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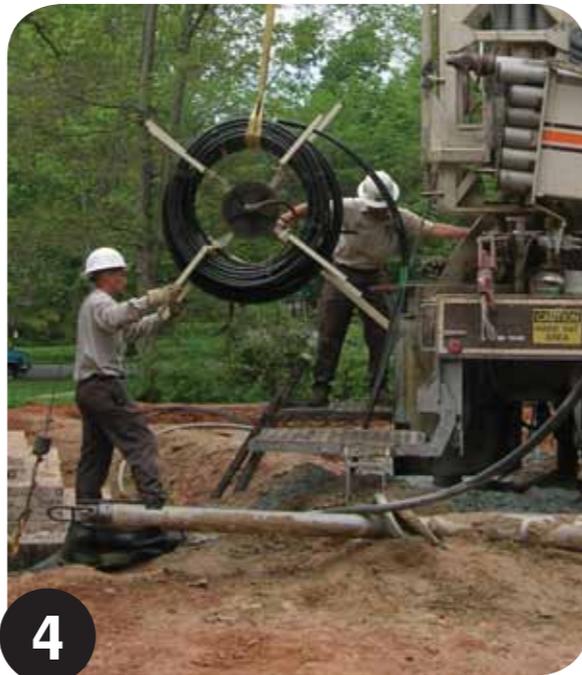
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From the Editor

The geothermal market is growing and the HVAC contractor can find it profitable. In order to help contractors just getting into the field or give those who are in the field a few pointers, *The NEWS* teamed up with AHRI for this geothermal ebook. In this book, we will cover important issues like geothermal tax credits, financing, and tax incentives. In addition, we showcase a few real-world examples where geothermal was the correct choice for both a homeowner and a school district. We hope that whichever way you are reading this ebook — PDF, digital edition, or iPad app — you will enjoy our coverage of the geothermal market.



Kyle Gargaro
 Editor-in-Chief
 The NEWS

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Geothermal Financing: 'There Is No Silver Bullet'

by Greg Mazurkiewicz of *The NEWS* Staff 

A geothermal heat pump (GHP) system can cost significantly more than a conventional heating and cooling system. Because of this, federal tax credits along with state and local incentives have been a boon to the industry. Financing is also considered essential to seal the deal with new customers. Recently, more financing options are opening up and this looks to be very beneficial to the GHP industry and contractors.

PowerSaver Loan Program

In April 2011, the U.S. Department of Housing and Urban Development announced that it had lined up national, regional, and local lenders to participate in a new program to offer qualified borrowers low-cost loans to make energy-saving improvements to their homes. Backed by the Federal Housing Administration (FHA), these new PowerSaver loans offer homeowners up to \$25,000 to make energy-efficiency improvements, including the installation of duct sealing, high-efficiency HVAC systems and water heaters, solar panels, and geothermal systems.

"We believe the market is right for a low-cost financing option for families who want energy-saving technologies in their home," said HUD Secretary Shaun Donovan in a press release. "PowerSaver hits on all cylinders



Drilling and installing the loop is a major expense when going geothermal.

by helping credit-worthy homeowners finance these upgrades, cut their energy bills, and boost the local job market in the process.”

The Electric & Gas Industries Association (EGIA), a nonprofit organization dedicated to advancing energy efficiency and renewable energy, jumped on board to assist with marketing and implementing the PowerSaver loan program through its network of contractors, distributors, and manufacturers. EGIA makes the program available through its pre-screened GEOSmart Authorized Contractors, who offer homeowners loans of up to 15 years for qualified home improvements and up to 20 years for renewable energy improvements, which include solar and geothermal. There is no cost to the contractor to offer these loans at below-market interest rates.

Richard Lay, certified geothermal designer for Dominion GeoThermal LLC, Fairfax, Va., an employee-owned company, said that his “experience has been mixed” with the PowerSaver loan program. But, he added, “My experience has been mixed with all the financing currently available.”

A problem that he pointed out with PowerSaver is that it has to be a second position loan. If the homeowner has a home equity loan — which many people do — that potential customer does not qualify.

“If you can get into it, it’s the best thing out there,” said Lay.

Heidi Humphrey, accountant, Freier’s Comfort by Design, Ellsworth, Wis., agreed that PowerSaver is “definitely a good program.” Her company is a Water



Shown is a geothermal loop for a residential installation.

Furnace dealer and also offers geothermal financing through a WaterFurnace and EGIA partnership. “It just takes a phone call to get financing,” she said. “We tell customers they can expect to spend about 30 minutes on the phone.”

