



## Service Guaranteed: In by 9:00, Out by 5:00

by Kerri Tate

STILLWATER - Installations can be done in the amount of time spent at the office working 9 to 5. Most people hear the word ground source heat pump and they immediately think of a complicated installation process with messes outside, and major work and remodeling done inside their home. Lynn Vick of Air-O Heat & Air Conditioning, Inc., in Stillwater, OK has turned one-day installation into a tangible possibility.

Many homes that are twenty to thirty years old are due for a new central heat and air conditioning system. Maintenance on the older units can be frequent and expensive, with only marginal performance in extreme seasonal conditions. With the problem of increasing costs of natural gas and electricity, geothermal technology can be the solution. However, it is

important to compare costs and savings of conventional and geothermal units. Significant savings in ground source systems can come from lower operating costs, lower annual maintenance costs, and lower life cycle costs.

After consideration of these factors, Dr. Jim Netherton, an IGSHPA employee since 1992, made the decision to replace his old system with a new four-ton Paradigm split system from ClimateMaster. This system includes a new York gas furnace and air handler, and a new four-ton York coil. The system uses internal pumping and includes the option of inside or outside installation. Four boreholes two hundred feet deep were drilled for use with this system. Four two hundred fifty foot three-quarter inch polyethylene plastic pipe loops were used for the ground exchanger.

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*As long as qualified contractors and drillers are used with some planning ahead, installation doesn't have to be complicated.*

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*Four 200 foot bore holes were drilled using an air rotary rig in order to avoid a mud clean-up problem. The loops were spaced 12 feet apart to eliminate the thermal influence from one loop to another.*

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# Bulletin Board



## The Source Corrections

In the May/June issue of *The Source*, Pete Peterson of Geothermal Supply, Inc., was incorrectly listed in the photo caption on page 3. On page 5, Jeremy Rousseau's name was spelled incorrectly. Mr. Rousseau is with I S C O Industries, LLC.

The staff of IGSHPA appreciates hearing from readers of *The Source* and apologizes for the above noted errors. If you have a story to submit for publication in *The Source*, please contact Jeanne Knobbe at 1-800-626-4747.

## Geothermal Heat Pump Systems Design Seminar

The University of Wisconsin, Madison, Department of Engineering Professional Development will offer a seminar, Geothermal Heat Pump Systems Design, September 10-12, 2001 in Madison, Wisconsin.

This course will benefit designers and facility managers of buildings where a heat pump system is being considered. By attending this practical two-part course featuring industry experts and intensive classroom sessions, you will learn more about heat pump systems using ground source, water source, or air source.

The electric heating systems portion of this course will benefit designers and managers where electric heating is the only option, or electric reheating is necessary. Contact Customer Service at 800-462-0876 for more information.

## Newsletter Announced

The Geothermal Heat Pump Consortium (GHPC) and IGSHPA announce the production of a new quarterly technical newsletter, *GeoExchange Solutions*. *GeoExchange Solutions* will focus on the technical issues facing the industry, separate from GHPC's *Earth Comfort Update* or IGSHPA's *The Source*.

IGSHPA would consider research articles, updates, news, and comments on issues or fields regarding our industry. We are looking for articles concerning, but not limited to, design issues, tools, GHP costs, and GHP fundamentals.

IGSHPA hopes that you will take part in the continual efforts to keep industry professionals informed as we promote the growth of the geothermal heat pump industry. If you have questions about this publication or other concerns, please contact Jeanne Knobbe or Kerri Tate at 1-800-626-4747, or email us at [jkdsng@aol.com](mailto:jkdsng@aol.com).

In by 9:00, Out by 5:00 *continued from page 1*

Installation Day

At 9 a.m. the installation crew and the drillers arrived on the site. While the drillers were using air rotary to drill the four boreholes, the installation crew removed the old outside unit as well as the old furnace and coil inside the house. Air rotary drilling was used to prevent a mud clean-up problem. An additional return air vent was installed to accommodate the higher capacity air handler in the new furnace from York.

By 2:15 p.m., the drillers were finished with the four boreholes. Before the loops were installed, they were filled with water, checked for cuts, and pressure tested for leaks.

By 3:15 p.m. the loops were installed and headered, and the new Paradigm unit was installed in the same location as the old unit.

At 4:00 p.m. the trenches and boreholes were backfilled, and the new system was turned on and switched to the cooling mode. The entire system was up and running with no problems in seven hours.



*Before each of the four loops were installed in the boreholes, they were filled with water, checked for cuts and pressured tested for leaks. The loops were then heat fused and connected to the supply and return headers and placed in a four foot deep trench up to the outside unit.*

*continued on page 4*

**Richard Simmons Drilling Co., Inc.**

Specializing in air rotary drilling and installation of vertical closed loop heat exchangers for water-source heat pumps.

