



# EarthLinked<sup>®</sup> Heating and Cooling Systems With Optional Water Heating

## 40-60% Savings in Operating Cost

### Solar Energy from the Shallow Earth

Reduced fossil fuel consumption, reduced emissions and increased comfort result from the use of renewable solar energy stored in the shallow earth. These benefits are delivered by the EarthLinked<sup>®</sup> heat pump system.

Almost half of the sun's energy that reaches the earth is stored in the ground, resulting in a solar battery that can be used for heating anytime, anywhere that people live. The constant and favorable temperature of the earth also makes it a favorable heat sink to receive unwanted heat in the cooling season.



### Diagonal Earth Loop System

- small footprint
- typically one loop per ton
- typical 100' bore hole length
- 0-45° drill angle
- 3" diameter bore hole
- vertical and horizontal earth loops equally effective



The EarthLinked system is a heat pump that uses the refrigeration cycle to move heat from one location to another, like an air conditioner that can also operate in reverse. It's a unique heat pump because the patented refrigerant flow controls enable it to directly connect with small earth loop tubes that can be installed vertically, diagonally or horizontally in 3" bore holes 50 to 100 feet (15 to 30 m) in length. Typically, the earth loops are 100 feet per ton (12,000 BTU) of capacity.

The diagonal loop configuration exchanges heat in a large subsurface area but impacts a small six foot diameter area at the surface during installation. The system, the earth loops and the boring equipment are small, so the installed footprint is small and the system is very adaptable for retrofit installations.

Because of its efficient use of the favorable earth temperature as a heat source/heat sink and its direct heat exchange method, the EarthLinked system is more efficient than an air source heat pump (ASHP) and other geothermal heat pump (GHP) units that must circulate water for heat exchange.

### One System, Multiple Uses

Whether you live in Australia or Alaska, the EarthLinked system is the simple solution to a comfortable environment throughout your home. A single unit can provide space heating and cooling, and water heating, no matter the climate conditions. Because of its small size and mechanical simplicity the system is convenient, reliable and easy to maintain.

### Space Heating and Cooling

Thousands of property owners in North America and around the world use EarthLinked to heat or cool buildings. The system delivers a stable, comfortable temperature all year round. In summer there is a greater dehumidification because of colder refrigerant coils and longer run cycles. In winter there are no blasts of hot air as with a furnace, and the heated air is warmer than with an air source heat pump because the earth is a warmer heat source. For maximum winter comfort and efficiency, the EarthLinked system can also be coupled with a radiant hydronic system.

### Water Heating Option

You can use the EarthLinked system to heat water up to 125°F (52°C), optimizing your energy consumption and saving money. The system uses waste heat given off in the air-conditioning mode in summer or natural heat stored in the ground and harvested by the heating mode in winter. Either way, you can reduce your water-heating costs by as much as 75% compared to electric resistance heating.

### Swimming Pool Heating

No matter the size of your pool, the EarthLinked system can quietly heat the water to a comfortable temperature without harmful combustion byproducts—all with the highest efficiency.

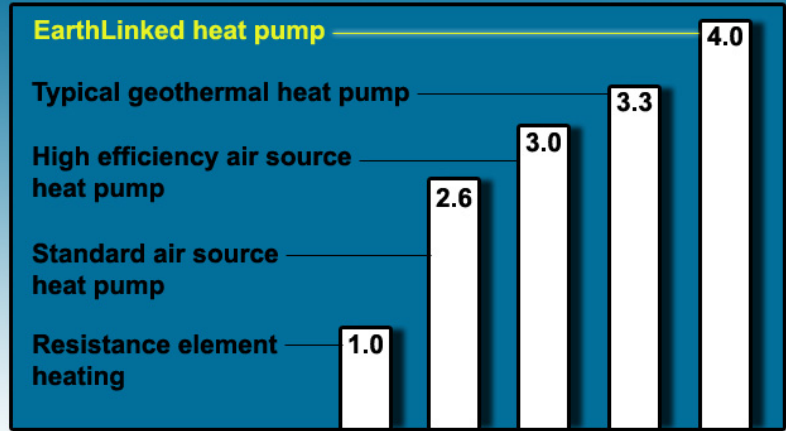
### EarthLinked Advantages Over High Efficiency ASHPs

- Saves 40-60% in operating costs on an annual basis.
- Increases comfort by efficiently using the favorable earth heat source to provide greater than 100°F supply air.
- Does not lose efficiency as ambient air temperature drops, as an ASHP does.
- Achieves high efficiency without having to utilize variable speed compressors or multi-speed fans.
- Can be located in a utility room or basement because of the elimination of the need to circulate air over the exterior evaporator/condenser.
- Quiet operation resulting from total system enclosure and elimination of an exterior fan.
- Exterior condenser/evaporator unit (fan coil in ASHP) is buried out of sight, protected from damage or theft.
- Approximately one-half the size of a typical ASHP unit.
- No anti-freeze; not subject to freezing; no defrosting required.
- Has greatly improved reliability and serviceability.
- Eliminates the exterior condenser/evaporator coil, fan, fan motor and capacitor, defrost timer, and ancillary wiring, making it mechanically and electrically simpler.
- Extends compressor life by reducing compressor run temperature.
- Continues to operate even when evaporator surface (earth loop) is enveloped in ice.

### EarthLinked Advantages Over Typical GHPs

- Controls assure more efficient operation of compressor, evaporator and condenser.
- Eliminates large closed-loop plastic piping system, with its inefficient intermediate heat transfer. (GHP earth loops must be purchased in parts, assembled on site, installed, filled with antifreeze and water, and pumped constantly while system is operating.)
- Mechanically simpler and more reliable; easier to service.
- Utilizes bore holes 3" in diameter in contrast to 6" bore holes of water-based systems.
- Less drilling equates to lower installed cost.

### Comparative Efficiencies



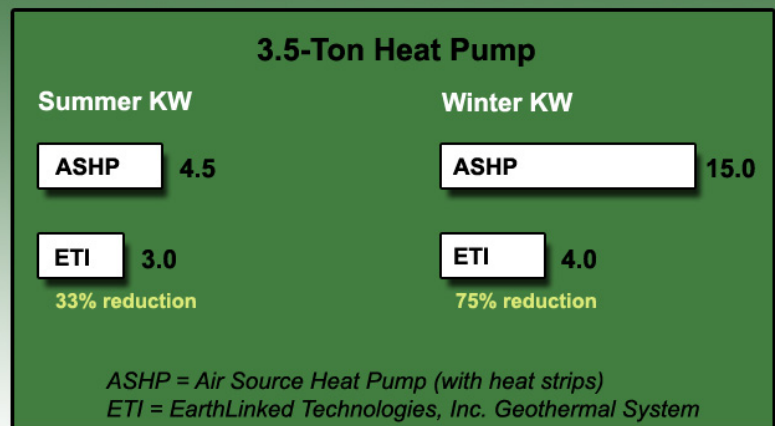
### Consumer Benefits of EarthLinked vs. Typical ASHPs

- Greater comfort from favorable constant temperature of the earth.
- 40-60% operating cost savings.
- 60% sound reduction; 50% size reduction.
- Reduced cost of maintenance and service.
- Competitively priced.
- Less than 60-month payback.

### EarthLinked Advantages to Electric Utility

- Weather sensitive winter peak demand reduction of approximately 60%.
- Weather sensitive summer peak demand reduction of 30%.
- Gain in winter load share by replacing on-site fossil fuel firing.
- Improvement in load factor.
- 100% green energy potential with wind and photovoltaic energy.

### Maximum Electric System Demand



Contact Your EarthLinked Dealer



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