BORETS

Case Study

Borets ESP System
Doubled Geothermal Well Production

Double benefit: geothermal water production increased two-fold and power consumption was 20% less than originally anticipated

Customer Challenge

Declining natural-flowing geothermal well

- Well depth: 2,450 m
- Reservoir temperature: 105°C
- Reservoir pressure: 212 bar
- Water temperature on surface: 95°C - 97°C

Borets Solution

Install Borets Geothermal ESP system utilizing Borets' industry-leading permanent magnet motor

Resulting Benefit

- Doubled well production
- Eliminated natural gas burning at district heating system

A geothermal project operator from the EU contacted Borets looking for a reliable and cost-effective electric submersible pump (ESP) system to maintain and potentially increase the production capacity of a declining natural-flowing geothermal well. The geothermal well supported the district heating system (DHS) of a town with a population of almost 9,000 people, situated in the southern part of Slovakia. The hybrid DHS has been operating since October 2016 on natural-gas boilers and hot-geothermal water.

In December 2017, Borets installed its Geothermal ESP system comprising:

- 538 series ESP delivering 9,000 bpd flow rate and 70% efficiency
- 512 series energy-efficient permanent magnet motor (PMM) featuring lower power consumption as compared to a conventional induction motor
- Borets-15 variable speed drive (VSD) allowing motor speed variation in the range of 1,800 rpm to 4,500 rpm in order to ensure optimum pump performance at changing well flow rate and pressure. The Borets VSD application-specific firmware provides automatic control of geothermal fluid flow rate based on its consumption.

The system was equipped with Borets SL-450 (E-Lead) leaded power cable for superior performance in high-temperature environments, and stainless-steel housing for full protection against corrosion.

Well production increased two-fold after changing from the naturally flowing well to ESP. The Borets ESP system also eliminated the need for additional water heating by burning natural gas, thus saving considerable costs and reducing CO_2 emissions.

Borets ESP expertise and field-proven technology helped the geothermal project operator to build an energy-efficient heating system that fulfilled investor expectations, lowered environmental burden, and increased quality of life.

The installed Geothermal ESP system has already passed 26 months of continuous operation and is still running.