

Geothermal Energy for the Home

What is Geothermal Energy?

Geothermal energy is solar energy stored in the earth's crust. Geothermal energy is also considered as energy from Magma and the radioactive decay of uranium, thorium and potassium.

How does a Geothermal Heat Pump Work?

A geothermal heat pump transfers heat from one place to another by evaporating & condensing refrigerant using a compressor and an expansion device.

In the heating mode, we have a coaxial heat exchanger that acts as the evaporator coil in which we take heat out of the water flowing through it. Then this refrigerant enters the compressor. The compressor boosts the pressure & temperature of the refrigerant. Now this high evaporated temperature crosses through the Condenser heat exchanger. Here the air temperature in the home is cooler than the refrigerant temp. Therefore the refrigerant temp gives its heat up to the air, condensing back into a liquid. This high pressure liquid is then pushed through a small expansion valve device. This device changes the characteristics of the refrigerant to a saturated cool gas because of the massive pressure drop. Where the temperature now is cooler than the column of water flowing through it it can again extract heat from the water and continue this process.

In the cooling mode this process reverses. A reversing valve activates and changes the flow of refrigerant through the system. Now the Condenser becomes the evaporator and the evaporator becomes the condenser. Still the same process takes place.

