

# EARTH

How geothermal energy can heat and cool your house

By Deborah R. Huso

More than a few homeowners are disgruntled about fuel and energy bills that have nearly doubled in the course of the last year. But there is a way to heat (and cool) a house without using any fuel source at all and minimal electricity—by tapping into geothermal energy.

“When you say geothermal, some people think you’re talking about drilling wells in Alaska,” says Al Midgett, eastern region manager for Water Furnace International, which manufactures and sells ground-source heat pumps. “But what you’re doing is using the earth to heat and cool your home.”

Unlike a conventional heat pump, which draws on outside air for heating and cooling, a geothermal system draws warmth from below the ground’s surface, via vertical or horizontal pipes that circulate water or environmentally safe antifreeze through a loop under the ground or submerged in a pond. “There’s more energy in the ground,” says Midgett, “than a house can ever use.” In summer, the system pulls warm air out of the home and puts it back into the ground.

Midgett says it wasn’t long ago that ground-source heating and cooling existed on the fringe of HVAC systems. “But since the cost of fossil fuels has gone through the roof, we’re having record sales.” And no small wonder. Homeowners with a geothermal heat pump can expect cost savings of 40 to 60 percent on their utility bills compared with a conventional heat pump. Midgett says heating a home can be four times cheaper for a homeowner who replaces an oil furnace with a geothermal system. “We’re now even more efficient than natural gas,” he adds.

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—Al Midgett,  
Water Furnace International

## TO LEARN MORE

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While Midgett says geothermal systems have been installed mainly in new construction in the past, more and more homeowners are retrofitting existing ductwork to accommodate geothermal. He says a geothermal system is usually about a third more expensive than other standard heating and cooling systems, mainly because of the cost

involved in putting loops into the ground. But you don’t have to live on a farm or own a pond in order to take advantage of geothermal heating and cooling. Vertical loops enable homeowners to install such a system, even on small lots.

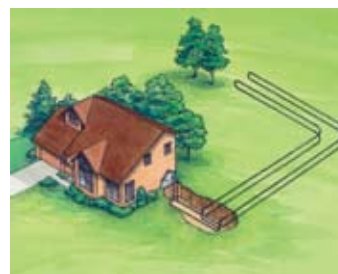
The recently enacted federal Energy Policy Act contains tax credit incentives for both residential and non-residential installation of geothermal systems.

Midgett says Water Furnace offers homeowners the option of 50-year warranties on its loop systems, as well. While a geothermal unit costs more to install, “where we

win is in lifecycle costs,” he notes. The system will pay for the extra installation cost in five to six years, perhaps less if energy costs continue to rise. Furthermore, you don’t need to turn back the thermostat to increase cost savings. A geothermal system actually works most efficiently when the temperature in the home remains consistent.

Midgett advises against jumping on the geothermal bandwagon without analyzing your home’s current status in terms of air leakage and insulation. “Your house needs to be part of the system,” he explains. “All the money you spend to heat your home can go right out the window if you have leaks and lack proper insulation.”

When you’re looking for a contractor to install a geothermal system, Midgett advises, find somebody who not only knows the equipment but who understands heat loss and gain. It’s also important to find a technician willing to spend time educating you about how to run a geothermal system efficiently and how to establish different zones in your home for heating and cooling that will ensure efficient and customized comfort through the year. “The better you understand how the system works,” notes Midgett, “the better it will work for you.”



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