

EIKE, a collaborative project for development and testing of scaling and corrosion inhibitors for geothermal sites in Germany

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The economic efficiency of geothermal plants is often impaired by depositions of secondary minerals or corrosion damage. A countermeasure with high potential to improve the sustainability and economic use of geothermal plants is the application of inhibitors.

Geothermal plants in the North German Basin extract highly saline thermal water from porous aquifers. Flow parameters of such aquifers are sensitive to secondary mineral formation. Mineral deposition near the injection well may decrease the injectivity. To date no suitable inhibitors are available for areas in Germany with (planned) geothermal use of porous aquifers.

In geothermal plants, which extract thermal water from fractured aquifers - such as in the Upper Rhine

Graben - commercially available inhibitors are currently used in testing operation. In the future, the innocuousness to water management needs to be ensured and the applicability needs to be extended to lower injection temperatures, in order to enable sustainable and economic long-term operation.

An overview over investigations performed within the collaborative project EIKE, funded by the German Federal Ministry for Economy and Energy is presented. Characterization of geothermal brines, including gases and particulate matter, as well as scaling minerals and corrosion products are one scope of the project. The final goal is to develop a scale- and corrosion inhibitor combination from common chemical compounds, which is optimized for applications in areas with geothermal use of porous aquifers. Transfer to sites using fractured aquifers is intended. Compared to commercial products, the combination of pure substances of known composition enables a systematic selection process and targeted studies on the thermal and chemical stability and on the impact of the inhibitor on fluid-rock interactions.

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