

Advanced Technology Can Make Your Home More Comfortable Now

Washington, DC- Imagine a heating and cooling system for your home that would keep you cool in the summer and warm in the winter, cut your utility bills by 25 to 50 percent, and help save Planet Earth, all at the same time.

Sounds like a challenge for the new millennium, doesn't it? A futuristic dream that homeowners can look forward to some time well into the 21st century.

The good news is this advanced heating and cooling system is here today. It's called Geoexchange and thousands of homeowners nationwide are already reaping the benefits, including higher comfort levels and lower utility bills.

Geoexchange (sometimes called geothermal, or ground-source heating and cooling) taps the renewable, safe, and virtually endless energy supply that lies just below the earth's surface.

The way it works is simple. In winter, warmth is drawn from the earth through a series of pipes, called a loop, installed beneath the ground. A water solution circulating through this piping loop carries the earth's natural warmth to a heat pump inside the home.

The heat pump concentrates the earth's thermal energy and transfers it to air circulated through interior ductwork to fill every space in your home.

In the summer, the process is reversed; heat is extracted from air inside the house and transferred to the biggest "heat sink" of all--Mother Earth--by way of the ground loop piping. The Geoexchange system also uses some of the heat extracted from the interior in the summer to provide free hot water--saving as much as 30% on your annual hot water bill.

Because Geoexchange technology uses such a readily available source of energy--and uses it so efficiently--it can save a substantial amount of money on monthly utility bills.

In fact, a typical 1,500-square-foot home in a moderate climate can be heated and cooled for a year-round average of just \$1 a day.

The Environmental Protection Agency and the U.S. Department of Energy have both recognized Geoexchange technology as the most efficient and environmentally friendly home heating and cooling system available.

Geoexchange technology may sound almost too good to be true, but it's advanced technology that you can use right now.

To learn more about it, start with the Geothermal Heat Pump Consortium, a nonprofit organization formed with support from the Environmental Protection Agency and U.S. Department of Energy to promote the use of Geoexchange technology. You can reach them at 1-888-333-4472.

Greenbacks, "Green" Power Top List of Heating/Cooling System Benefits

Washington, DC- If you are buying a new home, or if your existing home is crying for a new heater or central air conditioning system, you may want to consider the many benefits of an advanced technology currently making its way into mainstream use.

The technology is called Geoechange, and it offers higher efficiency, lower utility bills, improved comfort, and reduced greenhouse gas emissions, compared to conventional heating and cooling systems.

By using the renewable energy of the earth just below the surface, Geoechange systems provide superhigh operating efficiency, leading the U.S. Environmental Protection Agency to cite Geoechange as "the most energy-efficient, environmentally friendly heating and cooling technology available."

Because of their energy efficiency and their simple design, Geoechange systems offer a number of benefits over conventional heating and cooling systems.

Cost Savings. Because they tap the Earth's renewable energy, Geoechange systems are more efficient than furnaces or conventional heat pumps. They don't burn fossil fuels, nor do they try to extract heat from cold winter air or reject heat to hot summer air. They simply move heat from the earth to the building's interior in winter, and pump heat from the interior to the earth in summer. So they cost less to operate. Much less.

Homeowners with Geoechange units typically realize energy savings of 25 to 50% over conventional gas, oil, or heat pump systems. In fact, a typical 2000-sq.-ft. home can be heated and cooled for as little as \$1 a day.

In addition, Geoechange systems can supplement the home's conventional water heater, saving up to 30% of hot water costs every year.

Maintenance savings. With a Geoechange system installed, homeowners can also look forward to saving money in maintenance, repair, and replacement costs.

Properly installed Geoechange systems rarely need service. The underground loop piping that carries heat to and from the earth is made of high density polyethylene, typically guaranteed for 25 years and expected to last 50 years or longer. (It's the same material used for cross-country natural gas lines.)

The Geoechange system hardware has few moving parts and should remain virtually maintenance-free for 20 years or more. The homeowner's only routine maintenance chore is changing the air filter every three months.

Added Value. A Geoechange system, like other energy-efficient features, can also add value to your home. Recent studies indicate an increase of \$20 in home value for every \$1 in annual energy savings.

Comfort. Choosing a heating and cooling system is like Goldilocks sampling the porridge. The air that a furnace system sends through the ducts is heated to as high as 130° F, and may feel too hot or dry. Most conventional heat pumps circulate air through the ducts at about 92° F--too cold and drafty for many people.

With good construction and proper duct design, Geoechange systems circulate air heated to about 105-110° F--just right for almost everyone.

Safety and aesthetics, too. Geoechange systems use no combustion, or flame, so they produce no carbon monoxide, under any circumstances.

Geoechange equipment is also compact and, except for the loop piping buried in the ground, is located inside, tucked neatly in basement, attic, closet, or crawl space.

There is no outside compressor to face the ravages of weather, climate, or vandalism; no noisy fan installed next to deck or patio to disrupt the quiet of a summer day. And the indoor system, which is roughly the size of a washing machine, makes about the same amount of noise as a refrigerator.

