



Well Drilling • Pumps • Water Treatment

What is GeoExchange technology?

GeoExchange technology uses the earth's renewable energy, just below the surface, to heat or cool a home or other building, and to help provide domestic hot water. It's sometimes referred to as a geothermal heat pump, a ground source heat pump, or earth energy. No matter what you call it, GeoExchange systems are the best choice you can make for both your pocketbook and your planet. In fact, these systems are so good that the U.S. Environmental Protection Agency (EPA) has said they are, "the most energy-efficient, environmentally clean, and cost-effective space conditioning systems available today."

How does it work?

A few feet beneath the surface, the earth's temperature remains fairly constant year-round, ranging from 45° to 50° in Eastern Washington. GeoExchange takes advantage of this constant temperature to provide extremely efficient heating and cooling.

In winter, a fluid circulating through pipes buried in the ground absorbs heat from the earth and carries it into the home. The GeoExchange system inside the home uses a heat pump to concentrate the earth's thermal energy and then transfer it to the interior space for warmth.

In the summer, the process is reversed: heat is extracted from the air in the house and transferred through the heat pump to the ground loop piping. The fluid in the ground loop then carries the heat back to the earth. The only external energy needed for GeoExchange is the small amount of electricity needed to operate the heat pump, ground loop pump and distribution fan or pump.

Is GeoExchange new?

The basic technology has been around for more than 50 years, and many homeowners and businesses have been enjoying the benefits of GeoExchange for much of that time.

In recent years, significant improvements have been made in the materials used, installation methods, electronic control systems, and efficiencies of the compressors, pumps and other equipment.

What are the major benefits to the home/building owner?

Owners enjoy lower utility bills (25% to 70% lower than with conventional systems), lower maintenance and higher levels of comfort year-round. They also have the peace of mind of knowing they're being environmentally responsible.

Since a GeoExchange system burns no fossil fuel on-site to produce heat, it generates far fewer greenhouse gas emissions than a conventional furnace, and completely eliminates a potential source of poisonous carbon monoxide within the home or building. Even factoring in its share of the emissions from the power plant that produces

electricity to operate the GeoExchange system, total emissions are far lower than for conventional systems.

What are the environmental advantages?

According to data supplied by the U.S. Department of Energy (DOE) Office of Geothermal Technologies, nearly 40% of all U.S. emissions of carbon dioxide (CO₂) are the result of using energy to heat, cool and provide hot water for buildings. This is about the same amount of CO₂ contributed by the transportation sector.

A typical 3-ton residential GeoExchange system produces an average of about one pound less carbon dioxide (CO₂) per hour of use than a conventional system. To put that in perspective, over an average 20-year lifespan, 100,000 units of normal sized residential GeoExchange systems will reduce greenhouse gas emissions by almost 1.1 million metric tons of carbon equivalents.

That would be the equivalent of converting about 58,700 cars to zero-emission vehicles, or planting more than 120,000 acres of trees.

The waste heat removed from the home's interior during the cooling season can be used to provide virtually free hot water, resulting in a total savings in hot water costs of about 30% annually, and lowering emissions even further.

Fogle Pump & Supply, Inc. is a certified
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How popular is GeoExchange?

There are more than one million installations in the United States today. Although this is a very small percentage of the total HVAC market, the number of people who are choosing to install GeoExchange is growing rapidly as more learn about the benefits of technology.

Is GeoExchange used primarily in homes?

While many homes have been fitted with GeoExchange systems, a large number of commercial enterprises, including factories, retail stores, office buildings and schools also use GeoExchange. In fact, there are more than one million installations in the United States today.

Will GeoExchange work in a very hot or very cold climate?

Yes, GeoExchange technology can be used in any part of the country. Why? Because it transfers heat to and from the earth, which remains at a relatively constant temperature, rather than the air, where temperatures can vary greatly.

Does GeoExchange cost more?

Not necessarily. It depends on how you measure cost. While it sometimes cost more to install in homes than conventional systems because of the ground loop piping, GeoExchange systems typically have the lowest life-cycle cost of any heating and cooling system. Heating and cooling costs for a typical 2,000-sq. ft. home can run as low as \$1 a day.

Moreover, installation costs have declined substantially in recent years, and are expected to continue to fall as more builders and contractors offer GeoExchange systems, and as more innovative ways are developed to install the systems faster and more efficiently.

Altogether, GeoExchange systems are a sound investment. The amount the homeowner saves every month in energy costs is more than enough to offset the higher installation cost.

Remember, too, that GeoExchange means extra savings on repair, maintenance, and hot water bills.

Furthermore, the energy efficiency of the system adds value to the home. The National Association of Realtors Appraisal Journal estimated that a home's value increases by \$10 to \$25

for every \$1 reduction in utility bills. That's a lot of equity to build just by choosing GeoExchange !

How much will my system cost to install?

Installation costs are based on variables, such as your home or building's size and design, the brand and model you choose, your location, etc.

To find out how much it would cost to add a GeoExchange system into your home or business, contact Fogle Pump & Supply, Inc. for an estimate.

How long will it take for my system to pay for itself?

The answer to this question depends on what it would have cost you if you were operating another heating and cooling system, and how much lower your bills will be when you're using the GeoExchange system. Every installation will vary, but the Water Professionals at Fogle Pump & Supply, Inc. will help you determine your system's payback.

Whatever the job or challenge let Fogle Pump & Supply's "Water Professionals" get results for you

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