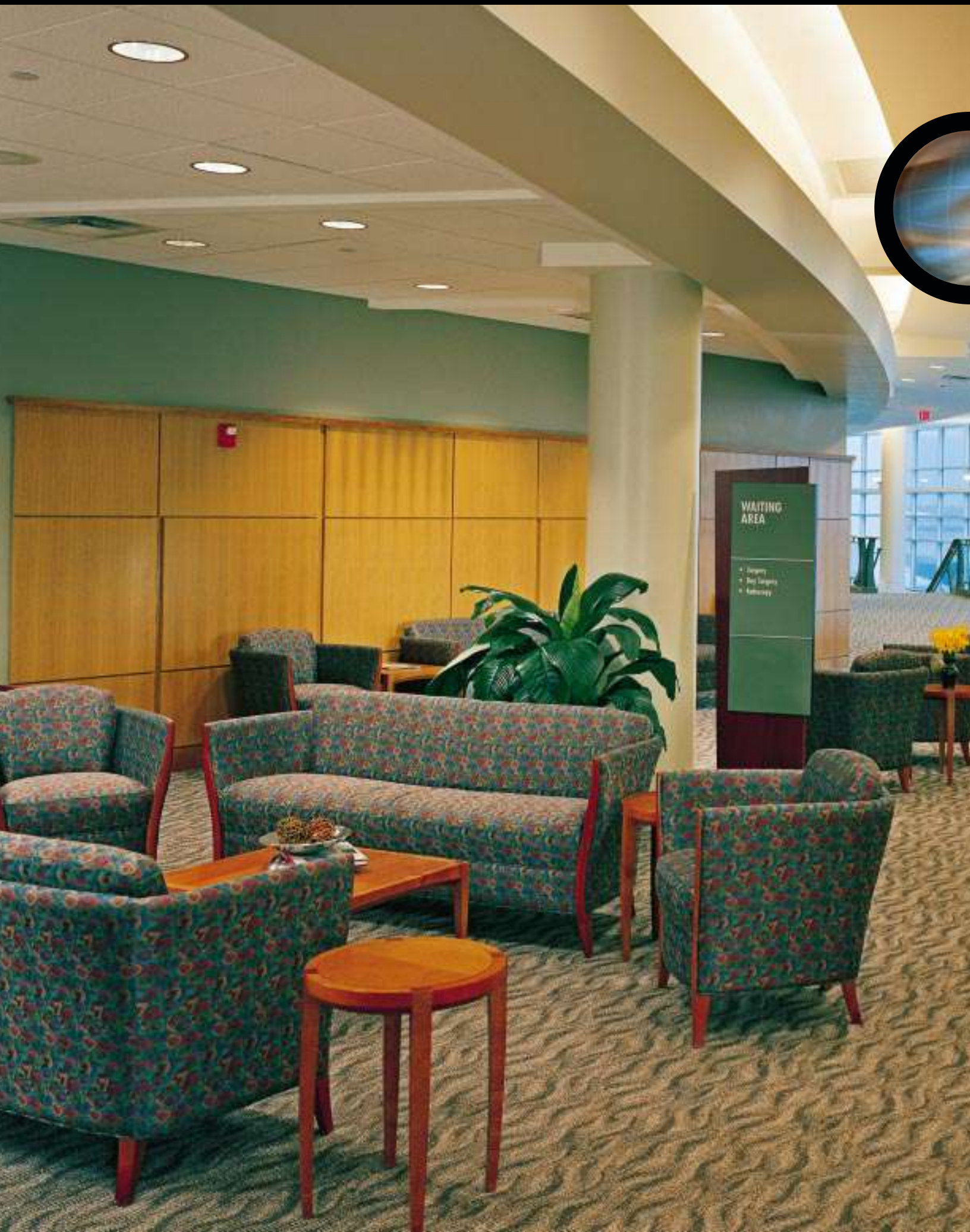
GEOEXCHANGE

THE PRESCRIPTION FOR LOWER HEATING
AND COOLING COSTS IN HEALTHCARE FACILITIES

GEOEXCHANGE


WAITING
AREA

A SURE CURE

FOR RISING ENERGY BILLS

Each year, more hospitals, nursing homes, rehab centers and other healthcare facilities are discovering how to deliver greater patient comfort while saving tens of thousands of dollars on heating and cooling costs through GeoExchange.

