGuard™

ELIMINATING GAS LOCKING IN THE DELAWARE BASIN

► SUMMARY

WELL STATISTICS

- Delaware Basin Installation
- 5.5" 20# Casing
- Horizontal Well
- GLR up to 2900 SCF/STB
- Oil Cut up to 30%

IMPROVEMENTS

- 89% reduction in shutdown frequency
- Increased production by an average of 28%
- Increased production by an average of 76%
- Amp signature improvement
- Cooler motor operation

► BACKGROUND

Gas interference and gas locking conditions represent one of the largest challenges facing the ESP industry today. Though technology has recently developed to address gas management through gas separation and handling, limitations of this technology arise in the presence of gas slugging and GVF approaching 70% and beyond. Facing challenges of high GLR applications can be extremely costly for producers. Gas interference can not only lead to continuous loss of production from faults and decreased efficiencies of the ESP but can also lead to failure of electrical components of the ESP system from continuous cycling or inadequate liquid flow past the motor, which results in overheating and stress on electrical components of the ESP system.

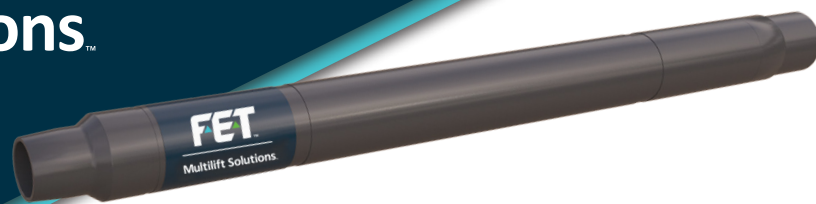
► PROBLEM

A major operator in the Delaware Basin of West Texas was experiencing difficulties with an unconventional well where ESP efficiency and operations were compromised due to gas locking.

► SOLUTION

Multilift Solutions partnered with the one of the largest producers of oil in the Permian to introduce the GasGuard™ fluid conditioning tool. This technological solution mitigates gas interference by lowering the GVF of the production stream to levels that an ESP and gas mitigating technology can manage without interruptions, costly downtime, or failures. The initial results of the introduction of GasGuard™ were apparent immediately upon ESP restart. After installation of GasGuard™ the average oil production increased by 28% according to six (6) months of data, while the occurrence of shutdowns were reduced by 89% This improvement was seen compared to the previous three (3) months.

CASE STUDY



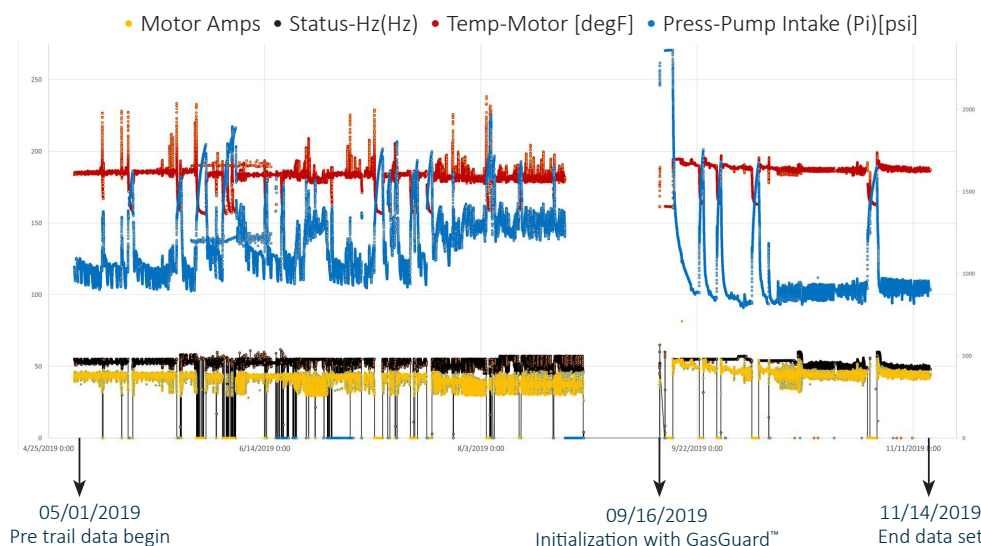
► RESULTS

In addition to successful initial results, variations in motor amperage were significantly improved and motor temperature spikes were drastically reduced, allowing the ESP to operate more efficiently with no interruptions due to gas. Since the installation of the GasGuard™, shutdowns from gas lock or gas interference issues have been a fraction of the previous ESP run. Lowering the GVF before the fluid/gas mixture reaches the intake of the ESP allows the ESP to remain active during a slugging event indicated by a tighter amp signature.

Additionally, fluctuations in motor temperature were significantly reduced, demonstrating that the GasGuard™ helped reduce the slugging effect of gas, allowing proper cooling of the motor through a more consolidated stream of fluid. This, along with the reduction of fluctuations in amperage, indicates that the ESP system experienced the same consolidated fluid mixture contributing to an increase in efficiency, an increase in additional drawdown potential, and a significant decrease in failures (both mechanically and electrically).

	Previous 3 Months	With GasGuard™ (After Draw Down)	Variance
Oil bbl/day	128.2	176.3	37.5%
Monthly Shut Downs	10.7	1.5	-85.9%
Gas Production mcf	422	538	27.5%
Total Fluid Production (bbl/day)	727	902	24.1%
30 Day Revenue Increase (@ \$55 oil/bbl)	\$211,530	\$290,895	\$79,365
60 Day Revenue Increase (@ \$55 oil/bbl)	\$423,060	\$581,790	\$158,730

Motor Amps, Frequency, Motor Temp and Intake Pressure



Oil, Water and Gas

