

Thermal interaction of neighbourly shallow geothermal systems: An example project from Dresden, Germany

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Progressive urban development is fraught with challenges not only in infrastructural planning. Especially in urban areas, geothermal energy is increasingly used as an energy source. As a result, the topic of mutual influence of neighbouring geothermal systems is becoming more and more important and should be given special attention in planning.

At the beginning of a planning process, intensive data research must be done in order to determine not only the location but also the dimensioning boundary conditions and the energetic uses of adjacent systems. In this context, the planning of a BHE system can conflict with data protection laws.

On the one hand, the handling of this data has to be coordinated with the responsible authorities. On the other hand, it must be clarified in which case the influence of one geothermal plant on another is given and how this is dealt with by the authorities.

In addition, software-related requirements are added which cannot be covered by the usual simulation programs EED or EWS. Especially the groundwater flow has to be mentioned as a decisive parameter. Furthermore, to determine the temperature of fluid and underground, the chronology of operation of adjacent systems must be taken into account. This situation can be considered by means of numerical calculations e.g. in FEFLOW®, but the demands and the effort for the dimensioning increase in this case.

Because simulation and dimensioning of GSHP comes along with uncertainties on the geological and user side, often monitoring of geothermal systems is indispensable.

The changed requirements in planning shallow geothermal systems next to existing sites were experienced and processed in a project in Dresden, a good example for future cases.

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