

Find out Europe's six most innovative geothermal projects of 2022

In March 2023 EGEC will announce the final winner among the six endorsed nominations for the Ruggero Bertani European Geothermal Innovation Award 2023. The six finalists are (in alphabetical order by company):

BRGM (France), with the project ***INHIBIOSOURCE**Expert.*

The safe use of low enthalpy geothermal installations in the Dogger Aquifer of the Paris Basin (DAPB) by production-injection wells requires a suitable anti-corrosive treatment, which should be proper to the circular economy, using inhibitors bio-sourced, biodegradable, non-toxic and highly efficient against corrosion.

In this project, BRGM presents comparative study of anticorrosive effectiveness of innovative organic Bio-Sourced Surfactants (BSS) with those of Petro-Sourced ones (PSS) when a carbon steel (CS) is immersed in a Standardized Reconstituted Geothermal Water (SRGW). The electrochemical behaviors of CS immersed in SRGW, with and without BSS, permit the selection of several BSS for their biodegradability and anti-corrosive action.

Energie Plus Concept (Germany) with the project ***ErdEis II: Frozen Soil Storage and Near-surface Geothermics.***

In the applied research project ErdEis II (03ET1634A-E) a so-called Frozen Soil Storages (FSS) is implemented for the first time in an actually realized project. A neighbourhood in Schleswig (Germany) with approx. 60 single houses and a fire station will be supplied with heating and cooling. Via a 5th generation district heating and cooling network (5GDHC) geothermal heat from two FSSs and two single-layer collector fields is transported to the houses, where it is brought to the desired temperature with heat pumps. First houses are currently being built.

The goal is to prove that, with the FSS, regenerative heating & cooling can also be developed in areas where there is not enough space for collector fields and/or probes are not permitted.

Halliburton (Netherlands), with the project ***Geothermal Virtual Pump Intake Pressure.***

In Geothermal Electrical Submersible Pump (GeoESP®) optimization, downhole gauge readings are widely used to determine equipment performance and to diagnose well conditions and challenges. Pump Intake Pressure (PIP), in conjunction with other surface-related values such as well head pressures and temperatures, flow rate, frequency, amperage, voltage, and well history, can be used to determine and improve performance and production. When a downhole gauge faults, it is necessary to have a reliable backup system to notify government authorities of PIP. The solution is Virtual PIP- a reliable, safe, accurate, and green technology that provides a PIP in real-time to geothermal operators.

Huisman Geo (Netherlands) with the project ***Composite Downhole Tubulars.***

Early 2022 Huisman launched its full composite downhole tubular system (HCT - Huisman Composite Tubulars).

After some years of development, the product is now successfully run in various applications (geothermal-, oil&gas-, carbon storage wells). An exceptional application for which the product is used, is in the injection well(s) for highly corrosive carbonized salt water into basaltic bedrock, to capture the CO₂. The composite tubular solution itself and the gained knowledge on the project are directly transferable to other (geothermal) wells."

Norwegian Well AS (Norway) with the project *CryoFLask*.

The CryoFlask is the next generation of flask to be used during drilling and well interventions in high-temperature Geothermal wells. The CryoFlask significantly increases the retention time in the wellbore for the sensors and electronics used to gather information from the wellbore. For example, while a standard flask may keep the sensors and electronics safe from overheating for four hours at 350 oC, the CryoFlask can keep the same sensors and electronics protected from overheating for 16 hours.

ZerdaLab Ltd. (United Kingdom) with the project **Manufacturable hi-spec drill bits design library**

PDC drill bits made huge progress in drilling hard rock in conventional oil and gas drilling, but they are still illusive to geothermal - poor performance, unaffordable price, and very long lead times as geothermal industry in competition for drill bits with oil and gas sector during up cycle. As a result, the geothermal industry is either left with a "left-over" bits from existing depreciated inventory, not suitable for hard rock and/or low specification cutters to save on cost.

ZerdaLab has developed bit design philosophy that are optimised for manufacturing and repair, efficient inventory management and only high-spec components. The bits are matched to application using Machine Learning enabled algorithms and can be manufactured locally."

"Thanks to these innovations, we will reach a fantastic geothermal decade. All 20 applications from 12 different European countries had good quality. The 6 pre-selected finalists demonstrate benefits, improvements, replicability, and reliability of their innovation to develop geothermal. This Innovation award is a great opportunity to promote ingenious projects, and we are honoured to receive so many good and innovative projects every year", said Philippe Dumas, EGEC Secretary-General.

The Ruggero Bertani European Geothermal Innovation Award is an initiative of EGEC, the European Geothermal Energy Council, in collaboration with Messe Offenburg, organiser of the GeoTHERM congress. The Award is given to companies which have made an outstanding contribution in the geothermal sector in the form of innovative products, scientific research or project initiatives.

The jury for 2023 is composed of Miklos Antics (France, EGEC President, Managing Director, GPC IP / GEOFLUID), Javier Urchueguia (Spain, Chairman geothermal panel RHC ETIP, UPV), Fausto Batini (Italy, Magma Energy, ETIP-DG President), Sandra Kircher (Germany, Head of Trade Fairs, Geotherm Expo&Congress), Gerdi Breembroek (Netherlands, IWG President), Kamila Izabella Piotrowska (Belgium, EGEC Vice-president, Baker Hughes), Van Wees Jan-Diederik (Netherlands, ETIP DG Vice-chairman), and Sara Montomoli (Italy, EGEC Ordinary Member of the Board, ENEL Green Power).