

Near-surface geothermal potential assessment of the region Leogang – Saalbach-Hinterglemm in Salzburg, Austria

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Within the EU-funded Alpine Space project GRETA (Near-surface Geothermal Resources in the Territory of the Alpine space), a potential assessment for the use of near-surface geothermal energy is being performed. The focus region for Austria is represented by the two communities Leogang and Saalbach-Hinterglemm where settlements are located in altitudes of about 800 – 1.000 m. In these communities, as well as in large parts of the alpine space region in Austria, winter sports tourism is an important economic factor. The demand for heating and domestic hot water in this region of about 6.000 inhabitants rises significantly in the winter months due to around 2 million guest nights per year. This makes clear why the focus is on touristic infrastructure like alpine huts or hotels. It is a high-altitude area with a large number of remote houses, thus district-heating is not ubiquitous – thus, near-surface geothermal energy can be a useful solution for a self-sufficient energy supply. The objective of detailed investigation within the project is, to which extent the elevation, the gradient and the orientation of the hillside influence the geothermal usability of the shallow underground. To predict temperatures in depths of up to 100 m and therefore make statements on the geothermal usability of a certain piece of land, it is necessary to attain a precise ground-temperature map which reflects the upper model boundary. As there are no ground temperature measurement stations within the region, the GBA has installed four monitoring stations. Two are located in the valley, at altitudes of about 800 m, and two in higher altitudes of about 1.200 m, one on a south- and one on a north-slope. Using a software invented by the University of Soil Sciences in Vienna a ground-temperature map will be calculated. The calculation is based on climatic data considering parameters like soil composition. Measured values from the installed monitoring stations will help to validate or to calibrate those calculated ground-temperatures.