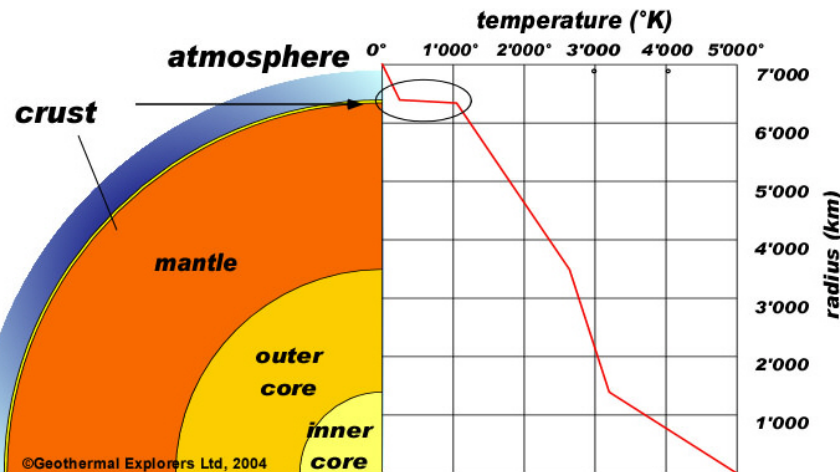


Geothermal energy



<http://www.geothermal.ch/bilder/content/tempverlauf.jpg>

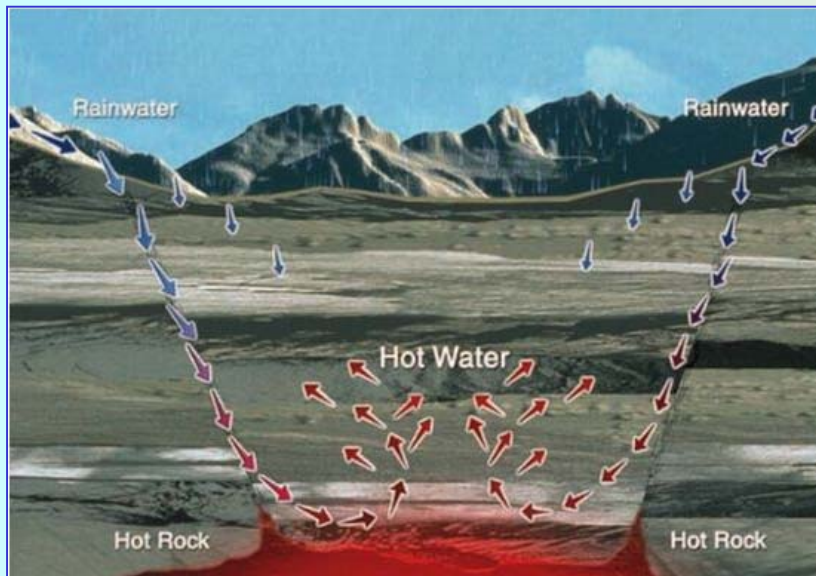
What is geothermal energy?

The word **geothermal** comes from the Greek words *geo* (earth) and *therme* (heat).

So, geothermal energy is heat from within the earth.

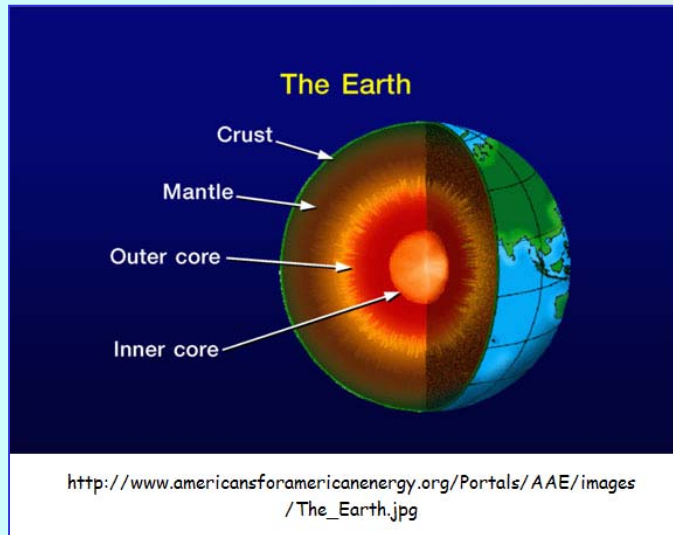
We can use the steam and hot water produced inside the earth to heat buildings or generate electricity.

