

Case study: Texas, United States

HPump system extends run life and reduces maintenance costs 90%

An oil producer in Brazos County, Texas was struggling to stabilize production from an Eagle Ford well. Initially a rod lift system was installed, but due to high amounts of gas, rod failures occurred monthly. Baker Hughes offered two different electrical submersible pumping (ESP) systems, but severe downhole conditions such as low inflow, high gas content, gas slugging, and high downhole temperature caused short ESP runs.

Baker Hughes engineers analyzed the frequent failures and proposed a solution that incorporated a jet pump from TECH-FLO® with a Baker Hughes **HPump™ horizontal surface pumping system and chemical injection program**. While collaborating with the jet pump supplier, Baker Hughes engineers were able to design a system to power the circulation of fluid. This is typically accomplished with positive displacement (PD) pumps, but the HPump system improved reliability and reduced maintenance costs by 90%.

A jet pump converts the pressurized power fluid to a high-velocity jet downhole that creates an area of low

pressure at the intake. This allows the formation fluid to naturally flow into the pump and mixes directly with the power fluid in the throat or mixing tube. In the jet pump diffuser, the high velocity stream is then slowed down to build pressure and lift the produced fluids to surface. This system consists of a pump housing run on the end of the tubing string with a packer, a hydraulically retrievable jet pump carrier, a power fluid source, and a surface pump to inject the power fluid downhole.

Baker Hughes alleviated many of the issues typical with jet pumps by replacing the troublesome PD pumps with a more reliable HPump system. Baker Hughes offered a chemical injection program to warranty the system performance, providing protection for the HPump system, the jet pump internal components, and the wellbore against scale and corrosion without the use of a capillary line.

Challenges

- Elevated downhole temperature
- Low production rate
- High amount of free gas
- Sand production
- Recurring rod lift failures
- Chemical treatment required

Results

- Maintained production
- Reduced maintenance costs 90%
- Increased run time
- Lowered operating cost
- Eliminated frequent shutdowns
- Reduced intervention costs
- Eliminated efficiency loss due to recirculation