

GasGuard™



▶ BACKGROUND

Gas intrusion and gas locking remain critical challenges to ESP performance in the industry. Although advancements in gas separation and handling technologies have improved overall management, performance limitations persist when wells experience severe gas slugging and gas volume fractions (GVF) approaching or exceeding 70%.

Applications with high gas-to-liquid ratios (GLR) can greatly increase operating costs. Excess gas can disrupt production, reduce pump efficiency, and lead to premature failure of electrical components. These issues are often driven by frequent cycling and insufficient liquid flow past the motor, which may cause overheating and place excessive strain on the ESP system.

▶ PROBLEM

A major Permian Basin producer experienced significant gas interference despite the use of both a gas separator and a gas-handling pump. Although the oil cut was high, flow rates had fallen below 500 bbl/d. Conversion from ESP to plunger lift had become the only alternative. After multiple shutdowns due to underload faults, the ESP inevitably failed due to an electric ground fault and was pulled.

▶ SOLUTION

FET Multilift Solutions approached the producer with **GasGuard** as a technological solution to **reduce gas interference by lowering the GVF** of the production stream to levels that an ESP and gas mitigating technology could manage **without interruptions, downtime, or failures**.

▶ RESULTS

The results became apparent **immediately after the GasGuard installation**. By regulating the influx of gas slugs and consolidating the fluid/gas mixture into a homogenous mixture, fluctuations in motor amps were virtually eliminated, indicating the ESP was **producing fluid without gas interference**.

The successful operation of GasGuard was also evident in the ESP's ability to draw down the well, increasing total fluid production and nearly **doubling oil production in the first week**, production rates not seen in more than two years.

Drawdown pressure improved from 691 psi to 543 psi—a **21% decrease**—demonstrating GasGuard's ability to allow the ESP to operate at its designed flow point with consistent, stable fluid intake.

Since installation, **no shutdowns or gas-lock conditions** have occurred due to gas interference. The ESP has maintained **100% uptime**, a clear contrast to the repeated underload faults and eventual ground failure that necessitated the previous ESP pull.

WELL STATISTICS

Location	Permian Basin, West TX
Casing	5.5" 20-lb. Casing
Setting Depth	8,000 ft.
Well Type	Horizontal
Peak GLR	Up to 3,600 SCF/STB
Oil Cut	Up to 30%

KEY IMPROVEMENTS

100% Uptime	zero trips or shutdowns
76% Average	increased oil production
21% Decrease	in drawdown
Near doubling	in oil output in 1st week

