



**EARTHLINKED**  
TECHNOLOGIES



Clean Renewable  
Energy Systems for  
Heating and Cooling



Come in from the cold to the comforting warmth of home.

## Welcome Home

Come in from the cold to the comforting warmth of home. You and your family deserve a home environment that offers a comfortable, constant temperature that you select. When you close the door on harsh temperatures, you want to step into a home that is free of hot or cold blasts of air, distracting loud noises or unsafe combustion fumes.

The EarthLinked® heating and cooling system offers you all of these benefits through a powerful source that is quiet, safe, small and trouble-free. It is a system built tough, yet simple, to provide years of reliable comfort while maintaining its capacity and efficiency when outside temperatures reach their extremes.

Choosing the right comfort source for your home is one of the most important decisions you can make for your family. The factors most valued in determining that choice are efficiency, comfort and reliability. The EarthLinked system excels in meeting each of those needs with clean, renewable energy technology. This proven system substantially cuts monthly energy bills.

EarthLinked also quietly delivers peace of mind. It improves humidity control and the quality of indoor air by eliminating the combustion of fuel and its byproducts, including carbon monoxide. Greater air filtration results from longer run cycles as compared to other space conditioning methods. Without combustion, there is no explosive hazard, no flame, no fumes and no emissions.

You can rely on EarthLinked for low-maintenance, low impact, high efficiency heating and cooling. It offers you the most comfortable living environment and ensures a long life of cost savings, energy conservation and reduction of greenhouse gases and other harmful emissions.



### Simply Innovative

The EarthLinked® system is uniquely simple. The years of intense engineering, research, field demonstrations and pioneering work of EarthLinked Technologies, Inc. brought about the technological advances that make this simplicity possible. The breakthrough was in ETI's refrigerant flow controls. They allow the unit to operate with the refrigeration compressor and circulating fan essentially as the only components that consume energy.

Earlier geothermal models were limited by dependency on a large plastic water circulating

loop, an intermediate heat exchanger and a circulating pump to connect the heat exchanger to its thermal source. EarthLinked replaces all of these costly components with a small copper earth loop for a direct thermal exchange with the earth. ETI developed and perfected the simplified design of EarthLinked, which substantially reduces the cost of installation and operation while increasing reliability. Efficiency is increased, power consumption is reduced and there is no secondary heat exchanger or circulating pump to clog or fail.

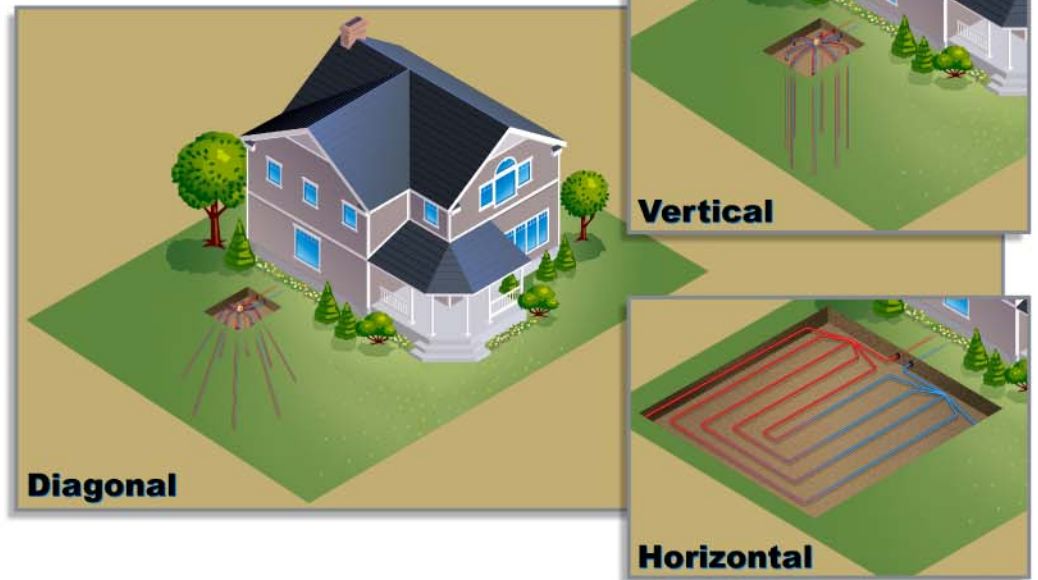


### Annual Operating Cost Estimate

System Description	Total Heating Cost	Total Cooling Cost	Total Operating Cost	Average Monthly Cost	% of Savings
Earthlinked®	\$544	\$159	\$703	\$59	
Closed Loop Water Source	\$657	\$182	\$839	\$70	16%
13 SEER Air Source Heat Pump	\$2,424	\$210	\$2,633	\$219	73%
80 AFUE* Gas Furnace and 13 SEER Electric AC	\$1,750	\$210	\$1,959	\$163	64%
80 AFUE* LP Furnace and 13 SEER Electric AC	\$2,537	\$210	\$2,747	\$229	74%
80 AFUE* Fuel Oil Furnace and 13 SEER Electric	\$1,805	\$210	\$2,015	\$168	65%

