European Institute
for Energy Research
by EDF and KIT

GeoMo

Geothermal monitoring for installation and operation with integrated consumption monitoring for individual optimization of the heat pump

Key Facts

Funding Agency
German Federal Ministry for Economic Affairs and Energy (BMWi)

Project Call
7th Energy Research Programme

Duration
01/2019 – 12/2021

Coordinator
IAB-Institut für Angewandte Bauforschung Weimar gemeinnützige GmbH

Partners
- IRK-Dresden, Ingenieurbüro für Hochfrequenztechnik & Antennenentwicklung
- Institut für Bioprozess- & Analysenmesstechnik e.V
- geoENERGIE Konzept GmbH
- MSR-Service GmbH
- EIFER

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Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

Project Objectives

The objectives of the project are to develop a quality assurance and monitoring system for borehole heat exchangers (BHEs) based on dielectric high-frequency spectroscopy and a monitoring system which coordinates the habits and individual needs of the consumer with the heating system (conventional heat supply in combination with a ground-coupled heat pump).

The integration of the measuring system, the real-time monitoring of process parameters as well as the high spatial resolution of the obtained data enables error analysis in case of incomplete backfilling and long-term environmental monitoring of BHEs.

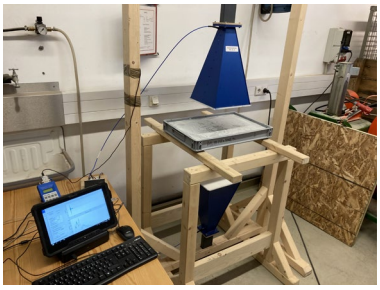

Figure: Microwave measurements on backfilling material plates

EIFER's Contribution

- Techno-economic market analysis for BHEs for a proper monitoring system setup
- Basic dielectric characterization of relevant backfilling materials
- Design and installation of pilot test rigs for evaluation of the monitoring system functionality
- Simulation of different test conditions (backfill material, BHE system arrangement, cavities etc.)
- Evaluation of test results and optimisation of test procedures and the monitoring system prototype
- Acquisition of potential industrial partners for commercialization of the monitoring system

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