

Case study: Permian Basin, Texas

# ACE Plus GH2500 gas handling pump controlled GVF over 50%, improved drawdown, reduced NPT

An operator in the Permian Basin, Texas, was unable to handle the amount of gas being produced with the previous standard electrical submersible pump (ESP) system. The system was allowing excess gas to enter the pump, operating with large amperage fluctuation resulting in gas locking that shut down the ESP several times a week.

The large current fluctuation caused the whole system to heat up and, coupled with the repeated shutdowns due to gas lock, the well's daily production rate was reduced, lowering system efficiency, both of which negatively affected the well's economics. It was clear to the operator that the system was not effectively drawing down the well and producing without cycling, leading to an ESP failure due to geothermal district heating (GDH).

The Baker Hughes artificial lift systems team recommended a new ESP design including the **Ace Plus™ GH2500 gas handling pump** to improve ESP performance and eliminate

equipment shutdowns related to gas lock. The pump increases lift efficiency and extends gas production capabilities by handling up to 75% free gas.

The key to the superior gas handling capability of the ACE Plus GH pump is the sophisticatedly designed tandem vane helicon-axial stages that mix the multiphase flow and provide great momentum to the high gas volume fraction (GVF) mixture. This combination ensures the well is mixed and the flow continuously moves into the next pump with sufficient energy. The pump is field proven to dramatically increase ESP gas handling ability especially under low intake pressure.

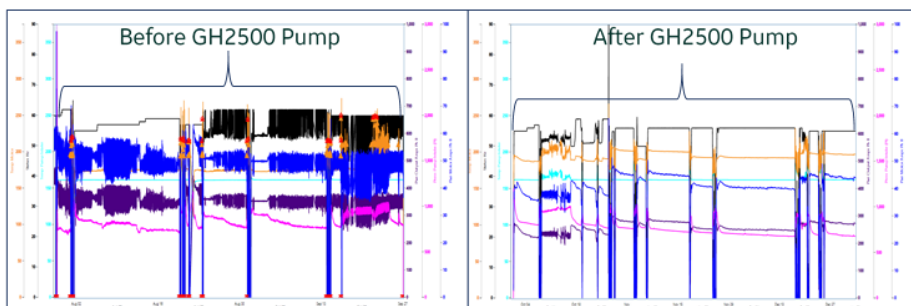
After installation, the Baker Hughes ACE Plus GH2500 gas handling pump substantially reduced cycling and shutdowns that were associated with gas interference. The ESP system enhanced the well drawdown and increased production by eliminating the nonproductive time (NPT), improving operator's well economics.

## Challenges

- High gas liquid ratio
- Limited well drawdown
- ESP operating below bubble point
- Premature failure due to GDH conditions

## Results

- Improved well drawdown
- Improved ESP uptime leading to greater stability and higher production
- Mitigated gas interference in downhole pumping system, successfully handling high GVF
- Reduced nonproductive time due to pump shutdowns caused by gas interference



ESP operational trends before and after the ACE Plus GH2500 pump installation