Helping Planet Earth. Because Geexchange systems burn no fossil fuel and operate so efficiently, they even reduce greenhouse gas emissions substantially over conventional heating and cooling technologies.

Geothermal Heat Pump Consortium Champions Geexchange Technology

Washington, DC-The Geothermal Heat Pump Consortium, Inc. (GHPC) is a nonprofit organization created in 1994 to increase the awareness of Geexchange (geothermal heat pump) technology for commercial, institutional, and residential heating and cooling throughout the United States.

Geexchange is an energy-efficient, environmentally friendly heating and cooling technology. Geexchange systems use the earth's renewable energy to provide heating in winter, and cooling in summer, with energy consumption 25% to 50% less than traditional oil, natural gas, and electric heat pump systems. Moreover, because Geexchange systems burn no fossil fuels in creating heat, they reduce greenhouse gas emissions substantially, and eliminate a source of carbon monoxide inside the homes and commercial buildings where they're used.

The Consortium counts among its partners electric utilities, equipment manufacturers, architects, engineers, contractors, builders, energy service companies, and other private sector companies that operate in the Geexchange market.

The Consortium is a resource for anyone wishing to know more about Geexchange technology. Its full time staff and industry allies can provide technical expertise, marketing research data and insight, and current industry activity status.

Architects Go Underground With Geexchange Technology

Washington, DC-Imagine an HVAC system that could save clients 25 to 50 percent on their utility bills. Imagine a system that is not only easy to maintain and reliable, but for every hour of use, produces one pound less CO₂ than a conventional HVAC system. Finally, imagine a system with optimal design flexibility because the roof and landscape are free of chillers, air handlers and other outdoor equipment.

Sound too good to be true? It isn't. Such a heating and cooling system exists and it is called Geexchange. Geexchange utilizes natural thermal energy stored in the ground, minimizing the need to burn fuels to create new energy. Geexchange requires far less energy and has much lower operating costs than traditional heating and cooling technologies.

And it's reliable. In fact, architect David Samokar of Clotfelter-Samokar in Lexington, Kentucky, believed so strongly in the technology that for one of his first installations he offered to replace the system free of charge if the client was not completely satisfied. "As it turned out, we never even

had a discussion about replacement. It proved to be the best way for me to build the client's confidence in Georexchange, and it has paid off very well for my business," says Samokar.

How Georexchange Works

The system works by attaching geothermal heat pumps to the ground through either a series of buried plastic pipes (closed loop) or water wells (open loop) often beneath parking lots or green areas. Closed loop systems circulate water or an environmentally safe antifreeze. The fluid absorbs heat from the ground during the winter and transfers it to the heat pumps inside the building. In the summer, the process is reversed with heat from the building being returned to the ground. Open loop systems operate on the same principle and can be installed where an adequate water supply is available.

For the architect, this system brings several benefits, including design flexibility, reliability and energy efficiency. Knowledge of and experience with the system can also be an effective marketing tool for the architectural firm.

Design Flexibility

Georexchange can benefit a building's design because there is no need for unsightly and noisy rooftop equipment, such as split systems and cooling towers. Without the necessity of rooftop equipment, the architect is free to experiment with alternative roof styles. Eliminating rooftop equipment also reduces the load-bearing requirements of the roof structure. The air distribution ducts can be reduced, allowing for higher ceilings or reduced construction costs.

In addition, boiler rooms can be eliminated and the size of mechanical rooms can be reduced. Less mechanical space means more productive space and more design freedom.

Georexchange is also ideal for renovating buildings of historical merit. Because Georexchange installations are so flexible, they are generally the easiest systems to incorporate into an historic building. One successful strategy is to use smaller heat pumps dispersed in closets, basements, and attics to provide space conditioning and ventilation with minimal ducting. Because the ground loop heat exchanger is completely invisible, there are no unsightly condensers on the roof or grounds.

Reliability and Maintenance

Georexchange systems also offer ease of maintenance. The elimination of outdoor or rooftop equipment means equipment is not exposed to the temperature extremes, dirt, and pollution of the harsh outdoor environment. For this reason, Georexchange systems require less maintenance than conventional systems. Furthermore, Georexchange systems retain their high efficiency over the years. Since units are protected from weather, equipment life is extended and cost of repairs due to vandalism is eliminated.

Energy Efficient and Better for the Environment

Georexchange systems absorb the clean renewable geothermal energy stored in the earth, near the surface.

Temperatures just below the earth's surface consistently range from 45° to 75°F, depending on the latitude. Because the temperature remains relatively constant and close to indoor temperatures, the earth is an ideal source for heating and cooling both residential and commercial buildings, and is viable in all 50 states.

Geoexchange systems create and maintain a heat exchange between the earth and the building. In winter, they absorb heat from the earth, concentrate it via a heat pump, and transfer the warmth to the building's interior. In summer, they reverse the operation, removing heat from the building and transferring it to the cooler earth. Because the systems transfer heat to and from the stable and relatively moderate temperatures of the ground, they are more energy-efficient than other systems. This translates into lower energy bills and a reduction in the consumption of fossil fuels. For example, a Geoexchange system typically saves 25 to 50 percent on heating and cooling bills, compared to other technologies.

