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Donnerstag 1.10. – Diskussionsbeiträge (19:30 – 21:00)

D3

Interpretation der magnetotellurischen Anisotropie: Ansätze nach Ulrich Schmucker

Tezkan, B.

D4

What I always wanted to know...

Weckmann, U.

D5

Geothermal exploration using MT and gravity techniques at Szentlőrinc area in Hungary

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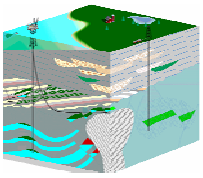
2-D AMT/MT and gravity surveys were completed in 12 survey areas in Hungary during 2008. The main objective of this project was to locate potential geothermal targets for alternative energy development in Hungary. We selected here the Szentlőrinc survey area because the first geothermal drilling project just completed.
The main geothermal reservoir systems found in Hungary are the Mesozoic carbonate–karstic basement rocks and the Pliocene-Upper Pannonian porous sedimentary formations. The interpretation of 2-D AMT/MT and gravity focuses on locating potential geothermal areas of the geothermal reservoir system within Mesozoic fractured carbonate–karstic basement rock for drilling locations.
We estimated that the faults within the north-south strike in the Szentlörinc survey area were developed in the deep basement. In addition, dense fractures have also been widely developed in the top basement (limestone) of the survey areas. Thermal energy, which was transported up along the fault systems from the deep Earth, seems to be the heat source of geothermal formation. A set of thick tertiary deposits, are located above the formation. Fractured karst limestone and dolomite deeply buried in the Mesozoic system contain the targeted geothermal reservoirs. Based on the cooperative constrained inversion of magnetotelluric (MT) and gravity data, we surmise that the geothermal aquifer is characterized by a relatively low apparent resistivity and low density, while the higher porosity and permeability formations are unique for faults and fractured zones.
The distribution characteristics of the fault zones with relatively low resistivity and with boundaries outlined by cooperative constrained inversion of MT and gravity data indicate that the prospective zones for potential geothermal reservoirs in the Szentlörinc survey area indicate that the mid-northern part of AMT/MT line 1 and the middle part of AMT/MT line 2 are potential areas for geothermal power plants or space heating.
The client has successfully drilled a well in Szentlörinc, Hungary using our exploration technology. Hot water of 80°C, estimated to have a peak heating capacity of 4 MW, was found at depths of 1,620 to 1,790 meters. This discovery was possible by utilizing different geophysical and geological information to determine the well location. The drilling was targeted by integrating electromagnetic and gravity methods with seismic and stratigraphic information.



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