Cost and space savings, improved comfort, lower maintenance and equipment life cycle costs, individual room control and environmental conservation are just a few of the benefits that make this earth-friendly HVAC technology worth serious consideration.

Although GeoExchange may seem to be a new technology to some, it's actually as old as the earth itself. By tapping into the relatively constant temperature of the earth below the frost line, GeoExchange heats and cools buildings at significant savings — 25% to 40% savings compared to traditional systems. Considering that a healthcare facility requires maximum temperature control 24/7, better-managed energy consumption can produce enormous savings.

GeoExchange is ideal, whether you're building a new healthcare facility, renovating an existing one or simply replacing your old HVAC system. So keep reading. Discover how much more patient-friendly, cost-efficient and environmentally conscious your treatment center can be with GeoExchange.

← Great River Medical Center
West Burlington, Iowa

SIMPLICITY OF DESIGN AND OPERATION

FROM THE GROUND UP

Unlike traditional furnaces that burn fuels for heat and require separate air conditioning or chiller systems, GeoExchange systems transfer heat from one place to another using a simple process to provide both warmth and cooling. There are two types of GeoExchange systems. Each taps the earth's inexhaustible supply of renewable thermal energy, under ground or under water, where temperatures remain fairly moderate at 45° to 55°F, year-round.

"Closed loop" systems use the earth as the heat transfer medium, employing a mixture of water and non-toxic antifreeze pumped through a continuous loop of sealed polyethylene pipes buried beneath the ground, vertically or horizontally. "Open loop" systems draw water directly from a well, lake or pond and pump it through a heat exchanger at the geothermal heat pump, after which the water is returned to the source.

In winter, GeoExchange systems bring the earth's natural warmth up to a building and then transfer it into each room or zone via a heat pump. In summer, they work in reverse to provide air conditioning, absorbing the heat from inside a building and transferring it to the cooler earth below.

Closed Loop Vertical System

Closed Pond Loop System

HIGHER EFFICIENCY THAN OTHER SYSTEMS

After an extensive evaluation, the Environmental Protection Agency found that, even on a source fuel basis – accounting for all losses in the fuel cycle, including electricity generation at power plants – GeoExchange systems average 40% to 75% greater efficiency than all other available heating and cooling technologies.

WORLD'S LARGEST LAKE-LOOP SYSTEM

GREAT RIVER MEDICAL CENTER

WEST BURLINGTON, IOWA

Construction:	1998-2000
Building Type:	$120 million hospital complex
Total Area:	700,000 sq. ft.
HVAC:	GeoExchange, lake-coupled, closed loop system; 105 grids, 800 heat pumps, total capacity: 1,500 tons
System Comparison:	Conventional boiler and chiller
Estimated Annual Savings:	$1.5 million

Great River Medical Center, West Burlington, Iowa

OUTSTANDING COMFORT INSIDE, VIRTUALLY INVISIBLE OUTSIDE

Traditional systems have two major shortcomings. They heat or cool an entire building at once, with little or no ability to control comfort levels in individual rooms or zones. Second, they occupy tremendous space, both inside and outside the building.

A GeoExchange system creates an exceptionally comfortable healing environment by giving medical staff precise temperature control, room by room, according to patient preference or medical need. The system can compensate for morning or afternoon shade, heat buildup or temperature variance anywhere in a building. Administrative offices, non-clinical areas, even surgical rooms can be designed with sensors that activate the system when they're occupied, and shut it down when they're not.