Geothermal energy is a **renewable** energy source because the water is replenished by rainfall and the heat is continuously produced inside the earth.



http://www.instablogsimages.com/images/2007/12/03/geothermal-energy_6648.jpg

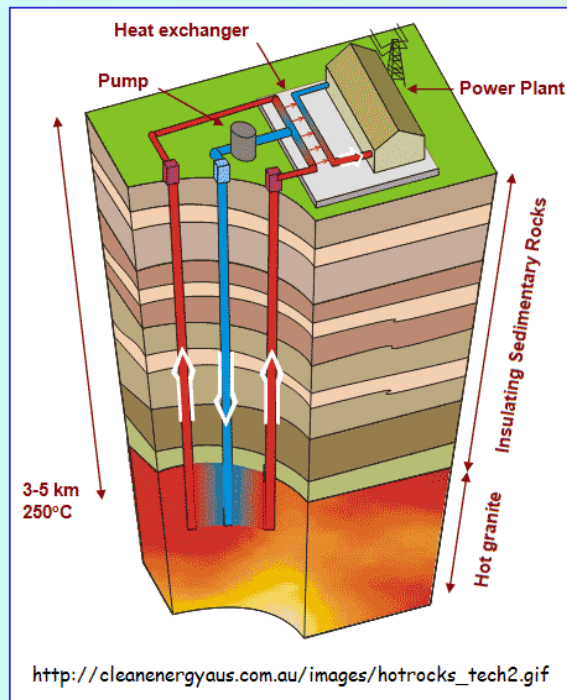
Geothermal energy



Energy inside the Earth

Geothermal energy is generated in the earth's core, about 4,000 miles below the surface.

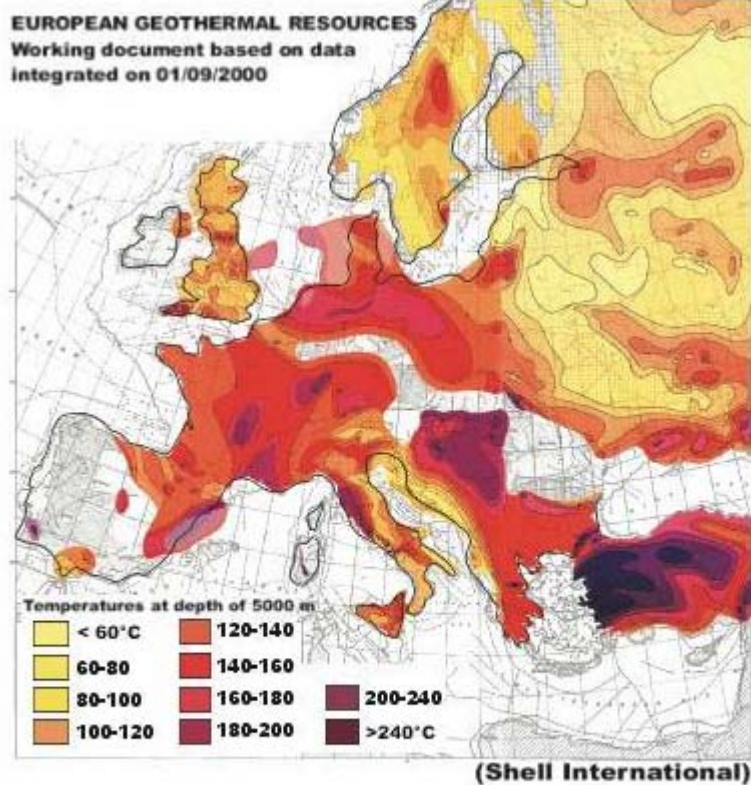
Temperatures hotter than the sun's surface are continuously produced inside the earth by the slow decay of radioactive particles, a process that happens in all rocks.