\*Annual Fuel Utilization Efficiency

## How it Works

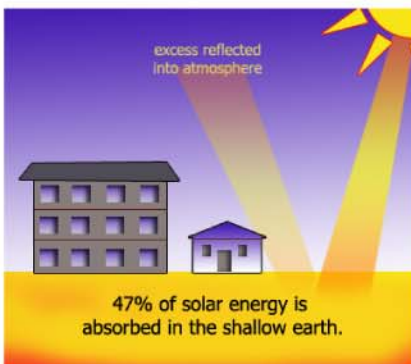


The EarthLinked® system has three major components:

1. An earth loop system that circulates a heat transfer refrigerant to exchange heat with the earth.
2. A heat pump that moves heat or cool between the building and the earth via the earth loops.
3. A distribution system to distribute comfort throughout the building.

And two options for water heating:

1. A desuperheater to capture waste heat from the air conditioning cycle and move it to the water heater, or
2. A full-demand water heater, where the EarthLinked system supplies all of your hot water needs year-around.



**Earth Loop System - engineered for efficiency and flexibility**

The earth loops are like arteries in a human body. The loops are connected to the heat pump to circulate refrigerant and directly exchange thermal energy with the earth. EarthLinked ground loops have the smallest size and smallest footprint on the market. They have the highest temperature differential with the earth, which means they can use the least amount of earth contact to work effectively. The loops can be installed in three different configurations—horizontal, vertical or diagonal—for maximum design flexibility and cost-effectiveness.

The long-lasting earth loops are made of copper, one of the few metals that exists naturally as an element in the earth. A noble metal, copper resists corrosion because of the protective film that forms naturally on its surface. In rare exceptions where pH readings exceed safe levels, we offer the proprietary Cathodic Protection System for the in-ground copper to preclude corrosion in harsh conditions. With installations dating back to 1980, we have never experienced a field failure of a production earth loop due to corrosion.

The earth loops are pre-assembled and pressure-tested for maximum convenience, quality, and easy installation. Depending upon underground conditions, loops using vertical or diagonal configurations are typically installed in less than two days, whereas horizontal loops can be installed in a single day.

**Heat Pump - the heart of the system**

Like a pulsing heart, the heat pump circulates the refrigerant through the earth loops to exchange thermal energy with the earth. No complex digital or mechanical equipment is required. Just three mechanically simple devices (a compressor, a condenser and an evaporator) enclosed in a small indoor unit and integrated to work seamlessly, leveraging the natural laws of physics. The system is more reliable and efficient than other geothermal systems because it has no water circulating pump, intermediate heat exchanger or thermostatic expansion valve.

The heat pump is engineered for easy integration with the building's heat distribution system. Because the unit is fully enclosed, it can be installed indoors and does not have to withstand the stress of extreme temperature changes and inclement weather.

**Refrigerant Flow Controls**

A uniquely innovative, patented technique enables control of the flow and stability of the refrigerant without any electronic devices, thereby further improving the efficiency and reliability of the EarthLinked system. The refrigerant is efficiently managed by two simple proprietary flow control devices: the Active Charge Control and Liquid Flow Control.

These two mechanical controls respond directly to the temperature and velocity of refrigerant flow through the system. They modulate the amount of refrigerant in circulation to assure optimum efficiency at all times. By eliminating subcooling in the condenser, the system operates at lower refrigerant "head" pressures with increased mass flow, which reduces energy consumption, increases heat transfer, system reliability and useful life.

# Naturally Clean and Efficient



Geothermal heat pumps are the most environmentally clean and efficient conditioning systems according to the U.S. Environmental Protection Agency and Department of Energy. The EarthLinked® system works with nature to deliver the highest efficiency using the solar energy stored in the shallow earth. Rather than consuming fuel to produce heat, the EarthLinked system transfers heat energy from the earth into your home in the winter, and removes heat and humidity in the summer. Because it takes less energy to transfer heat than to create it, EarthLinked delivers up to four times more energy than it uses — that means 400% electrical efficiency!

25%

average reduction in cooling costs\*



75%

heating costs reduction potential\*

\* EarthLinked offers the most energy efficient means of heating and cooling buildings. Transferring renewable energy reduces cooling costs an average of 25% as compared to a 13 SEER air conditioning, and heating costs up to 75% as compared to electric heat. EarthLinked water heating is four times as efficient as electric resistance water heating.

The system can reduce annual energy consumption over 40% compared to air source heat pumps, as much as 70% measured against standard air conditioners with electric resistance heating, and 20% compared to conventional geothermal heat pumps.



A pioneering source in efficiency, ETI began its development of the EarthLinked® system in 1980 and has produced more engineering breakthroughs for Direct Exchange systems than any other company. The EarthLinked system has been awarded nine U.S. patents, and ten international patents. The product line has received safety certification by a national testing laboratory and the highest rated average efficiency of any system using the earth or air as a heat source.

Outstanding technology deserves quality workmanship. ETI focuses on creating the most reliable access to renewable energy. We have surpassed that goal in our EarthLinked heating and cooling systems and back each one with a 5-year limited warranty on the unit and a 20-year warranty against earth loop defects.



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