

# Geothermal Hal


\* Hal Roberts' company finds success under ground.

Hal Roberts thinks like a cave man.

At least when it comes to the fundamentals of his Lakeland company, he does. The secret behind Earthlinked Technologies' success, he says, is a simple Neanderthal mentality.

"When it's really cold outside, they went into caves because the Earth is warmer than the ambient air," Roberts says. "In the heat of summer, they went into the caves – because they knew how cool it was."

That's the basis of the system manufactured by EarthLinked, where Roberts is CEO. It uses the Earth as a heat source, and heat sink (or reduction) to heat and cool air and water. The solar process can save money and the environ-

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ment – like going green and saving green at the same

time.

"This is an innovative method of making use of solar energy with a non-solar device," says Jeff Curry, alternative energy coordinator for Lakeland Electric. "The Earthlinked units will use less kilowatts, therefore reducing emissions at power plants."

The EarthLinked system, Roberts says, works a lot like a refrigerator: A copper tube is inserted into the earth to circulate a standard refrigerant used in air conditioners and heat pumps. In the winter, the liquid refrigerant travels down the tube. The heat of the earth evaporates the liquid to a gas. The gas travels to a compressor, where heat and vapor are concentrated and the temperature is raised. The hot refrigerant gas is delivered to an air handler, which releases heat into a stream of air flowing through coils. Fans circulate the warm air. In the summer, the earth (which is cooler than the air) cools the refrigerant. The

resulting hot vapor cools, condenses into a liquid, and returns to the air handler, which circulates cool air.

"The earth is a very stable, favorable source of heating and cooling," Roberts says. "The system dehumidifies air better than an air-source heat pump generally because it has a longer run cycle. In winter ... we have a more favorable heat source and can deliver warmer air," Roberts said.

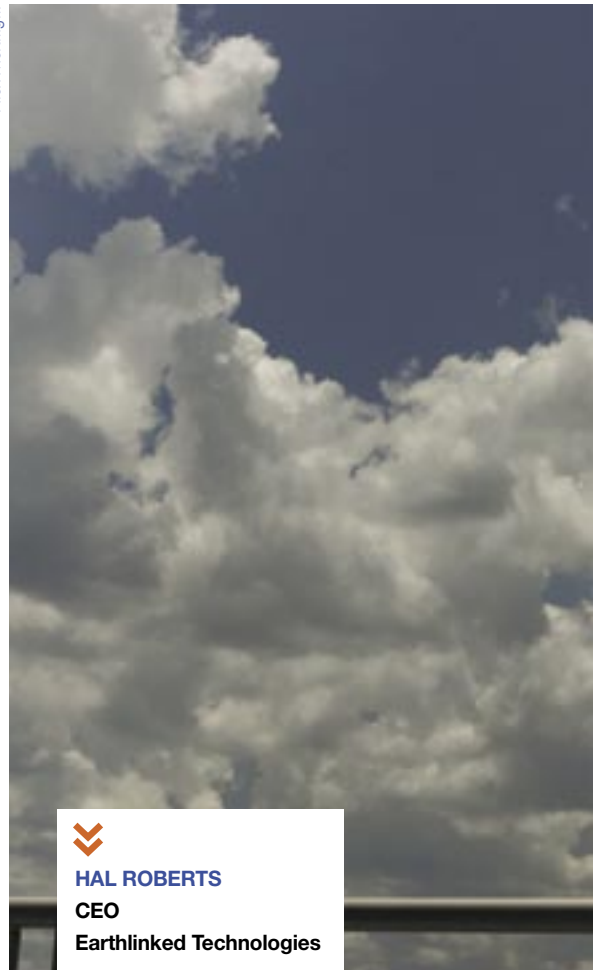
The system can be installed in new construction or retrofitted. EarthLinked Technologies ([www.earthlinked.com](http://www.earthlinked.com)) used the less expensive (or new construction) method before moving into its new Lakeland facility. (The growing company more than tripled its space moving into a 30,000-square-foot facility this spring.) When construction began, an excavator dug six-foot-deep trenches where heat exchange coils were laid and covered before the building was constructed.

The more expensive and more common method of installation is for already existing buildings. For these cases, installers drill lengths of 50 to 100 feet to accommodate the tubing. To install a system for a client in Manhattan, Roberts says, contractors had to drill through a sidewalk.

The Environmental Protection Agency has verified that geothermal systems can cut commercial water heating costs by 75 percent compared to electric water heating. Roberts says the system cuts electricity use for space heating and cooling by 40 to 60 percent.

"You'll pay a premium up front, but you can recover that in anywhere from two to four years, depending upon how much water you use. The more

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you use an efficient system to replace an inefficient system, the quicker you'll recover your cost," Roberts says.

Roberts says costs vary depending on the size of the system and project. For a 2,000-square-foot home he estimates the system and installation costs between \$15,000 and \$20,000. That's about 75 percent more than for a conventional air source heat pump. The time it takes to recover that investment difference will depend on the amount of heating and cooling required and the cost of electricity, he says.

A former city attorney for Lakeland, Roberts launched the company with electrical engineer Bob Cochran in 1984. The two met in 1971 when they worked for Lakeland Municipal Electric. The duo started with \$20,000, doing nothing but research and development for the first 15 years, Roberts says.

After the two produced the most energy efficient water heat-

ing system for Florida Solar Energy Center in Cocoa Beach in the mid-80's, two electric utilities (one in Delaware and the duo's old stomping ground, Lakeland Municipal Electric) funded demo projects. That led to eight more utility projects in Florida, Georgia, South Carolina, Michigan, Oklahoma and Connecticut.

Locally, the company has worked with Tampa's Senior Care Group to install a system at a Sun City Center retirement center. It's also doing a project in a desert location for the U.S. Army at Fort Irwin, CA. The system there is powered by photovoltaic and wind-generated power and is off the electricity grid, Roberts says.

In 2003, the company began to sell systems to authorized dealers. Contractors from 22 different countries have visited Earthlinked's offices to observe the technology, get training and become authorized sales representatives, dealers and installers. Estonia became EarthLinked Technologies first international destination in 2003. Demand for the systems doubled in 2006. The system is now used in homes and businesses in 41 states and 14 countries.

Roberts won't disclose the private company's sales figures. But he does say average growth over the last two years is 50 percent per year. The company now has 35 employees, 24 sales reps and more than 450 trained dealers and installers in 14 countries. Just three sales reps are on staff, the rest are independent reps working from Web site inquiries to recruit dealers and installers in their regions.

"It's nice that after 28 years, we're becoming an overnight success," Roberts laughs.

Earthlinked's offices and manufacturing are in Lakeland. About 70 percent of its sales come over the Internet, from consumers and businesses researching for energy-saving systems, Roberts says. The remaining is in referrals or directly through the Lakeland office.

Companies demanding energy savings in environmentally-friendly ways are becoming new customers. The majority of new clients are in Indiana, New England and North Carolina. They include builders of single-family homes looking to differentiate themselves.

"Florida is woefully behind in its adoption of solar energy technologies," says Lakeland Electric's Curry. "Other states like California, Arizona and New Jersey have advanced the use of solar energy for many years. This has resulted in many economic benefits – attracting manufacturers, creating jobs, moving toward energy independence and improving the tax revenues of those states."

Roberts jokingly credits a former Vice President and recent Nobel Peace Prize winner for the company's growth in a "go green" world: "If it wasn't for Al Gore, we couldn't be in business. He invented the Internet, and discovered global warming!" ■

