

Case study: Permian basin, United States

# Baker Hughes ESPs improved run time 150% year over year, saved operator \$14 million USD annually

An operator in the Permian Basin had several electrical submersible pumps (ESP) installed in challenging unconventional formations that included factors such as abrasives and large gas volumes. The ESPs included units from Baker Hughes as well as other service providers. The operator wanted to improve the ESP program and collaborated with Baker Hughes to reduce failures and increase run lives on all Baker Hughes ESPs.

Baker Hughes included a variety of systems including the **FLEXPump™ series of ESPs**. They provide the operational flexibility required in dynamic well conditions to minimize ESP system changeouts and nonproductive time (NPT) while reducing operating expenses.

Working with the operator, Baker Hughes experts analyzed the field technology, seeking ways to optimize the design, including the tapered gas-handling ESP system. The objective was to create a standard set of

operating procedures for more efficient operations to control high gas-to-liquid ratio (GLR) wells and abrasive-handling stages resulting in increased uptime and run lives while reducing early failures.

In 2020, after reviewing the data, making adjustments, and standardizing the equipment and processes, the average run time on Baker Hughes ESPs substantially improved to over 400 days—a 50% improvement year over year. ESPs that failed in less than 90 days shrank by 61%. The number of Baker Hughes ESPs running more than a year increased dramatically—over 63%—and seven wells ran for more than 1,000 days, triple the operator’s target run times.

By nearly eliminating early failures and increasing run life on all remaining Baker Hughes ESPs, the operator reduced costs associated with pulling and replacing failed ESP systems. The estimated savings based solely on optimizing Baker Hughes technology was more than \$14 million USD.

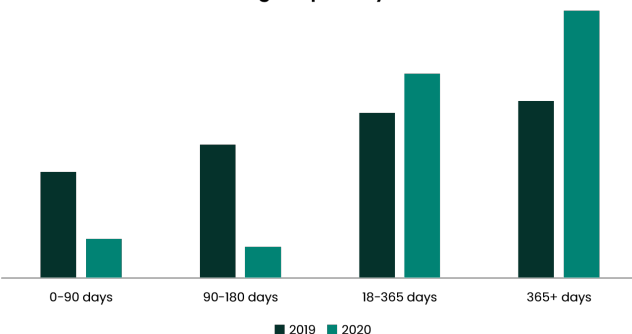
## Challenges

- Extend ESP run life in harsh unconventional application
- Manage gas handling effectively
- Minimize abrasive wear on ESPs
- Reduce early (1-90 days) ESP failures

## Results

- Improved average Baker Hughes ESP run life by 63%
- Outpaced competitors’ ESP performance
- Increased operator’s return on investment (ROI) by an estimated \$14 million USD
- Experienced no health, safety and environmental (HSE) issues

Baker Hughes pulls by run time



Baker Hughes dramatically decreased ESP early failures (0 to 180 days) down to 13% in 2020 while improving long-term ESP run lives by 40%.