

Journey to the Center of the Earth – A Conference Center Uses Geothermal Energy!

Hot Water from Inside the Earth

Have you ever filled your bathtub with water only to find that it is too hot to step into? What makes the water this hot? In our homes it is a water heater. In a state park in Wyoming, there is water from inside the Earth that is naturally too hot to step into. The Hot Springs State Park in *Thermopolis*, Wyoming has the largest public **mineral hot springs** in the world.



The hot mineral water that bubbles up from inside the Earth is a temperature of 128° F (54° C). This is so hot that the park officials have to cool mineral water by letting it sit outside in a cooling pond. This cool mineral water is then mixed with the very hot mineral water to make a temperature of 104° F (40° C). Then the water is like a hot tub!

Heat from the Earth

What makes this water in the Hot Springs State Park so naturally hot? The interior of the Earth is very hot. Scientists guess that the center of the Earth is about 7200° F (4000° C). Imagine how hot you are on a day that is just a mere 90°F (32° C). The heat that comes from inside the Earth is called **geothermal energy**. You can understand the term geothermal energy by looking at word parts. *Geo* means *Earth*.



The study of geography is the study of the earth. *Thermal* means *heat*. Your thermos keeps your soup hot. Remember the name of the town where the state park is located is ***Thermopolis!*** As you can see from the word parts, geothermal energy involves using heat from the Earth.

There are five main types of geothermal energy that flow from inside our hot Earth. Today we have the technology to use two of the types of geothermal energy and make money.

One of these helpful kinds of geothermal energy is like the hot springs. It is called **hydrothermal energy**. What does *hydro* mean? It has to do with water. So, hydrothermal resources are made when **water** seeps into the Earth and is heated by hot rocks. This hot water can be brought to the surface and used to make electricity or is used just as it is. There are many hydrothermal resources all over the world. In the United States, you can find these hot water resources in the western United States, Alaska and Hawaii.

Earth energy is the other type of geothermal energy that we can use today. Earth energy is the heat that we find in soil and rocks closer to the surface of the Earth. It is used by geothermal heat pumps.

What's So Good About Geothermal Energy?

You already know that there are many problems with burning **fossil fuels** to make energy. Let's review some of those problems.

- (1) Fossil fuels will run out.

- (2) Fossil fuel burning makes **greenhouse gases** that add to problems with our Earth's temperature.
- (3) When burning fossil fuels, **particulates** are released into the atmosphere. These particulates can cause health problems.
- (4) Taking these fossil fuels from the Earth can destroy the natural beauty of the land.

Geothermal energy does not run out. It is a renewable resource that occurs naturally on our planet. There are some greenhouse gases like **carbon dioxide** that are **emitted** from a geothermal power plant. But, we have to realize that there is a lot less carbon dioxide coming from a geothermal power plant than from a fossil fuel burning power plant. Imagine these tiny fractions: geothermal plants put 1/1000 to 1/2000 the amount of carbon dioxide into our atmosphere compared to a fossil fuel burning power plant! There is also no burning necessary in a geothermal power plant. Therefore, there are no particulates put into the air that can cause health problems.

There are other good things about geothermal power plants. You can depend on them. They rarely need to be shut down for repairs. They also can be used in many different ways. Do you live in a part of the world where you need to shovel snow? Geothermal energy could help you! In one Oregon town, a geothermal heating system melts snow from the sidewalks. Geothermal energy also is used in greenhouses and to run laundries.

A New Conference Center in Mississippi Goes Geothermal

Take a drive about an hour and a half out of Jackson, Mississippi, and you'll find Tara. No, not the plantation in that movie your parents often mention that you've never seen. This Tara, named Tara Wildlife, offers a wide range of wildlife activities. The people who built it have a strong commitment to the wise use of natural resources. The new Herbert Bryant

Conference Center building at Tara has a geothermal heating and cooling system.

Gilbert Rose, President of Tara Wildlife, decided to install this system in the new conference center because it seemed to match the philosophy of Tara to use our natural resources wisely. The conference center is right next to a small lake. This easy access to water can help cool the center. It just makes good sense. Geothermal pumps are more expensive than traditional heating and cooling systems, but Mr. Rose hopes it will pay for itself in less than ten years.



The Galt House East Hotel in Louisville, Kentucky knows first hand about the savings. It has a yearly energy bill that is \$300,000 less than the hotel next door that is the same size! Imagine saving this much money and helping the environment, too. The Galt House East Hotel has the largest geothermal heat pump in the world. It uses this heat pump to both heat and cool the hotel. It uses electricity to move the thermal energy from the ground to the building to make heat. It also moves heat from the building back to the Earth to cool the room. Yes, a geothermal heat pump uses electricity, but it does lower the amount of electricity that a building needs. Power bills are less and fewer greenhouse gases and particulates are emitted into the air.

You're an Expert!

1. Write a good compare and contrast paragraph about the differences between using geothermal energy and fossil fuels. Be sure to use a good topic sentence and clincher sentence.
2. Draw a picture or make a model of the interior of the Earth from clay. Show the different layers and write captions describing the layers.
3. Make a list of as many words that begin with hydro as you can. Do the same for geo.

Taking Action.....

Write a commercial for the Herbert Bryant Conference Center that encourages people to visit it. Tape your commercial or prepare it for publication in an imaginary magazine.