



A geothermal horizontal closed-loop system.

Courtesy of ClimateMaster

the earth's huge thermal mass instead of the outdoor air. During winter, the ground temperature stays warmer than the outdoor air, so it is easier for the geothermal heat pump to draw heat into your home. During summer, the ground stays cooler than the outdoor air, so the geothermal heat pump can dump the heat more efficiently.

The cost of installing a typical 3-ton (36,000 Btu) geothermal heat pump will cost several thousand dollars more than installing a gas furnace and a central air conditioner. The geothermal heat pump often will pay back the higher initial cost in about eight years, or less, depending on local utility rates. Geothermal heat pumps typically have a life of 20 years or more.

Many geothermal heat pumps offer all the comfort options of standard air conditioners or heat pumps. They may also produce warmer air than a standard heat pump during the winter. Models are available with two-stage compressors and efficient variable-speed blowers to closely control temperature and humidity. Some models use new ozone-friendly R410A instead of freon.

You don't need a large yard for a geothermal heat pump, and there are two designs to choose from. One type uses a polyethylene pipe ground-loop either in a horizontal trench or vertical holes (requires less space) in your yard. A solution of water and antifreeze runs through the pipes, which are connected to the unit inside your home. Your contractor can determine the length of pipe required and whether horizontal or vertical is best.

The other design (called DX) uses small copper tubes buried in the ground, and the refrigerant flows through them. The heat exchanger is not needed. With this direct heat exchanging with the ground, less tubing is needed, so it is often ideal for smaller yards.

Write for (instantly download, www.dulley.com) Utility Bills Update No. 924—a buyer's guide of 14 geothermal heat pump manufacturers (26 models) listing stages, efficiencies, outputs, features, freon/R410A, cost comparison, and ground loop details. Please send \$3 and a business-size SASE to: James Dulley, Country Lines, 6906 Royalgreen Dr., Cincinnati, OH 45244.

Courtesy of WaterFurnace

Geothermal Scores in Efficiency

AS THE COST OF HEATING FUELS rises, many homeowners are paying closer attention to advertising for geothermal heat pumps. Although the ads correctly tout the efficiency of geothermal heat pumps, one can never be sure if a heating or cooling system provides the best payback without having a detailed heat loss/gain analysis done on your home. For example, if your house is very energy efficient and already has low year-round utility bills, then installing a new system which cuts those small bills in half will not result in a huge savings.

Even if an analysis of your home shows the economic payback from installing a geothermal heat pump is about the same as a less expensive standard heat pump, consider other factors. By using less electricity with a geothermal system, there are fewer emissions from generating plants and our resources will last longer. It also reduces the peak summertime electric load for utility companies and this reduces the need for long-term electric rate increases.

The U.S. Environmental Protection Agency analyzed six major cities with very different climates, from Burlington, VT, to Phoenix, AZ, and found geothermal heat pumps in homes produce the lowest year-round utility bills of any central heating/cooling system. Other advantages are high durability and low maintenance. Since outdoor air is not needed with a geothermal heat pump, there is no noisy outdoor condenser unit. The entire unit can be indoors and the only sound is a very quiet compressor.

To give you an idea of how efficient

geothermal heat pumps are, consider that an older, but still working, central air conditioner may have an efficiency rating of 8. The most efficient geothermal heat pumps have efficiencies as high as 27. If it now costs you \$300 per month to cool your house, your monthly cooling electric bills would be cut to less than \$100. If you now use an electric resistance furnace during winter, the heating savings may be even greater.

Almost every geothermal heat pump offers an optional built-in desuperheater. During summer, any heat pump or central air conditioner draws heat from the air inside your house and transfers it outdoors. Instead, a desuperheater diverts this heat drawn from inside your house to your water heater for basically free hot water. With a large family, this can save another \$100 per month for water heating. During winter, some geothermal models are also designed to heat water efficiently when your house thermostat is not calling for heat.

Geothermal heat pumps produce their super-high efficiency because they use

A geothermal unit (left) can also heat water for your home.



Compare heating costs - Find contractors
EARTHCOMFORT
www.earthcomfort.com