

Donnerstag, 20. Februar 2025, 16.00 Uhr
Baden Arena Kongress 2
Oberflächennahe Geothermie

Thursday, 20 February 2025, 4.00 am
Baden Arena Congress 2
Shallow geothermal energy



District Heating and Cooling in Denmark utilizing shallow geothermal reservoirs.

Fernheizung und -kühlung in Dänemark unter Nutzung oberflächennaher geothermischer Reservoirs.

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A new geothermal concept is tested through a pilot project on the small island of Als close to the Danish/German border. The idea and project were initiated by Energy Machines and Danfoss and the purpose of the project is to explore and investigate whether the upper part of the Chalk formation can be utilized for district heating and cooling at the location. The final plant will work as an Aquifer Thermal Energy Storage (ATES) allowing both extraction of heating and cooling during seasonal changes.

The approach for the concept is new in Denmark both regarding the depth of the reservoir and the surface facility design/construction. The Chalk reservoir is expected to be found approximately 300 m below ground level, which means that the Danish Subsoil Act comes into force. This traditionally means that the authorities require adapting conventional well design and drilling practices. This poses a significant challenge with regards to the project economy.

Energy Machines and WellPerform jointly worked to establish a safe and reliable well design with focus on evaluating the subsurface prognosis, assessment of project risks and development of a robust work program for the drilling contractor. All data and information obtained in the first well, depth prognosis, drilling operations and test results are to be used for the second well planning and the geothermal project in general.

The case story will present the challenges and lessons learned in the new project, the outcome of drilling two new wells and the test results. The pilot plant will show case a new approach for establishment of geothermal ATES project by utilizing an unproven reservoir type and a simplistic approach to well design thus ensuring a sound project economy.