CHOOSE THE BEST ENERGY.

Geothermal energy potential of bedrock - surveys for large properties

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Geothermal energy potential of bedrock

In large properties where a ground source heat pump with an installed capacity of over 30 tons is required, it is necessary to investigate the geothermal energy potential of the bedrock in order to be able to determine the optimal size of the system. Optimal sizing can reduce investment and operating costs and ensure that the system provides a good economic return. An oversized system results in unnecessary investment costs, whereas a system with undersized geothermal wells results in additional operating costs.

LIKE BUILDING WITHOUT A SOIL TEST

Not investigating the geoenergy potential of the bedrock when planning a geoenergy system for a large property is comparable to building a house without carrying out a soil test and foundation design. The soil test provides the developer with information on what the soil is like underneath the building and whether there is a need for e.g. piling. The construction engineer needs this information to carry out his work. Similarly, a large geothermal system should not be planned without accurate information on the geoenergy potential of the bedrock.

WHAT INFORMATION DOES THE STUDY PROVIDE?

The study includes measurements and calculations of the thermodynamic properties of the bedrock and a simulation to optimize the geothermal wells. The simulation gives the specifications for an optimal geothermal system, i.e. the number of wells and well depths needed to produce the desired amount of heating and cooling energy. Peak power, pressure drop and flow calculations as well as drawings and other calculations can be provided.

Proper sizing of the geothermal wells ensures optimal operation of the heat pumps.

Investigation procedure

Consultation | Test borehole | Measurements | Design | Report

1. CONSULTATION

The consultation included in the geoenergy potential study explains in detail what geothermal energy is, how it works and how the property can benefit from it. Our consultancy services also include cost estimates for projects.

2. DRILLING A TEST BOREHOLE

We drill a test borehole and install geothermal pipes in it. We then conduct a thermal response test where we inject heat into the borehole and log the response. The test borehole can later become part of the geothermal system.

3. THERMAL RESPONSE TEST MEASUREMENT

The measurement takes about three days. It determines the geological properties, the undisturbed average temperature and the thermal conductivity of the bedrock as well as the thermal resistance of the geothermal well. These data are important for system design and the future drilling plan.

4. ANALYSIS OF THE RESULTS, SIMULATION AND DESIGN

The results of the measurement are analyzed and used as input for a simulation of the ability of the geothermal wells to deliver energy and power in the form of heating and cooling to the property. Making use of the simulation, we can plan a geothermal system that is properly dimensioned and sustainable over time.

5. REPORT

In the report, the results of the measurement and the simulation are presented in detail. As a conclusion a recommendation is given for what kind of geothermal system is suitable for the property.

Rototec is the market-leading provider of geothermal solutions and a driven pioneer. Our services cover the entire geothermal energy system value chain from consultation to installation.

For heating and cooling we offer an affordable, reliable and renewable alternative to heating oil, propane or natural gas. Under the property your own energy is available beneath your feet.

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