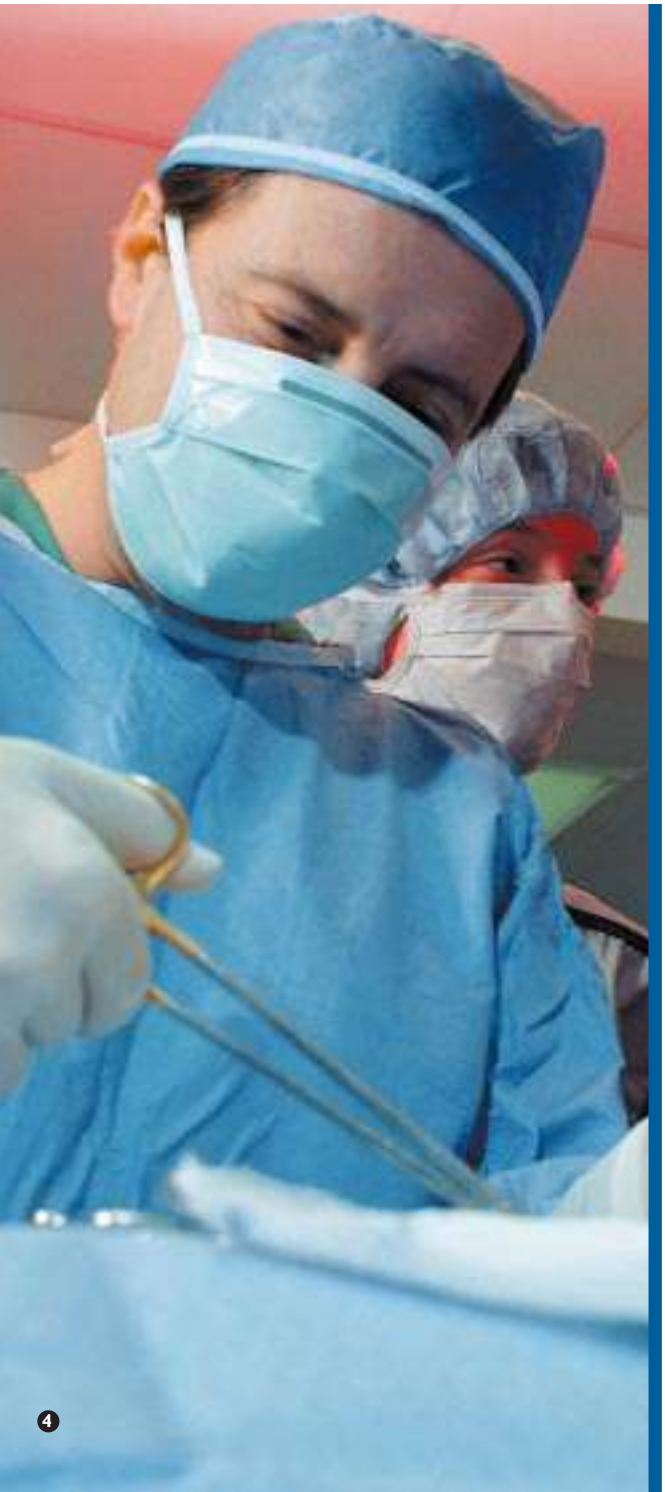
Humidity levels are ideal. There's no "blast" of hot air. No "cold blow" that sends patients scrambling for blankets. Temperatures don't fluctuate, so thermostats don't need constant adjustment.

GeoExchange systems are much more compact than traditional systems, and out of sight. Mechanical rooms can be much smaller. There are no boilers, smoke stacks or fuel tanks. No massive rooftop chillers requiring added structural support, labor and construction costs. No holes drilled in roofs to secure them either, reducing the risk of leaks. No above-ground equipment to be seen at all.

