



Case study: Rockies, US

# Production chemical increased ESP run time 150%

Operators in the Bakken region, Rockies were experiencing Electrical Submersible Pumps (ESP) failures due to scale corrosion issues. The Bakken wells produced water can reach temperatures of >250°F (>120°C) before reaching the ESPs and up to 450°F (232°C) after contact with the pump. Calcium can reach concentrations >15,000 ppm. These conditions mean that the traditional phosphonate scale chemistries, although often effective against scale, can cause insoluble precipitate to form. Application of this chemistry was causing the capillary lines to plug and ESPs to fail prematurely.

Baker Hughes Artificial Lift Systems and Baker Hughes Chemicals collaborated to conduct a full system review and recommended the continuous treatment of a recently developed new production chemical - **CHEMBINE™ WCW3778**. Dual combination product CHEMBINE WCW3778 was specially designed to combat the scale and corrosion issues seen in high temperature, high TDS wells.

Baker Hughes CHEMBINE WCW3778 was applied via a 1/4-in. and 3/8-in. capillary string and was required to inhibit scale and lower corrosion rates on the production tubing, ESPs and ESP cables.

After continuous treatment the operator reported an increase in ESP run time from an average of **90 days to 240 days** with no adverse effects.

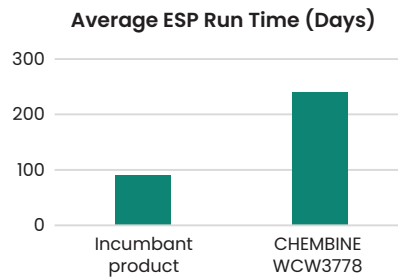


Figure 1: Average ESP run times

The improvement in ESP performance enabled the operator to sustain production and reduce operating expenditures (OPEX) resulting from less intervention work and production deferment.



Figure 2: Single pump providing dual combination treatment

## Challenges

- ESP failures in high temperature, high TDS wells
- Traditional chemistries caused capillary lines to plug

## Results

- CHEMBINE WCW3778 continuously applied via capillary string
- ESP run time average increased from 90 to 240 days