

Germany

GeoESP® pump system delivers 1200+ days of continuous sand-laden production

Sand-resilient Tiger Shark® pump sustains geothermal output and eliminates need for sand control systems

CHALLENGE

- Anticipated sand production in geothermal well
- Avoid downhole sand control systems and associated costs
- Prevent pump blockage and hard starts
- Replace artificial lift provider that underperforms

SOLUTION

- Deliver full GeoESP® pump system in 10 weeks
- Install abrasion-resistant 675-series Tiger Shark® SH27000 pump
- Integrate oversized motor and ACS®-15 drive controller
- Provide remote monitoring through the Intelevate® digital platform

RESULT

- Achieved continuous geothermal plant operation over 1200 days
- Restarted equipment more than 30 times without failure
- Saved US\$50,000 in sand control costs
- Maintained stable flow across seasonal variations
- Secured long-term geothermal project viability

Overview

In 2023, an operator launched its first geothermal power plant in Germany to support more sustainable energy production. The project required a reliable artificial lift solution that could manage continuous production and maintain stable output under abrasive conditions.

The initial lift provider failed to meet delivery requirements, which placed the project timeline at risk. The customer required a provider that could deliver a complete system quickly and offer long-term reliability. The operator selected Summit ESP®, a Halliburton service, to deploy a complete geothermal electric submersible pump (ESP) system tailored to these conditions.

Halliburton delivered a fully integrated GeoESP® pump system within 10 weeks. The system included surface controls and downhole components designed to withstand sand-laden production and support continuous operation.



Geothermal power plant

Challenge

The geothermal system produced sand that could damage equipment, reduce efficiency, and lead to failure. The operator needed to avoid traditional downhole sand control methods, which increased cost and restricted flow. Frequent shutdowns introduced additional risk. Sand fallback during these events could block the pump and prevent restart. The operator required a solution that could tolerate abrasive conditions, restart reliably, and sustain production without intervention. The failure of the initial lift provider increased urgency. The operator needed rapid delivery without a compromise to system performance or reliability.

Solution

Halliburton deployed a GeoESP® pump system built around the 675-series Tiger Shark® SH27000 pump. The design addressed high flow rates and abrasive geothermal conditions. The system included XRange® Overlap (XRO) pump extended operating range bearings and Erosion Buster® pump technology to extend run life in sand-laden environments. The XRange Extreme (XRX) pump bearing system expanded the operational range and improved durability under variable conditions.

Engineers incorporated a seal that prevents sand accumulation amid shutdown events. This design reduces blockage risk and supports reliable restarts. The system also included an oversized motor, high-strength shaft, and the Summit ACS®-15 drive controller with a hard start algorithm. These features provide consistent restart performance after sand fallback events. The Intelevate® platform, powered by the Summit Knowledge® digital ecosystem, provides continuous remote monitoring. This capability allows teams to track performance, identify risks, and maintain optimal operation.



Surface test tank displays sand produced by GeoESP pump system.

Result

The operator achieved continuous geothermal production for more than 1200 days without mechanical failure. The system handled sand production and simultaneously maintained consistent output and reliability. The ESP system restarted more than 30 times after surface-related shutdown events. Each restart occurred without damage or performance loss, which eliminated the need for intervention. The operator avoided installation of a sand control system and reduced overall project cost. The system maintained stable flow rates despite seasonable variability, which supported consistent energy production.

The solution facilitated long-term project success through the delivery of reliable performance under difficult conditions. The operator secured sustainable geothermal production and reduced operational risk.

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