In fact, the surface above a ground loop can be used for parking lots, walking paths or courtyards. And because GeoExchange equipment is usually underground (wells and piping) and inside (heat pumps), it's not exposed to damage from weather or vandals.

WITH GEOEXCHANGE

THE SKY IS NO LONGER THE LIMIT



MORE DESIGN FLEXIBILITY, MORE AVAILABLE SPACE

Traditional systems limit architects, designers and engineers to traditional thinking. GeoExchange permits them to envision a new world of hospital design possibilities, inside and out.

A GeoExchange system needs only about one-third the space of a traditional boiler room. Pipes hidden above the ceiling transport warmth to or from heat pumps concealed in small closets in patients' rooms. Large blower units and radiators need no longer be a visual detriment in every room. And the eyesore of above-ground and rooftop equipment completely disappears from view.

The result? Unlimited architectural creativity. GeoExchange systems permit more attractive exterior and roof designs. They allow older healthcare facilities to be modernized without negatively impacting their appearance. They also permit more room in every room, with higher indoor air quality and controlled humidity. More overall space available throughout the building. And preservation of the natural beauty that surrounds your facility.

"I've had so many compliments from staff, patients and surgeons even, about the performance of the system. And the savings we're generating are probably in the neighborhood of $1.5 million a year at today's energy rates."

Steve Leavitt, Director of Development

Great River Medical Center

West Burlington, Iowa

"It's amazing to me after 23 years in the business to be able to use 33-degree pond water to heat a building. The (geothermal) system purred like a kitten from the start-up."

Rex Clark

Facilities Development Team

St. Joseph Medical Center

Fort Wayne, Indiana

ENVIRONMENTALLY SAFER IN THE AIR AND THE GROUND

Even the most advanced fossil fuel systems release emissions into the air during combustion. And rooftop cooling towers could present additional air quality concerns related to waterborne bacteria or airborne mists from water treatment chemicals.

GeoExchange systems present no such problems. And they are fully endorsed by the Department of Energy and the Environmental Protection Agency. GeoExchange is environmentally responsible, creating warmth without combustion while drastically reducing greenhouse gas emissions. In fact, GeoExchange systems currently in use eliminate more than 3.8 million metric tons of carbon dioxide from our atmosphere annually. GeoExchange systems are a good business decision and a good example of environmental stewardship. All of which helps to keep America's blue skies blue.

Dupont Medical Center, Division of St. Joseph Medical Center
Fort Wayne, Indiana

East Campus Development, Quality Living, Inc., Omaha, Nebraska

EXPERTS IN THE KNOW, AS CLOSE AS YOUR PHONE OR COMPUTER

The GeoExchange industry is growing rapidly, with an expanding infrastructure of knowledgeable experts skilled in the technology. From design engineers and architects to well drillers, pipe fitters, HVAC contractors and equipment specifiers, you can find everyone you need to help design, install and maintain a GeoExchange system precisely tailored to your hospital's or healthcare facility's present and future needs.

Easily contacted by phone or e-mail, these people can put you "in the loop" quickly, bring you up to speed on the latest technology, and show you other institutions that have benefited, economically and ecologically, from GeoExchange heating and cooling.

Main Entrance, Quality Living, Inc.
Omaha, Nebraska

ASSISTED LIVING IN TOTAL COMFORT

QUALITY LIVING, INC.

OMAHA, NEBRASKA

Original Construction: 1999

Building Type: ..... Nursing facility, 60 long-term-care units, 52 apartments

Total Area: ..... 95,896 sq. ft.

