



# Geothermal Energy Utilization

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since 1951



**FRITZ**  
Planung GmbH



## What is geothermal energy?

The term geothermal is derived from the Greek term for earth's heat. The earth's heat, or geothermal energy, has different origins. On one hand it is a part of the energy released by the earth's formation, or resp. was already available before earth's formation. On the other hand it is being fed continuously through the emitted power by the radioactive decay of natural isotopes. Because of the high isolation of the earth's building materials, the geothermal energy reaches the surface of the planet very slowly. That is why this energy source will be available for a long time still. The only limitation for utilizing it has a technical nature. The hot and with it efficient parts of the earth are deeper than the most till now developed techniques and methods. Additionally the temperature flow from the earth's core to the surface, the so called geothermal gradient (see right), is not the same at different sites on earth. E.g. on Iceland, there are many thermal wells coming out directly on the surface sometimes like geysers, and in other parts of the world very deep drillings are needed for reaching thermal waters with the same temperature. These differences are based on the particular geological conditions. Earth's heat can escape on the surface much easier at continental plate boundaries or in tectonic rift systems, so that at such places high temperatures can be reached at shallower levels.



*The geothermal temperature gradient gives the temperature rise with increasing depth. The average in Germany is 3K per 100m, but locally significant anomalies can appear. These anomalies can be favorable for geothermal projects and can be used for preferably profitable plants.*

## Geothermal power can be established univalent or in combination with other renewable energies (solar, biomass, etc.)



### Future energy supply

When intelligent used, geothermal energy can become an important element of our energy supply in the future.

#### Geothermal energy:

- regenerates itself permanently from the earth's interior and from the radioactive decay
- is available any time and preserves the environment
- is base-loadable
- is profitable and innovative
- produces no CO<sub>2</sub>-emissions

#### Suitable for the geothermal utilization are:

- near surface geothermal systems (ground source heat pumps with collectors or heat probes, heat exchanger piles, groundwater wells) together with heat pumps and flat heat plants
- deep geothermal systems (Hydrogeothermics, deep source heat pumps and Hot-Dry-Rock – plants)



## More than 30 years experience

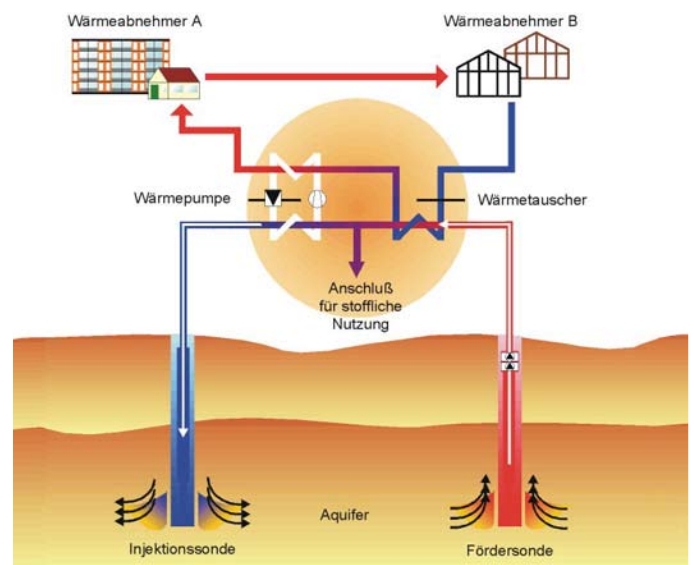
The FRITZ Planung Company is working more than 30 years in the field of geothermal energy utilization and is your partner at any phase of a geothermal project. We provide feasibility studies and economy analysis, develop projects from the geophysical exploration, through heat pumps and well plants up to several thousand meter deep drillings and plan the bonding of the obtained energy in the available electricity, cooling and/or heat network.

In addition to the development of concepts for the technical building equipment the FRITZ Planung Company organizes all the approval processes with the Environmental Agency and the Board of Mines.

We project plants for using „cold district heat“, where groundwater is used for heating and cooling. Shallow ground source heat pumps can supply housing estates and be used by the renovation and extension of existing energy supply.

We are your powerful partner by the following tasks:

- feasibility studies
- approval processes (water and mining law)
- general planning of geothermal projects and drillings
- economy analysis
- site exploration
- geological and geophysical exploration
- hydraulic tests
- gas leakage tests
- aerial image exploration
- deep drillings for geothermal and balneological utilization
- drill hole tests
- isotope hydrology
- laying out of under water pumps
- groundwater modeling
- energy utilization
- ground source heat pump plants
- processing plants



## Abstract of references

• Bad Saulgau	three thermal water drillings	(1976 - 1981)
• Bruchsal	geothermal Doublette with two drillings and geothermal plant	(1983 - 2010)
• Bad Waldsee	two thermal water drillings	(1985 - 1991)
• Tuttlingen	thermal water drilling	(1995 - 1998)
• Breitenbrunn	repowering of an old oil well to a thermal water drilling	(1996)
• Bad Kreuznach	thermal brine deep drilling	(1998)
• St. Blasien / Menzenschwant	direction drilling in an uranium ore mine	(2000)
• Waldshut-Tiengen	thermal water drilling	(2001)
• Freiburg	feasibility study	(2003 - 2007)
• Office Park Hoahrhein	cold district heat for a industrial area	(2007 - 2008)
• Poing	thermal water drilling (Doublette)	(2007 - 2009)



With effect from 31.01.2001 the FRITZ Planung has implemented its Quality Management System according to the DIN ISO 9001 for the entire Company. The QM-System was proved and accredited by the TÜV-Rheinland with a certificate from 20.11.2001 with the number 01 100 01 19941.

#### head office Bad Urach

Fritz Planung GmbH  
Am Schönblick 1  
72574 Bad Urach

Tel. +49 7125 / 15 00 - 0  
Fax +49 7125 / 15 00 50  
service@fritz-planung.de

#### branch office Freiburg

Fritz Planung GmbH  
Wöhlerstr. 1 - 3  
79108 Freiburg

Tel. +49 761 / 50 484 - 0  
Fax +49 761 / 50 484 50  
service@freiburg.fritz-planung.de

#### branch office Aalen

Fritz Planung GmbH  
Stuttgarter Straße 126  
73430 Aalen

Tel. +49 7361 / 46 92 - 0  
Fax +49 7361 / 46 92 50  
service@aalen.fritz-planung.de

#### branch office Weil am Rhein

Fritz Planung GmbH  
Rathausplatz 3  
79576 Weil am Rhein

Tel. +49 7621 / 73 42 0  
Fax +49 7621 / 79 19 44  
service@weil.fritz-planung.de

#### branch office Immenstaad

Fritz Planung GmbH  
Fritz-Kopp-Straße 26  
88090 Immenstaad

Tel. +49 7545 / 94 99 282  
Fax +49 7545 / 94 99 283  
stern@immenstaad.fritz-planung.de

[www.fritz-planung.de](http://www.fritz-planung.de)