

TYPES OF LOOPS



Horizontal Closed Loop

Horizontal installations are less expensive to install but take up more land area. Your contractor will excavate a trench 6-8 ft. deep, place piping in the ground and fill in with soil.

Directional boring can also be used in a horizontal loop system and requires about the same amount of area. Using today's technology, this loop may be installed under existing structures such as trees and other obstacles. The disturbance is substantially less than a typical loop, making them ideal for most retrofit applications



Vertical Closed Loop

Vertical installations use well drilling equipment and are generally more expensive. This application is ideal when land is scarce. A borehole will be about 4 in. in diameter and usually 150-200 ft. deep. The closed loop pipe is then inserted into the hole before it is filled in with a special grout material.



Open Loop

An open loop system can be installed where an adequate supply of suitable well water is available and open discharge is feasible. Check with your local zoning officials before installing an open loop system.



Pond Loop

Pond loop systems are the most economical. The pipes can be coiled in the pond rather than buried underground. The pipe is assembled, sunk and anchored to the bottom of the pond. The pond needs to be at least 8-feet deep (on the hottest and driest day of the year) with at least one-third of an acre of surface area. The best practice for a pond loop calls for loops to be laid in a pond with a minimum 12-foot depth.

Installation methods depend on available land area, soil and rock type at the installation site.



The Geothermal Alliance of Illinois is a not-for-profit trade association committed to the advancement of geothermal heating and cooling technology in Illinois. Members are leaders in this industry. The GAOI's mission is to promote excellence among its members and to help consumers to get the most efficient geothermal heating and cooling installation possible.

GAOI members are encouraged to become trained in all facets of geothermal system design and installation. To locate a dealer, please visit www.gaoi.org.



For more information or to find a geothermal dealer, visit our website at:

www.gaoi.org

WHAT IS GEOTHERMAL?

Geothermal heating and cooling is the most efficient technology available today. Geothermal systems will work in nearly any application, and today are heating thousands of homes, schools and businesses across Illinois.

With rising energy costs and increased environmental considerations every day, geothermal heating and cooling is the obvious choice. Geothermal heating and cooling means less energy used, fewer dollars spent and lower emissions of all kinds, including CO₂.

The most important considerations when choosing a heating and cooling system are comfort and economy. With a geothermal system you can have both. It is the ultimate renewable energy system, using the sun's energy and the earth's storage capacity to produce the greatest solar collector in existence – the earth. Geo systems take advantage of the earth's constant year-round ground temperature (typically in the 50 degree range in Illinois) to produce heating, cooling and hot water in a variety of applications. Rather than burning fuel to produce heat, geothermal systems just move the earth's free energy indoors. That's why the systems are so economical to operate. They use free heat from the ground.

HOW GEOTHERMAL WORKS

The earth's heat is extracted by means of a ground loop heat exchanger usually consisting of polyethylene pipes containing a water/anti-freeze solution. This solution captures heat from the ground and a circulating pump moves the water solution through a heat exchanger; removing heat from the water solution and then distributing the heat to a forced air or hydronic system in the building.

For cooling, the process is just reversed. Excess heat from the building is removed by the heat pump and transferred into the ground loop heat exchanger. In addition, during both seasons the geothermal system can help supplement your domestic water heating, substantially lowering your water heating costs.

A Geothermal system can result in:

- 25-75% Lower Heating Costs
- 2-7 Year Payback
- 30-50% Lower Cooling Costs
- Lower Operating & Maintenance Costs

(According to the Geothermal Heat Pump Consortium)

BENEFITS OF GEOTHERMAL

Comfort – Geothermal systems produce an abundance of warmth or coolness and delivers it gently to the desired space. There are not great temperature variances that are associated with other types of systems.

Economical – How about your energy bills? Heat from the ground is free and the only electricity needed is for moving heat between your home and the ground.

Environmentally Safe – Geothermal systems are recognized by the Environmental Protection Agency (EPA) as the most environmentally friendly heating and cooling technology.

Clean and Quiet – No flames, no flue, no odors – just safe, reliable, quiet operation. With no outside unit, there's no noisy fan during cooling season – and inside the geo unit operates quietly.

Reliable – A geothermal system has very few moving parts to maintain. A geothermal heat pump is located indoors, where it is protected from weather extremes, vandalism and abuse.

Low Maintenance – Geothermal systems require little maintenance. Homeowners only need to change air filters

Government Incentives – Geothermal systems may be eligible for government and utility incentives. Check with your geothermal installer or go to www.gaoi.org for up-to-date information.

Some advice to consider before installing your geothermal system

1. More than one contractor's proposal may provide you with important information/alternatives/competitive pricing.
2. Ask for the contractor's qualifications and credentials. What kind of training have the installers had – and what certifications do they hold?
3. Get references from the contractor and contact some people who have had the company install a geothermal system. Ask about their experiences, how their system has performed and about their energy/cost savings.
4. How long has the contractor been installing geothermal systems and how many systems has the company installed?
5. Ask each bidding contractor to provide a copy of a heat loss/gain calculation of the home or structure to be heated/cooled, to ensure that your comparison is "Apples-to-Apples."
6. What percentage of the total required heating load will be met by the geothermal system, without using any alternative heat?
7. Is the ducting system and electrical service adequate to support the geo system?
8. What kind of warranty do the manufacturer and contractor provide?
9. Ask the contractor how the geothermal loop was sized and designed. How did the contractor determine how much loop to be used? If a vertical loop is being installed, the loop must be properly grouted for optimal loop performance and to prevent groundwater contamination.
10. Educate yourself before purchasing and having the geothermal system installed.