100%

UPTIME — ZERO SHUTDOWNS

76%

INCREASE IN OIL PRODUCTION

3,600

SCF/STB PEAK GLR

21%

DRAWDOWN IMPROVEMENT

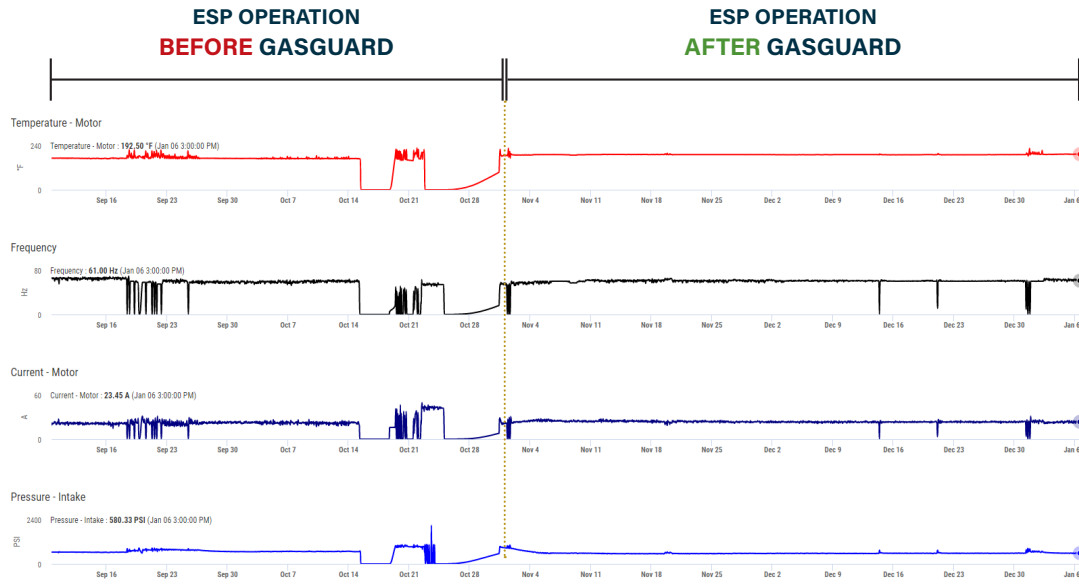
BEFORE GASGUARD

- ✗ REPEATED SHUTDOWNS FROM UNDERLOAD FAULTS
- ✗ ESP GROUND FAULT FAILURE – UNIT PULLED
- ✗ FLOW RATES BELOW 500 BBL/D
- ✗ 691 PSI DRAWDOWN PRESSURE
- ✗ GAS INTERFERENCE DESPITE SEPARATOR & GAS-HANDLING PUMP

AFTER GASGUARD

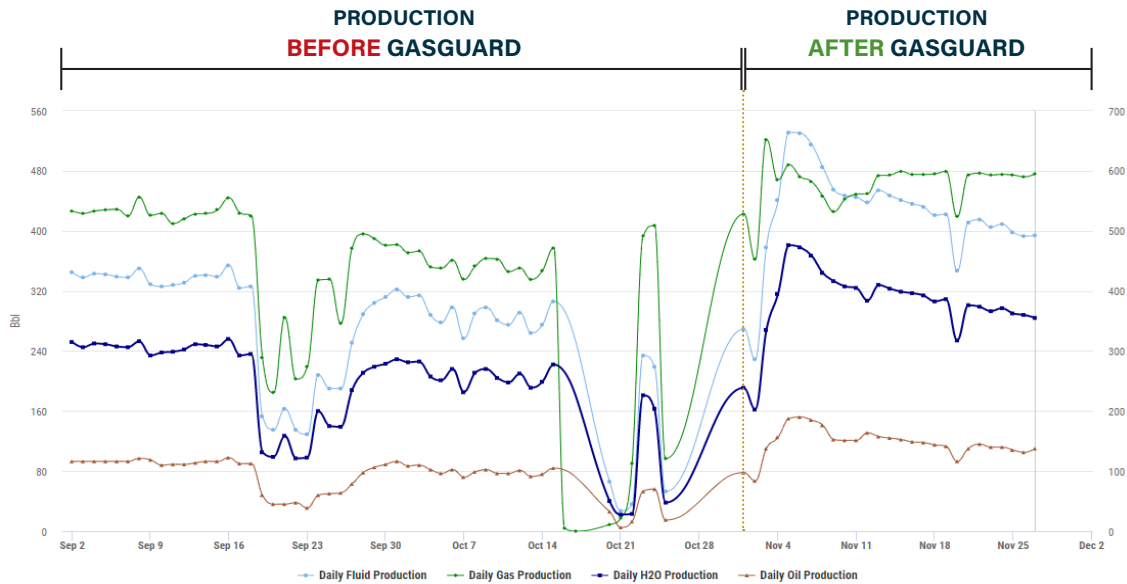
- ✓ 100% UPTIME – ZERO SHUTDOWNS SINCE INSTALLATION
- ✓ OIL PRODUCTION NEARLY DOUBLED IN FIRST WEEK
- ✓ AMP FLUCTUATIONS VIRTUALLY ELIMINATED
- ✓ 543 PSI DRAWDOWN (21% IMPROVEMENT)
- ✓ PRODUCTION RATES NOT SEEN IN 2+ YEARS

ESP OPERATING DATA — Temperature, Frequency, and Motor Current



Motor temperature stabilized, frequency held constant, and current fluctuations virtually eliminated following GasGuard installation. The contrast between pre- and post-installation behavior is immediately apparent across all three parameters.

PRODUCTION DATA — Daily Fluid, Gas, Water, and Oil



Oil production nearly doubled in the first week post-installation. Total fluid and gas production also increased substantially, confirming the ESP's ability to draw down the well and operate at its designed flow point.

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