



# Deep Geothermal Energy and Borehole Systems

Development of projects for the implementation  
of deep geothermal usage

The focus is on holistic concepts for the use of geothermal energy with the integration of all subsurface and surface data and technical requirements. Our team offers services across all planning phases - from potential and feasibility studies of deep geothermal energy to project management and project implementation.

## 25%

of germany's space and process  
heat demand can be covered  
by medium and deep  
geothermal systems

Deep geothermal energy represents an important part of the energy transition due to the possibility of continuously available heat supply and storage as well as electricity generation. Deep geothermal systems tap the subsurface at depths of about 400 to 5,000 m via open hydro- and petrothermal deep well systems and closed heat exchangers/deep geothermal probes. In Central Europe, deep geothermal energy can in particular make an important contribution to the decarbonization of the heat sector and represent an essential component in the transformation process for district heating networks, municipal heat supply and the provision of industrial process heat.

Our Team works with the goal of project realization of deep geothermal generation infrastructures. The focus is on holistic utilization concepts for deep geothermal energy with integration of all subsurface and surface data and technical requirements. We offer all services across all planning phases - from potential and feasibility studies of deep geothermal energy to project management and project implementation. Our range of tasks includes the collection, collation and evaluation of geoscientific subsurface data, the coordination of necessary exploration test work, the technical and protected-object-related risk analysis as well as the determination of the requirements for the above-ground energy consumer structures. This coupled approach forms the basis, on the one hand, for the determination of the technical energy output potentials and, on the other hand, for the outlining and implementation of the plant engineering concept. This includes the design of the underground plant components, including the dimensioning of the borehole systems, the design of the thermal water circuit and the selection of the deep pumping technology, as well as the surface geothermal plant, including heat converters and heat pumps, if required. Further tasks are the permit management, the preparation of sensitivity and economic analyses (LCOH for heat generation) and the monitoring of the plant operation (e.g. condition monitoring of the deep pump systems). In addition, communication concepts and public participation are developed, coordinated and accompanied.

## Our Competences

- **Project management across all planning phases**
- **Brief evaluation of the subsurface & potential assessment**
- **Stochastic and numerical simulation for performance determination**
- **Plant design: modeling of the entire system, energy flows, technical design**
- **Modeling of deep borehole heat exchangers up to 1,000 meters depth**
- **Deep pumping systems, thermal water cycle incl. condition monitoring**
- **Risk, sensitivity and economic feasibility studies under "real" conditions**
- **Permit management (concessions; operating plans)**

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## Your Contacts

Gregor Bussmann  
Operational Management  
Deep Geothermal Energy and Borehole Systems  
Tel. +49 234 33858-179  
[gregor.bussmann@ieg.fraunhofer.de](mailto:gregor.bussmann@ieg.fraunhofer.de)

Fraunhofer IEG  
Am Hochschulcampus 1  
44801 Bochum  
[www.ieg.fraunhofer.de](http://www.ieg.fraunhofer.de)

Ulrich Steiner  
Scientific management  
Deep Geothermal Energy and Borehole Systems  
Tel. +49 234 33858-179  
[ulrich.steiner@ieg.fraunhofer.de](mailto:ulrich.steiner@ieg.fraunhofer.de)

Fraunhofer IEG  
Am Hochschulcampus 1  
44801 Bochum  
[www.ieg.fraunhofer.de](http://www.ieg.fraunhofer.de)