Levare's LESP System Outperforms Conventional Rod Pumps in San Joaquin Basin Wells

Levare in Action

Operators in California's San Joaquin Basin were facing issues with excessive energy consumption and frequent mechanical failures in rod lift systems, prompting them to seek help from Levare.
By implementing Levare's Linear Electrical Submersible Pump (LESP) system with a Linear Permanent Magnet Motor (LPMM), the operators achieved a remarkable 60-65% reduction in energy use. The LESP system addressed critical production challenges such as tubing wear and downtime, delivered environmental benefits, and generated thousands of dollars in savings by minimizing workover interventions per year as well as tubing and rod string repairs.

Our Challenge

The San Joaquin Basin operators struggled with inefficiencies, which undermined their profitability. Conventional rod lift systems consumed significant energy, frequently failed due to tubing and rod wear, and contributed to environmental issues through methane leaks and noise pollution.
Maintaining steady production in wells with steep decline curves and variable flow rates demanded a more efficient artificial lift system.

Overcoming Obstacles

The Buena Vista reservoir is typically an unconventional production environment with demanding conditions, including low flow rates below 80 bbl/day and a lack of active aquifer support. The operators dealt with gassy and scale buildup downhole complexities, such as challenging dogleg severity in well sections. Traditional rod lift systems incurred high maintenance costs, frequent failures, and poor reliability in such conditions. Levare's LESP-LPMM system, designed for a wide operating range, eliminated rod components prone to wear, reduced downtime, and minimized lost production, making them more durable compared to rod lift systems.

Levare ElevionLift* LESP

Our Solution

Levare's LESP system combined proven rod pump capabilities with advanced linear motor technology to optimize well performance. The system eliminated rods and wear-prone components, which extended run times. It also provided more precise speed control and adapted to variable load conditions, reducing power usage by up to 65%. With real-time telemetry, the operators could monitor parameters, such as pump intake pressure, motor temperature, fluid temperature, vibration, and strokes per minute.

Additionally, they experienced environmental benefits from removing the stuffing box. This prevented methane leaks and fluid spills, while also reducing noise pollution by 25% near the VSD and 24% near the wellhead. Aside from the operational improvement, wellsite aesthetics also improved, which is important in urban areas.

How We Made it Happen

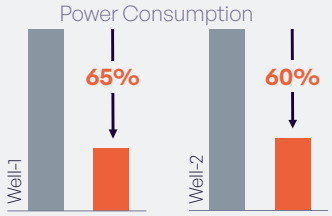
Levare applied LESP systems in two low-production wells.

- The systems were placed 40 feet below the bottom perforations to enhance fluid submergence and reduce free gas at the pump intake.
- The LESPs were placed on both wells, which had 91 ft tangent sections and dogleg severities of 1.35°/100 ft and 1.8°/100 ft.
- Advanced algorithms in Levare's Variable Speed Drive (VSD) improved energy efficiency and allowed for better performance monitoring.
- On Well-1, power usage was reduced to 3.31 kW compared to 9.35 kW for the previous rod lift system, simultaneously reducing downtime and maintenance.

Our Results

With Levare's expertly engineered LESP system, the operators achieved remarkable improvements:

- The operators reduced their energy usage **by 65%**, saving **52,186 kWh** and **$8,872** annually for Well-1, and achieved a **60%** energy reduction for Well-2.



- Reliability was extended with Well-1's Mean Time Between Failures (MTBF) increasing **by 660 hours (11.5%)**, while Well-2 exceeded **400 continuous days** of operation without failures.
- The LESP systems reduced CO_2 emissions **by 12.43 metric tons** annually for Well-1 and **11.46 metric tons** for Well-2, minimizing the operations environmental footprint. (These reductions were based on PG&E's emission factor of 0.524 pounds of CO_2 per kWh)
- Removing rods minimized wear and extended run times. So, the operators avoided costly workover interventions, improved fluid containment, and had lower noise levels.

Partner with Levare

Leave behind conventional rod pump systems and unlock the full potential of your well operations. Contact us today to learn more about our innovative LESP-LPMM systems.

* mark of Levare International