Mike Beaver, president, Beaver Brothers Inc., Salisbury, N.C., is not involved in the PowerSaver program, but he does offer financing through WaterFurnace and EGIA. “Without the federal and state tax credits, we probably would not be doing anywhere near the business we’re doing,” said Beaver. In addition to the 30 percent federal tax credit, North Carolina offers a 35 percent renewable energy tax credit, with a cap of \$8,400.

To look for available state and local rebates and incentives, check the Database of State Incentives for Renewables & Efficiency (DSIRE) at www.dsire.usa.org.

EGIA Offers More Options

Eric Howarth, vice president of contractor services, EGIA, said that his organization’s financing

programs are developed with input from manufacturer and contractor focus groups. “The programs focus on the three identified types of homeowner customers that contractors encounter:

- 1. The cash buyer** — This homeowner could write a check; however, they suffer from ‘cash separation anxiety,’ the fear of writing that big check. They need something to convince them to purchase.



A truck moves a drilling rig into position.



The cost of the ground loop often makes financing a necessity.

2. The payment buyer — This homeowner needs a low monthly payment to make the purchase palatable.

3. The credit challenged — This homeowner, either due to the economy or money mismanagement, has a few dings on their credit and as a result needs a finance program that can accommodate lower credit scores at reasonable rates."

The focus groups also brought up the need to address long terms and the delay before customers receive tax credits and incentives. Many homeowners

purchasing geothermal heat pumps and/or solar need a program that has extended terms and the ability to have a bridge loan to cover the period until they receive their tax credits and incentives. "In other words," said Howarth, "there is no silver bullet to financing, and as a result EGIA formed the GEOSmart Financing Clearinghouse to meet these market needs."

EGIA's options include an unsecured installment loan, a PowerSaver loan combined with a bridge loan, and what Howarth calls a "fresh start" loan.

same-as-cash loan to cover the tax credits/rebates and the PowerSaver loan for the remainder. “This combo allows for the lowest possible payment and is the ultimate option for the payment buyer with equity,” Howarth stated.

Fresh Start Loan

This second mortgage program offers secured loans to \$25,000, terms to 20 years, rates starting at 9.99 percent, and no equity is required, said Howarth. Fresh Start has low dealer and homeowner fees and a streamlined approval process. “This product is often used as a second look option behind traditional unsecured programs,” he said. “Contractors typically find that it can fund up to 25 percent of their homeowner finance turn downs.”

Small Business Program

Doug Dougherty, president and CEO of the Geothermal Exchange Organization (GEO), reported that in November 2011 President Obama signed into

law an appropriations bill that included \$1 million for utility on-bill financing of efficiency upgrades — such as GHP systems — for small businesses.

The financing was included in H.R. 2112, the Consolidated and Further Continuing Appropriations Act. The Economic Development Administration (EDA) at the Department of Commerce was to provide the money from existing funds, which would be sufficient to establish a pilot program.

In October 2012, acting U.S. Commerce Secretary Rebecca Blank announced a \$1 million EDA grant to the Burlington Electric Department in Burlington, Vt., to establish the Energy Efficiency Revolving Loan Fund (EE RLF). The EE RLF will make funds available for up to 150 commercial electric users during its first round of capitalization to help them make energy-efficiency upgrades.

“We feel this is very important,” said Dougherty. “One of the barriers to our technology is the initial upfront cost, primarily due to the cost of putting the loop in the ground. We see the utilities as an avenue to reduce that barrier.” 

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Tax Incentives Bolster Geothermal's Attractiveness

by Herb Woerpel of *The NEWS* Staff 

Aided by various state and federal tax programs, the addition of a geothermal heat pump may never be as advantageous as it is today. Much of the attention is on installations by homeowners, but commercial installations can qualify for some programs as well.

Federal Tax Incentives

The Energy Improvement and Extension Act of 2008, HR 1424, spurred a long-term tax incentive encouraging the installation of residential and commercial geothermal heat pumps.

The bill offers a one-time tax credit of up to 30 percent of the total investment for homeowners who install residential ground loop or ground water geothermal heat pumps through 2016. The credit may be applied to existing and new construction projects, and may be utilized on primary and secondary residences. A 10 percent credit is available, with no maximum, for commercial system installations.

To qualify, the system must be installed after Dec. 31, 2007 and meet or exceed Energy Star requirements. While a \$2,000 cap was implemented for units installed in 2008, equipment added between 2009 and 2016 are eligible for the entire credit.



An HVACR contractor hard-pipes a connection from a geothermal ground loop to a ClimateMaster unit.



Geothermal installers dig a trench for a horizontal ground loop.

Taxpayers may file for the incentive by completing the renewable energy credit subsection on their tax return forms. No proof of purchase is required; however, if audited, a filer must provide a detailed invoice. Contractors are encouraged to clearly label the equipment as a geothermal heat pump, and should acknowledge that the system exceeds existing Energy Star requirements.