New HVAC: ..... GeoExchange, 162 vertical loop wells, 230 ft. deep, 180 individual room heat pumps

System Comparison: ..... Traditional variable air volume, gas-fired hot water heating, chiller water cooling, central air conditioning

Space Savings: ..... 40% smaller mechanical room

Estimated Cost Savings: ..$460,756 over 20-year life cycle

ADDED ADVANTAGES OF GEOEXCHANGE

HEATING AND COOLING

A CONSTANT SUPPLY OF HOT WATER

In hospitals and healthcare buildings with cafeterias or food preparation facilities, on-site laundries and therapy rooms, GeoExchange systems can also help cut the cost of refrigeration, ice making, and hot water production. Walk-in refrigerators and ice making equipment, even computer rooms, generate excess heat, which can be captured by the fluid circulating in the ground loop and used to help produce hot water very economically.

In the winter, this excess heat can also be used to help heat the building interior. This heat can also be routed through pipes under parking lots and sidewalks to melt snow and ice. Since heat is merely transferred from where it's generated to where it's needed, operating costs are lowered even more than when GeoExchange is used just for heating and cooling the building interior.

LESS MAINTENANCE, FEWER INTERRUPTIONS

Traditional HVAC systems can be complex and costly to maintain. Oil and gas-fired boilers demand regular cleanings and component maintenance. Chillers need routine check-ups, fluid testing and replacement. Both systems require the attention of skilled technicians to ensure reliable operation. And should either system fail, the hospital or healthcare facility could shut down with it.

GeoExchange systems, however, are remarkably simple and reliable. They consist of standard pumps, water valves and heat exchange units. The polyethylene pipes underground

"With the system performing well and with cost savings so impressive, we expect a payback of a little more than four years for the cost of the geothermal system."

Mike Larson, P.E.

Farris Engineering

Quality Living, Inc. Rehab Center

Omaha, Nebraska

"I would definitely recommend this system over a conventional HVAC system."

Alex Martinez

Maintenance Engineer

Indian Health Service Hospital

Albuquerque, New Mexico

can last 50 years or longer. Routine maintenance consists primarily of air filter replacement. And in the unlikely event that an individual heat pump, water pump, pipe or valve should fail, that component can be taken off-line and repaired, without affecting other units.

WHY YOU SHOULD PRESCRIBE GEOEXCHANGE FOR YOUR HEALTHCARE FACILITY

GeoExchange is the most efficient, most environmentally responsible heating and cooling technology you can use. For a world of good reasons.

It is unrivaled for economy — comparable to traditional systems on first-installed costs and vastly superior over the long term — with energy cost savings of 25% to 40% annually. It offers precise control of comfort levels in individual rooms or zones. It affords exciting new architectural possibilities, inside and out. Its simple design and equipment ensure years of reliable performance with much less maintenance than traditional systems.

GeoExchange also enables healthcare facilities to demonstrate global stewardship by example, utilizing a limitless supply of natural heating and cooling energy with no impact on the environment. Or on the world's dwindling supply of fossil fuels.

If you'd like to learn more about the very real benefits of GeoExchange heating and cooling for your hospital or healthcare facility, contact the Geothermal Heat Pump Consortium toll-free at 1-888-ALL-4-GEO (255-4436) or visit our web site at: http://www.geoexchange.org

Indian Health Service Hospital
Albuquerque, New Mexico

GEOEXCHANGE ADVANTAGES

- Cuts heating and cooling costs 25% to 40%
- Increases patient comfort and staff control
- Reduces mechanical room space up to 60%
- Eliminates heavy rooftop equipment
- Preserves building aesthetics and beauty of land
- Simpler design, maintenance and operation
- Environmentally friendly technology

Credits: Photos of Quality Living, Inc. – East Campus Development courtesy of Farris Engineering, Omaha, Nebraska. Photo of Dupont Medical Center courtesy of WaterFurnace, Ft. Wayne, Indiana.

The Geothermal Heat Pump Consortium, Inc. (GHPC) is a nonprofit organization whose goal is to advance the use of GeoExchange heating and cooling systems. GHPC is a partnership made up of electric utilities and the geothermal heat pump industry.

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GEOTHERMAL HEAT PUMP CONSORTIUM, INC.

$8.00 GB-032

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