Getting In At The Ground Level

In 1992 when David Samokar first recommended a Geoexchange system for a new school, the idea was so novel that the Kentucky Board of Education refused to have the system installed unless there was also a back-up HVAC system. This made the idea cost-prohibitive. That's when Samokar offered to replace the Geoexchange system with conventional HVAC at no cost if the local school board was not satisfied. He backed this proposal up with a \$200,000 bond.

Samokar never had to install the conventional HVAC system and he's been installing Geoexchange systems ever since. In fact, he has installed the systems at his home and office.

"The thing we like best about the system is that our customers have no problems with it. As the leader of a professional team on a building project, the architect receives all the complaints, and with Geoexchange systems we've heard none," he says. In fact, Clotfelter-Samokar now specializes in the systems and recommends only Geoexchange systems to all customers.

Samokar finds installation costs to be competitive with conventional systems. "People who don't understand the system tend to 'over-design' it, often making it cost-prohibitive. If you have a thorough knowledge of the system, you can design it in a cost-effective way."

Samokar says he is always surprised to hear of architects who leave the design of the heating and cooling system to the engineer. "We take control of the HVAC design, which in turn gives us more to offer our customers. With Geoexchange growing increasingly popular in Kentucky, our knowledge and experience with the system has become a great marketing tool for our firm."

Geoexchange Earns 'A Place In History'

Washington, DC-If you stroll through Colonial Williamsburg in Virginia, you'll see and hear the sights and sounds of an authentic 18th century town. You'll see many of the same buildings that Thomas Jefferson and George Washington once did. You'll hear the clang of the hammer at a working blacksmith's shop.

What you won't hear is the buzz and rumble of 20th century air conditioners. And yet, the buildings are cool on the hottest days and warm in the winter. That's because several of Colonial Williamsburg's historic buildings use a modern heating and cooling technology called Geoexchange.

"Outdoor condensers and window air conditioners can ruin the charm and sense of history created by a centuries-old building," said John Kelly, Executive Director for the Geothermal Heat Pump Consortium, a nonprofit organization advancing the use of Geoexchange technology, which draws energy from the ground rather than from fossil fuels.

Among the most appealing characteristics of the technology is its virtual silence. Geoexchange does not rely on noisy pumps and exhaust fans to heat and cool interior space.

That's one of the key reasons the Colonial Williamsburg Foundation embraced the technology. According to Clyde Kestner, director of engineering for the foundation, several buildings in the historic district use Geoexchange heating and cooling systems. The largest system can be found at the Shields Tavern, a reconstruction of a tavern originally built in the early 1700s.

"It's an ideal technology for an historical district, when you can't afford to have any outdoor air-source cooling equipment humming," said Kestner. "The overriding concern is authenticity. You don't want to see these modern systems, hear them, or even know that they are there. You just want them to do their jobs quietly behind the scenes."

Geoexchange systems operate like ordinary heat pumps, cooling in the summer and heating in the winter. The difference is that they use the relatively constant temperature of the ground to provide energy-efficient, environmentally friendly comfort.

"Aesthetics aside, Geoexchange installations are also very flexible; therefore, they are generally the easiest systems to incorporate into an historic building," Kelly explained. "One successful strategy is to use smaller heat pumps installed in closets, basements, and attics to provide space conditioning and ventilation with minimal ducting.

"In addition, boiler rooms can be eliminated and the size of mechanical rooms can be reduced," he added.

Other Times and Places

The administration building at Whitman College in Washington is one such site that has also benefited from Geoexchange technology's design flexibility. Originally built in 1899, the historic building faced several design constraints when it came time to retrofit the HVAC system. The Geoexchange system was an ideal solution because it did not require ducting throughout the building. Instead, individual heat pumps were mounted above the ceiling.

Other historic buildings that contain Geoexchange systems include the Lady Meredith House at McGill University in Quebec, the original home of the American Bandstand television show in Philadelphia -- now a business incubator known as the West Philadelphia Enterprise Center -- and the Yates House in Houston's historic Sam Houston Park.

Geoexchange Fact Sheet for Architects

- Geoexchange systems provide the architect with optimal design flexibility because the roof and landscape are free of chillers, air handlers and other outdoor equipment.
- With Geoexchange systems, boiler rooms can be eliminated and the size of mechanical rooms can be reduced.

- Because Geoechange systems are so flexible, they are ideal for renovating buildings with historical merit. One successful strategy is to use smaller heat pumps dispersed in closets, basements, and attics to provide space conditioning and ventilation with minimal ducting. Additionally, there are no unsightly condensers on the roof or grounds to distract from the building's historic charm.

- The elimination of outdoor or rooftop equipment means the Geoechange system is not exposed to temperature extremes, dirt, pollution or vandalism.

- For every hour of use, a Geoechange system produces one pound less CO₂ than a conventional HVAC system.

- Geoechange systems do not require a flue or chimney. And since there is no on-site combustion, there is less chance of fire, and no chance at all of carbon monoxide spilling back into the building. According to the Environmental Protection Agency, Geoechange is the most energy-efficient, environmentally clean, and cost-effective space conditioning system available.