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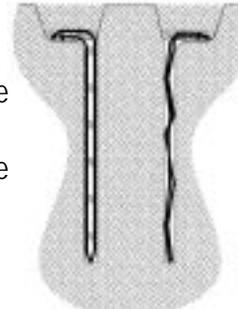


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**Geothermal Bore Technologies, Inc.**

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The new furnace and coil were installed in the same location as the old unit. An additional air return vent and grill were installed in the living room to accommodate the higher capacity air handler.

## One Day Installation

continued from page 3

This ground source heat pump system was installed in only one day with no problems. It serves as a prime example of the ease that comes with geothermal technology. As long as qualified contractors and drillers are used with some planning ahead, installation doesn't have to be complicated.

"We're very satisfied with the comfort level and operating costs," Dr. Netherton states. He and his wife have been living with the system for several months, including the hottest part of the year in Oklahoma. Dr. Netherton serves the members of IGSHPA through his work on training, seminars and conferences.



## Employment Opportunities to Be Listed

In order to better serve the industry, IGSHPA is now offering free employment listings for members on its website and in *The Source*. To be posted on the website, your listing should contain the job title, geographic region for the position, and company name (optional). We will then link this listing to your company's detailed listing on its own site. Listings in *The Source* will be on a space available basis, in a classified format and may be 50 words long including contact information. If your company has a job opening that you would like listed, please fax the Publications Coordinator at 405-744-5283 or email the Webmaster at [webmaster@igshpa.okstate.edu](mailto:webmaster@igshpa.okstate.edu).



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## New Meter Unearths Significant Savings

HOUSTON - "Dig deep for savings" just took on a whole new meaning. As the nation debates the state of the country's energy resources, one Houston-based geothermal energy company is breaking new ground with a patented metering process that measures and records the energy produced and emissions saved by geothermal heat pump (GHP) systems. While the systems have a proven record of significantly reducing dependence on fossil-fuel based power, the proprietary meter, developed by EnLink Geoservice Services, Inc., makes it possible to definitively measure and maximize energy savings. The meter also quantifies emission reductions so energy companies and building owners can qualify for renewable energy incentives. Patent No. 6,250,371 is the seventh patent EnLink has secured for its innovative technologies.

The EnLink meter attaches to the heat exchanger to precisely measure and record the energy generated by the system. It consists of a bimodal solid-state electronic heat meter that meets or exceeds European EN1434 standards, calibrated temperature probes, flow meter(s), and an RS-232 interface with modem to allow the remote collection

of data. Data from the meter is sent via phone lines or wireless communication to EnLink, where the company assesses the performance of the system and generates reports that document how much geothermal power has been used, the resulting savings in energy costs, and emission reductions. "Emissions and other renewable energy incentives can have a very real impact on the bottom line of corporations who are implementing GHP systems," said EnLink president and CEO, George Head. "Geothermal systems immediately reduce utility bills and are also friendly to the environment. EnLink technology offers the added value of precisely measuring the environmental impact of those choices, leading to further economic benefit to the owner." Building owners are able to optimize energy consumption and reduce operating expenses by using the reports to monitor the performance and function of the system's various components, from the loop field to heat pumps, refrigeration units and hot water heaters.

"After learning about the advantages of EnLink's innovative technologies, especially the meter, we knew we had to have it for our schools," said Mario Aguilar, superintendent for operations for Socorro Independent School District in El Paso, Texas. "We are very impressed with the simplicity and efficiency of the EnLink System and are already planning to install it in the next seven schools we have scheduled to build. The key to our decision was the ability to use the meter to manage all these systems from one central location, which saves us headaches, time and money," Aguilar said. Additionally, building owners benefit from increased indoor comfort and air quality for tenants and employees and a significantly reduced need for specialized maintenance staff to maintain comfort levels and repair HVAC systems. The intangible benefit of having a positive impact on the environment can also be measured and communicated to employees and other important external audiences.

"By using EnLink's system, the typical 100,000-square-foot commercial building can save the environment 1.5 million pounds of greenhouse gases each year. Over the life of the system, that's equivalent to taking 2,500 cars off the road or planting 5,000 acres of trees," Head said. "While traditionally utilized by schools and government entities, the popularity of GHP systems is growing due to state and federal regulations that require increased use of renewable energies, as well as dwindling natural resources required to fuel other types of refrigerated air systems.

Based in Houston, Texas, EnLink currently has a regional presence along the East Coast and throughout the Southwest. The company can be contacted at 888-855-6901.

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# Kansas City Power & Light Honors School

KANSAS CITY - When the North Kansas City (NKC) School Board opted for a geothermal heating and cooling system at its Northview Elementary school, the decision was based on the educational aspects of the technology and the estimated savings.