“Obviously the biggest legislative milestone would be the 30 percent residential and 10 percent commercial federal tax credit,” said Tim Litton, director of marketing communications, WaterFurnace International.

“The tax credit, passed in 2008 and expanded in 2009, has boosted sales

and helped thousands make the switch to geothermal. It will continue to be a boon to the industry until it expires in 2016.”

Dan Ellis, president, ClimateMaster said the federal tax incentives provides direct and indirect advantages for the industry.

“Obviously, the incentive has improved purchase economics and stimulated sales,” he said. “Not so obvious are the indirect benefits we received by being included ‘on the list’ with other renewables. This has raised awareness of our technology in the media, both consumer and trade, and also amongst energy and environmental trade groups and federal agencies.”

Enabling Energy Saving Innovations Act

Through the Energy Policy Act of 2005, the federal government was required to use at least 3 percent of its electricity in fiscal years 2007-2009 from renewable sources. This requirement increased to 5 percent in fiscal year 2010 and will increase to 7.5 percent in fiscal year 2013.

The U.S. government currently recognizes renewable energy as “electrical energy generated from solar, wind, biomass, landfill gas, ocean, geothermal, municipal solid waste, or new hydroelectric generation capacity ...”

Geothermal heat pumps fail to qualify because they do not generate electricity, even though they have the capability of reducing energy by as much as 70 percent in some applications.

While geothermal equipment doesn’t currently fit the federal government’s mold, a solution may be on the horizon. In September, the U.S. Senate unanimously approved HR 4850, the Enabling Energy Saving Innovations Act (EE-SIA), which amends the Energy Policy Act of 2005 to specifically include thermal technologies, such as geothermal sources, for achieving federal energy-efficiency goals. The 112th Congress ended their session before this bill could be considered by the U.S. House of Representatives.

“Geothermal systems offer amazing opportunities for governments, utilities, contractors, and homeowners. Anywhere power constraints are a problem; geothermal heat pumps are probably part of the solution.”

– Tom Huntington, WaterFurnace International

State by State

In addition to federal tax incentives, numerous states are either offering rebates, considering incentives, or are on the brink of recognizing geothermal positive capabilities. In April, Maryland became the first state to formally acknowledge geothermal heating and cooling as a renewable energy source. The state legislature passed SB 652, a bill recognizing geothermal exchange technologies as accepted energy sources for use toward earning renewable energy credits.

“This legislation reflects the state government’s recognition that geothermal heat pump technology can provide as much benefit through power conservation as wind and solar can through clean generation,” said Tom Huntington, president and CEO, WaterFurnace International. “Geothermal systems offer amazing opportunities for governments, utilities, contractors, and homeowners. Anywhere power constraints are a problem; geothermal heat pumps are probably part of the solution.”



A technician monitors the flow of two ClimateMaster indoor split units.

Iowa Gov. Terry Branstad signed SF 2432 into law on May 25, providing a state tax credit for residential geothermal heat pump installations equal to 20 percent of the federal residential energy-efficiency property tax credit. In conjunction to the federal 30 percent credit, the Iowa credit is equivalent to 6 percent of system costs. The law is applicable to any new or retrofitted residential geothermal installation occurring on or after July 1, 2012.

In June, New Hampshire Gov. John Lynch signed SB 218, allowing thermal renewable energy sources to be used by electric utilities to meet energy purchase requirements under the state's renewable portfolio standard. The state requires that power providers source 23.8 percent of electricity from renewable resources by 2025. The newly signed law will credit \$29 per megawatt-hour of thermal energy produced.

North Carolina offers a tax credit equal to 35 percent of the cost of the system, up to \$8,400; New Mexico extends a tax credit for 30 percent of a system's cost up to \$9,000; and North Dakota supplies a 15 percent income tax credit to indi-



This geothermal drill can reach a maximum depth of approximately 984 feet. Researchers believe geothermal wells may be dug as deep as 10,000 meters, or 32,800 feet.

viduals — paid at 3 percent annually for five years — to those installing geothermal energy systems.

“There is no doubt that the state-level geothermal heat pump incentives occurred as a direct result of the precedent set in federal policy,” said Ellis. “The future of the geothermal sector beyond 2017 will be built on the foundation created by a large base of successful installations.”

Other states, including California, Illinois, and Ohio, to name a few, are seemingly close to taking geothermal heat pump action.

“The Geothermal Exchange Organization (GEO) recognizes that changing state laws and regulations that create impediments to geothermal heat pump installations is of the utmost importance for the industry,” said Doug Dougherty, CEO and president, GEO.

“Geothermal heat pumps are an obvious leader in energy efficiency, but have been left out of various state laws, or ignored because of narrow definitions or formulas for qualifications. We are working in select states to begin turning those definitions in our favor.” 