Pictures shows people bathing in the Blue Lagoon, Iceland, with a geothermal power station behind.

<http://www.virginmedia.com/images/geothermal1.jpg>

Geothermal energy



http://www.soultz.net/fr_what_eng/what_images/map_geothermie.jpg

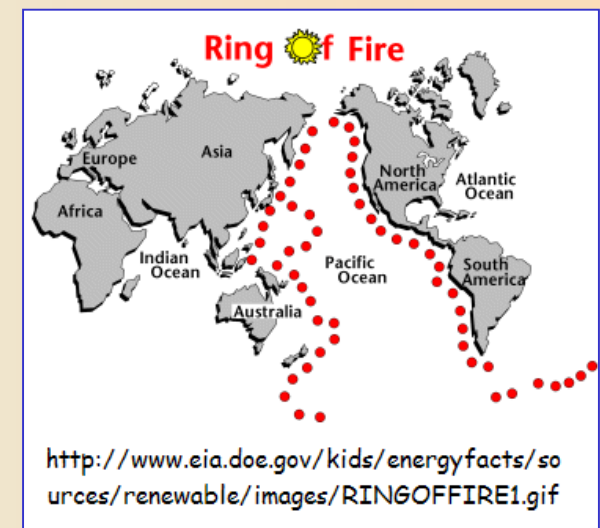
Where is geothermal energy found?

Geothermal energy can sometimes find its way to the surface in the form of:

- **volcanoes** and **fumaroles** (holes where volcanic gases are released)
- **hot springs** and **geysers**.

The most active geothermal resources are usually found along major plate boundaries where earthquakes and volcanoes are concentrated.

Most of the geothermal activity in the world occurs in an area called the **Ring of Fire**. This area rims the Pacific Ocean.



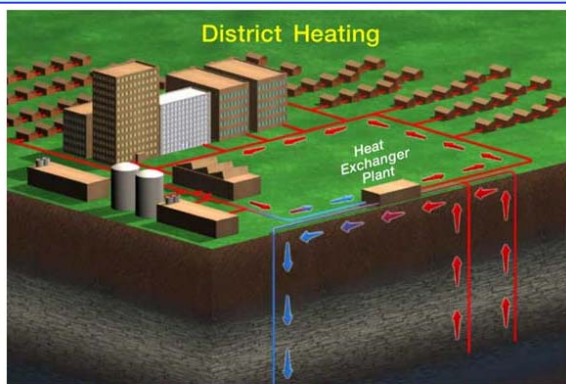
Geothermal energy

Uses of geothermal energy

Some applications of geothermal energy use the earth's temperatures near the surface, while others require drilling miles into the earth.

The three main uses of geothermal energy are:

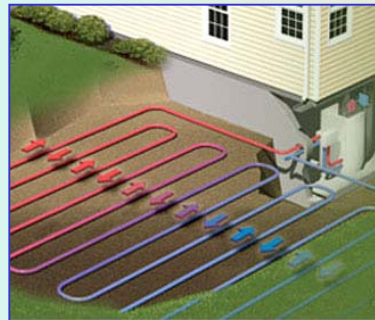
- Direct use and **district heating systems** which use hot water from springs or reservoirs near the surface.
- Electricity generation in a power plant requires water or steam at very high temperature. **Geothermal power plants** are generally built where geothermal reservoirs are located within a mile or two of the surface.
- **Geothermal heat pumps** use stable ground or water temperatures near the earth's surface to control building temperatures above ground.



Hot water from one or more geothermal wells is piped through a heat exchanger plant to heat city water in separate pipes. Hot city water is piped to heat exchangers in buildings to warm the air.

