From react to REFLECT: new EU research project will study behaviour of geothermal fluids to increase efficiency of geothermal operations

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The efficiency of geothermal utilisation largely depends on the behaviour of fluids that transfer heat between the geosphere and the engineered components of a power plant. The EU-funded REFLECT project aims to **avoid problems related to fluid chemistry rather than treat them**. These physical and chemical properties are often poorly defined, as *in situ* sampling and measurements at extreme conditions are difficult to date. Therefore, large uncertainties in current model predictions prevail, which will be tackled in REFLECT by **collecting new, high-quality data in critical areas**. This data will be implemented in a **European geothermal fluid atlas** and **predictive models** allowing to provide recommendations on how to best operate geothermal systems for a sustainable use.

By addressing the key problem of nearly all geothermal operations, REFLECT will have a major impact on the **operational efficiency, project economics and viability** as well as on the **environmental footprint**. By redefining geothermal fluid properties and their geochemical reaction constants over a large range of salinities and temperatures, a huge knowledge gap is aimed to be closed, leading to **more reliable predictions of geothermal performances**. The improved databases and modelling tools can be used by geoscientists and engineers to **help operators optimise power plant layout** and **reduce maintenance costs**.

By fulfilling its goals, REFLECT intends to solve many severe problems of geothermal operation. This matches the goals of the **EU Strategic Energy Technology (EU-SET) plan** by ultimately reducing the cost of key renewable technologies and increasing the security of the energy system. In the long run, REFLECT aims to **increase the number of economically viable geothermal sites**. By encouraging an increase of the share of geothermal energy within the European energy market, REFLECT can thus help to **reduce the consumption of fossil fuels**.

REFLECT recently marked its start with the kick-off meeting held on 29 and 30 January 2020 at the premises of the coordinator, the Helmholtz Zentrum Potsdam Deutsches Geoforschungszentrum (GFZ) based in Potsdam, Germany. The consortium as a whole consists of 14 partners from nine different European countries including three research institutes and geological surveys, one European organisation, four universities, and three companies.

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