CASE STUDY

HALLIBURTON

Europe

Intelevate™ Real-time Machine Learning Optimizes GeoESP® Performance

24/7/365 monitoring and early potential problem detection offer mitigation opportunities to extend run life

CHALLENGE

Reliance on static, historical offset well data is ineffective at mitigating operational issues, which can lead to premature failure, costly downtime, and expensive replacement equipment costs.

SOLUTION

- Machine learning models detect scale formation
- GeoESP® Intake equipment helps avoid scale accumulation
- Virtual models provide backup of downhole pressure and temperature gauge data
- GeoController® allows for power consumption optimization

RESULTS

- Implemented in five geothermal projects and 12 applications at no additional capital expense cost to operator
- Proven run life improvement for one operator of 170% versus the average before Intelevate

Overview

European geothermal operators typically rely on static, historical data and lessons learned from neighboring wells to mitigate potential operational issues that can lead to premature failure. Unfortunately, this ineffective approach introduces significant uncertainty when making operational decisions. Consequently, there is an elevated risk of losing thermal energy generation and revenue when equipment malfunctions. The financial impact on operators can be substantial, involving production delays and the considerable cost of replacing equipment, which may amount to hundreds of thousands of Euros.

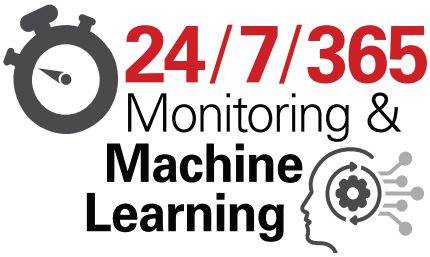
Challenge

Before the innovations by the Intelevate team, the operator did not have a real-time methodology based on the GeoESP operating parameters to identify operational challenges in the geothermal systems. Further, there was no intelligent alarm monitoring system that would help maintain the production rate for the heat requirements in Germany when downhole and surface problems arose due to scale development.

Solution

The Halliburton Intelevate digital platform offers:

- Cloud-based Intelevate digital platform with 24/7/365 remote support from subject matter experts
- Machine learning (ML) models to calculate virtual parameters such as pressure, temperature, flow rate, and total dynamic head



- Optimization playbook for field operations and remote troubleshooting techniques
- Real-time scale and vibration resonance detection
- Real-time power consumption tracking and enhancement

SUMMIT ESP
A HALLIBURTON SERVICE

CASE STUDY

Results

The Intelevate™ digital platform and associated innovative technologies have been implemented in more than 12 applications in Europe. They allow operators to achieve their production goals during several climate seasons and guarantee compliance with their geothermal energy requirements. The project was completed without additional capital expense, using SCADA information that was already available. For one operator, runtime increased from an average of 39 days to 105 days and is still running.