

Joint Effort Saves Time, Money, and Power Costs in Saltwater Disposal

Combining REDA HPS system with water treatment system increases uptime and efficiency for East Texas Salt Water Disposal Company

CHALLENGE

Reduce scale buildup to improve on pump uptime and maintenance cost, and increase pumping efficiency and run life through pump construction enhancements.

SOLUTION

Inject a calcium carbonate scale inhibitor to minimize scale precipitation on internal pump parts, introduce ARZ* abrasion-resistant zirconium to enhance radial stability and maximize pump longevity, and coat internal stages with epoxy to improve hydraulic efficiency and minimize stage material erosion.

RESULTS

Doubled run lives to 8.5 years and increased mean time before failure (MTBF), saving potentially tens of thousands of USD in maintenance, downtime, and power costs.

“The REDA HPS system has proved to be a very effective and reliable unit for my applications.”

Bruce Goodwin
Chief Engineer
ETSWD



Managing saltwater disposal

One of the biggest challenges in saltwater disposal is safely and cost-effectively moving the brine water. If the cost of disposing of the water outweighs the benefits of the disposal, the units are no longer economical to operate. Furthermore, if pump downtime is excessive, the water cannot be disposed of, and oil production may have to be reduced until the units are brought back online. Therefore, operating and maintenance costs are critical to economic success.

East Texas Salt Water Disposal Company (ETSWD) began operations in Kilgore, Texas, in 1941. The company's sole objective is to dispose of salt water produced in an East Texas oil field from the Woodbine formation that produces more than 11,300 bbl/d of oil.

The company currently has 89 disposal wells injecting more than 1,000,000 bbl/d of water at 550 psi to 650 psi for 11,050 individual leases. The brine water is injected down 5.5-in tubing to 3,700 ft in the Woodbine sand formation. To handle a portion of the water injection, ETSWD uses 9 REDA HPS units.

The REDA HPS* horizontal multistage surface pumping system was installed in 1991 as an alternative to conventional pumps to determine the viability of the system. Desired benefits from the REDA HPS unit included increasing injection volumes and lowering maintenance costs. The first units averaged 4.25 years of run life before they needed repairing as a result of scale buildup and erosion.

Demanding more improvement

In 1999, major changes were implemented to the injection process to improve system and equipment performance. A review of the system components indicated that calcium carbonate scale was forming on the internal components of the pumps and in the injection system and wells, causing problems. The solution was to start a chemical treatment program and to enhance the pump's construction by adding ARZ full abrasion-resistant bearing systems and by epoxy coating the stages.



ETSWD installed the REDA HPS system in 1991 to increase injection volumes and lower costs. It was enhanced by adding the ARZ bearing system in 1999 to improve the shaft's stability.

CASE STUDY: Combining REDA HPS system with water treatment system increases uptime and efficiency for East Texas Salt Water Disposal Company



The ARZ full abrasion-resistant bearing system extended the pump run life, reduced stage wear, and improved pump efficiency.

Realizing effective and cost-saving solutions

The continuous injection of a low concentration of calcium carbonate scale inhibitor reduced the scale formation in the system. The ARZ bearing system improved the stability of the shaft over the length of the pump, and the epoxy coating not only reduced stage wear but also improved the efficiency of the pump by 3 percentage points, from 78% to 81%. The combined efforts of ETSWD and Schlumberger have doubled the run life of the pumping system and lowered the operating costs.

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