“School board members were intrigued by the environmentally friendly system,” said Dave Wagner, Kansas City Power and Light (KCP&L) senior technical professional who did the estimating on the project. “They thought a geothermal system built into the school would have a special meaning for the students — and it has.”

According to Wayne Beer, the NKC School District’s former director of operations and maintenance, “Our school board members especially liked the fact that its annual maintenance and energy savings would free up more resources for educating kids.”

The 78,000-square-foot school was completed in 1999. With its 240-ton system, it is the largest building in the KCP&L service area to use a geothermal heat pump. When Wagner estimated annual operating costs for the new school, he predicted a 30 percent savings on annual operating costs with an energy expenditure of \$49,416. He is very proud of the actual 12-month’s costs: \$49,216.

Northview Elementary is also now a showcase for geothermal applications for large buildings, Wagner

indicated. The school hosts occasional tours of the facility to extol geothermal’s benefits to prospective customers.

In late May, KCP&L honored the school with a special award for choosing the new technology and helping demonstrate its commercial building applications. The award includes a special recognition plaque and a framed cartoon illustration that shows how the system works. Wagner presented the award to principal Mark Lewis at the school’s year-end awards assembly.

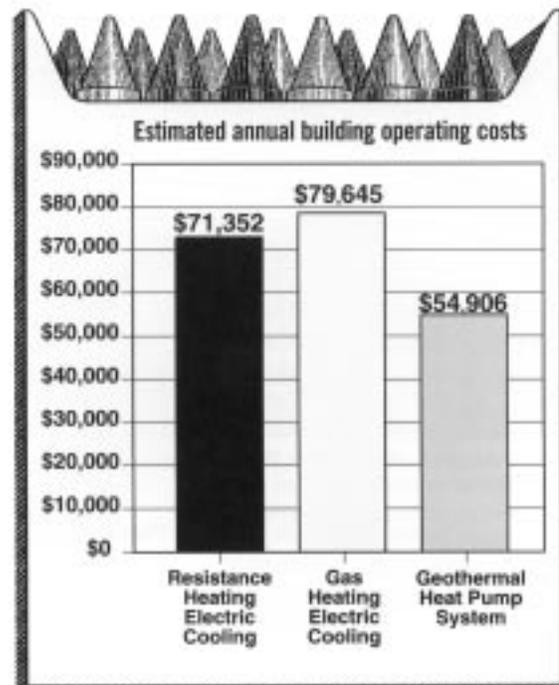
Like many successful projects, the Northview school endeavor had several area partners. Besides KCP&L and the school district, WRS Architects, Jenkins and Associates, and IGSHA member Ground Source Systems, Inc. collaborated on design and construction. KCP&L used the Geothermal Heat Pump Consortium’s GeoExchange Design Assistance Program to bring in nationally recognized design specialists.

Wagner speaks from personal experience. “I’ve had a geothermal system in my house for 15 years. That decision looks pretty good today now that natural gas prices have taken off. This technology for commercial buildings has a bright future,” he added.

## System Specifications

The state-of-the-art system connects 240 tons of cooling equipment to 200 vertical wells reaching depths of 200 feet. Located directly beneath the school’s playground, the well system includes 20 heat exchange circuits with 10 vertical wells. Each well is a 400 foot loop of three-quarter inch polyethylene pipe. A mixture of water and antifreeze fill the entire closed-loop heat exchange coil, providing extra freeze protection and improved heat transfer.

Inside the school, 60 water source heat pumps are strategically located above the ceilings and in mechanical closets. They range in size from 2.5 to 6 tons of cooling capacity. The zoned system affords teachers precise control of individual classroom comfort while a built-in Direct Digital Control (DDC) System provides overall system monitoring and scheduling.





## Calendar of Events

**September 5-8, 2001**

Comfortech  
Contracting Business  
Nashville, TN  
www.contractingbusiness.com  
216-931-9343

**September 5, 2001**

Geo-Basics Workshop (at Comfortech)  
See above for contact information

**September 19-21**

IGSHPA Installation Workshop  
International Ground Source Heat Pump Association  
Stillwater, OK  
www.igshpa.okstate.edu  
800-626-4747

**September 28-30**

Green Living & Sustainability Fair  
Texas Solar Energy Society  
Texas Renewable Energy Industries Association  
Fredericksburg, TX  
www.treia.org  
512-345-5446

**October 2-4**

IGSHPA Installation Workshop  
Alabama Power Co.  
HVAC Training Center, Verbena, AL  
mpmilwee@southernco.com  
800-634-0154

**October 22-24, 2001**

Certified GeoExchange Designer Workshop  
International Ground Source Heat Pump Association  
Atlanta, GA (before WEEC)  
www.igshpa.okstate.edu  
800-626-4747

**October 24-26, 2001**

World Energy Engineering Congress  
Association of Energy Engineers  
Atlanta, GA  
www.aeecenter.org/weec

# GHP SYSTEMS



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