

Submersible Pump: An Innovative Solution to Town Water Supply

The Problem:

A town water supply well faced challenges associated with the efficiency and cost of its original column/riser-based pumping system. The well's operating parameters presented significant opportunities for energy savings and cost optimization. Key inefficiencies included:

- **High Frictional Head Losses:** The original riser/column system incurred significant frictional head losses, increasing overall energy consumption.
- **High Maintenance Costs:** The riser system required regular maintenance, including the removal and reinstallation of components, adding to operational expenses.

With a high duty cycle and substantial production rate, the system's inefficiencies posed a long-term financial burden.

Our Solution:

The Submersible Pump Packer system was introduced to address these challenges by offering a more efficient and cost-effective alternative. Key improvements included:

- **Reduced Frictional Losses:** The Submersible Pump Packer system significantly reduced head losses compared to the original riser/column system, resulting in a measurable reduction in energy consumption.
- **Improved Cable Cooling:** Immersing the motor cable in flowing water, rather than stagnant water, achieved additional cooling and energy savings.
- **Optimized Equipment Costs:** While the initial equipment cost of the Submersible Pump Packer system was higher than the riser system, savings were realized in reduced installation costs and lower ongoing maintenance expenses.

The Results:

Over the lifecycle of the well, the Submersible Pump Packer system delivered substantial economic benefits, as outlined below:

1. **Energy Savings:**
 - Power consumption was significantly reduced compared to the original conventional system.
 - Annual cost savings achieved due to lower energy usage.
2. **Cost Comparisons Over the Lifecycle:**
 - Total costs for the original riser system were notably higher.
 - Total savings achieved with the pump packer outweighed the initial higher equipment cost.
3. **Maintenance Cost Reduction:**
 - Maintenance costs significantly reduced due to simplified removal and reinstallation processes.