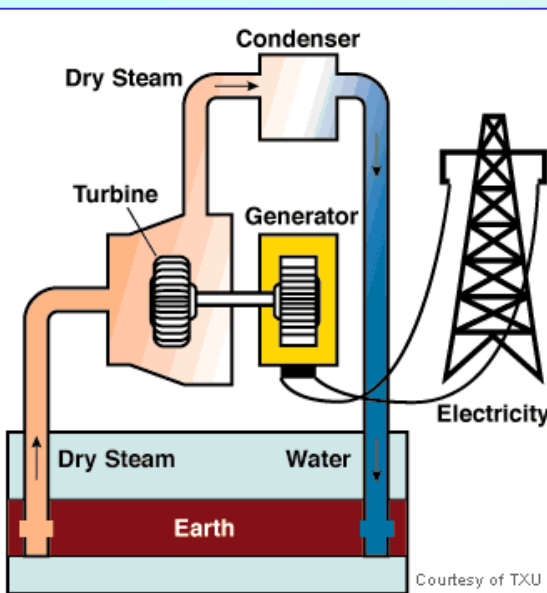
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<http://geothermal.marin.org/Geopresentation/images/img090.jpg>



Geothermal heat pump

<http://energytechstocks.com.previewmysite.com/wp/wp-content/uploads/2007/11/wfi330.jpg>



Courtesy of TXU

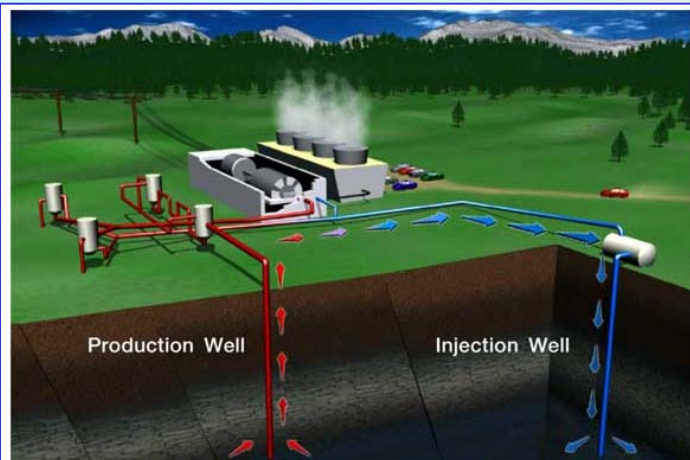


Geothermal power plant

<http://www.infinite.com/img/infinite-magjovellin-power-plant-full.jpg>

<http://www.reuk.co.uk/OtherImages/geothermalIllustr.gif>

Geothermal energy

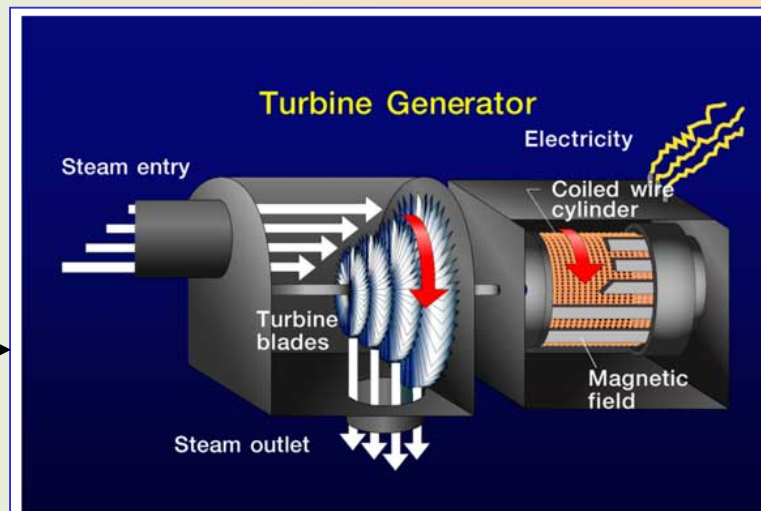


Natural steam from the production wells power the turbine generator. The steam is condensed by evaporation in the cooling tower and pumped down an injection well to sustain production.

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<http://geothermal.marin.org/GEOpresentation/sld037.htm>

Geothermal power plant



Like all steam turbine generators, the force of steam is used to spin the turbine blades which spin the generator, producing electricity. But with geothermal energy, no fuels are burned.

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<http://geothermal.marin.org/GEOpresentation/sld038.htm>



Substation with transformer and insulators, at a geothermal power plant.

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