



**D | GB - Alle Vorträge werden simultan übersetzt**  
**GB | D - All presentations will be simultaneously translated**

**GeoTHERM**  
expo & congress

Freitag, 3. Juni 2022 / Friday, 3 June 2022  
Kongress 1 - Tiefe Geothermie / congress 1 - Deep Geothermal Energy  
13.00 - 13.25



## **Investigations into lithium extraction from deep geothermal waters in Germany**

*Untersuchungen zur Lithiumgewinnung aus tiefen geothermischen Wässern in Deutschland*

**Elif Kaymakci, EnBW Energie Baden-Württemberg**

In Germany, the geothermal waters in the North German Basin (NDB) and Upper Rhine Valley (ORG) have been confirmed as having some of the world's highest concentrations of lithium (NDB: up to 240 mg/L, Regenspurg et al. 2015; ORG: 100-200 mg/L, Sanjuan et al. 2016). Given both the lithium concentrations and volumes of geothermal water fluids in these regions, Germany has good potential for the extraction of lithium from geothermal waters. Gaining commercial value from lithium extraction can potentially provide additional revenue streams to geothermal energy plants and contribute developing domestic supply chain of lithium for batteries, in Germany. Furthermore, the use of direct lithium extraction (DLE) technologies enables a more sustainable lithium supply compared to conventional solar evaporation pond and hard rock mining methods, in terms of land use, water use and carbon emissions.

The joint research project UnLIMITED, funded by the German Federal Ministry of Economic Affairs and Energy, aims at developing and testing an efficient and environmentally friendly extraction process for the co-production of lithium from hot deep waters in Germany. Thus, a better understanding of the obstacles and the key success factors likely to have an impact on the application of commercial-scale lithium extraction technology will be provided. The main investigations in UnLIMITED focus on identifying qualified lithium-selective adsorbents for the extraction process based on adsorption technology. Studies at the lab examine various adsorbents regarding their adsorption properties and suitable adsorbents are tested at selected sites including the Bruchsal geothermal power plant. In line with this purpose, a proper lithium extraction plant is to be designed and constructed given the laboratory results. In this regard, realistic lithium recovery rates shall be determined in a field test and potential impacts of the extraction process on the regular operation of the geothermal plant shall be analyzed.

The results of UnLIMITED will clarify certain fundamental aspects, which need to be eliminated before realizing an industrial lithium production from deep geothermal waters.

### **Co-Autor:**

Thomas Kölbl, Forschung und Entwicklung, EnBW Energie Baden-Württemberg AG