

Geothermal Energy

What is geothermal energy?

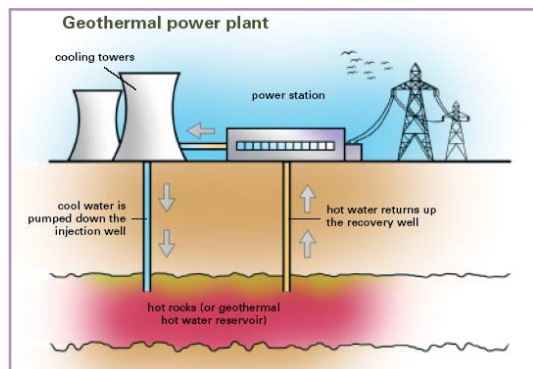
How can we use geothermal energy?

There is natural heat deep inside the Earth. Geothermal energy is about taking the heat from under the ground, so we can use it up here!

Geothermal – ‘Geo’ means Earth and ‘thermal’ means heat

There are different ways to make geothermal energy:

1. Drill down and bring up water from naturally occurring underground reserves
2. Force cold water through dry, hot rocks in the ground - returning to the surface heated



Source: dti

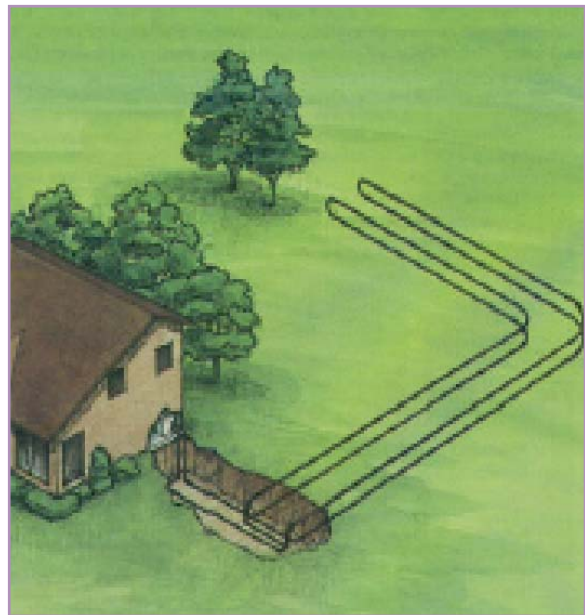
These power stations can **only** be located in certain places in the world. It is best near tectonic plate boundaries, e.g. in volcanic areas.

In Northern Ireland we use heat from the ground through,

Ground Source Heat Pumps

When the sun shines on the Earth, the ground absorbs heat. This heat is stored in the ground. Ground Source Heat Pumps use this store to heat rooms, water and can even run air conditioning in buildings.

How does it work?



- An area the same size as the house is needed. A trench is then dug and plastic coiled pipes are put in at a depth of 6ft.
- Water travels between the building and the Earth through these plastic pipes.
- The water has antifreeze in it so that it does not freeze in the winter, which would burst the pipes.



- Water is pushed through the pipes by an electric pump.
- The water is heated underground and a heat exchanger coil is used to transfer the heat from the water to other water pipes in the house
- This heat is normally used to heat the house – mainly used in under floor heating.
- In Winter – the heat stored in the Earth, warms the house
- In Summer – the Ground Source Heat Pump, can act like air-conditioning by removing heat from the house and returning it to the Earth.

Advantages

- Geothermal energy does not produce pollution
- Running costs of a Geothermal Power Station are very low
- Ground Source Heat Pump system is effective for heating a house and can last for 50-75 years with low maintenance

Disadvantages

- Difficult to find a good site for a geothermal power station
- Occasionally, dangerous gases and minerals can come out of a borehole, which maybe difficult to get rid of.
- Ground Source Heat Pump system, needs electricity to run the pump
- 3 units of heat need 1 unit of electricity

Case Study

Where?

A home in Co. Down

What?

Ground Source Heat Pump, fuelling the under floor heating system