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Growth Spurt Expected for Geothermal

by Joanna Turpin of *The NEWS* Staff 

Geothermal heat pump (GHP) sales have grown steadily in recent years, thanks to the 30 percent federal tax credit and higher levels of consumer awareness. Even so, manufacturers estimate that GHP installations account for only about 1 to 2 percent of the total market.

The high initial cost of installation is one of the main reasons why GHPs do not command a larger market share, although local incentives and better financing options may help mitigate this concern. The economy is also slowly improving, leading some industry experts to predict that sales of GHPs will command a far larger share of the market by 2016.

Growing the market as much as possible before that date is definitely on the minds of manufacturers, because the federal tax credits expire at the end of 2016. Which is why most in the industry see the next few years as the best opportunity for consumers to purchase GHP systems.



Tax incentives have helped to revive sales of geothermal systems by increasing awareness among homeowners.

Sense of Urgency

Many industry experts believe that sales of geothermal equipment will increase substantially over the next few years, thanks to government incentives, noted Jason McDiarmid, vice president and founder, Geofinity Mfg. Inc.

“One research firm estimated a doubling of the sales figure of 150,000 annual unit sales in 2010 to 327,000 units by 2017, whereas the DOE industry roadmap growth goal that same year set equipment sales targets for the industry of 1 million units annually by 2017. A more recent third-party study in late 2011 suggested that the GHP market could expect to see a 23 percent annual growth rate in the U.S. over the next few years.”

That being said, the expiration of the federal tax credit should concern everyone in the geo industry, said Mark Sullivan, national dealer development coordinator, Bosch.

“We have all enjoyed the benefits of having the tax credits in place the last few years, and their expiration will most likely be problematic

for our industry. Our strategy for dealing with this inevitability is to attempt to expand the geo market to the point that once sales are affected by the expiration of the tax credits, our sales level is still greater than it would have been at that point even if the tax credits had never been in place.”

While the tax credits have helped counteract current economic pressures, their expiration may be offset by the fact that some states are now implementing incentives of their own.

Tim Litton, director of marketing communications, WaterFurnace International, pointed out that states are “starting to recognize GHPs as another tool to alleviate power constraints and are embracing the technology. Maryland, for example, is offering renewable energy credits to utilities whose customers use geothermal heat pumps. The states are acknowledging that geothermal heat pumps can provide as much benefit to Americans as the clean generation of power from solar and wind.”

As Steve Williams, president, GeoSystems LLC, noted, “The state, local, and utility incentives and rebates are really strong in some areas. I know several states are offering excellent financial incentives, and we are seeing a higher level of interest in those areas, so I would say that the programs are having a visible effect. As a renewable energy, geothermal will continue to grow and increase its presence.”

Being a renewable energy source is one of the reasons why Doug Johnson, director of sales — geothermal and unitary products, Heat Controller Inc. believes that even though the loss of tax credits may decrease the immediacy of purchase decisions, he does not expect a decline as sharp as that which occurred when the unitary system tax credits expired.

“While incentive is important, it is not the main driver in purchase decisions but rather a catalyst. Keep in mind, the difference between geothermal and other sources of renewable energy is that geothermal is a stand-alone



Consumer awareness, dealer engagement, and drilling costs are three main drivers of the geothermal industry.

system that is effective no matter what the weather conditions. Because the geo story is so compelling and the expenditure so easily justified, this type of installation will continue to gain ground even without subsidies.”

Overcoming Obstacles

Still, a temporary drop in sales is almost inevitable once the tax credits go away, said Joe Parsons, vice president, EarthLinked Technologies Inc.

“The tax incentives have kept the geothermal market afloat, but the real detrimental effect has been the inability for homeowners to tap into the equity of their homes as they did in years past. Fact be known, there are few people

who can afford the additional out-of-pocket expense for geothermal, so they continue down the path of inefficiency. Hopefully the economy will have rebounded by 2016, and financing programs will be more readily available.”

Besides a lack of home equity, the decline in new construction is also impacting the sales of GHPs, noted Tony Landers, director of marketing — commercial products, ClimateMaster. “We do see retrofits taking place, but lack of new home starts is really hampering the expansion of geothermal into new markets and new communities.” That may be the reason why the majority of ClimateMaster’s business is currently commercial retrofits, especially in the school market.

Initial costs, driven by the cost of well drilling, are another obstacle that keep GHPs from emerging into the mainstream, said Williams. However, GeoSystems is experimenting with several projects that may spread the cost of the well field over multiple households. “We are hopeful that the first cost will begin to come down over time and balance out with the loss of the tax credit. Of course, we won’t rely on that to be the case, and we are working with a finance partner already to offer up options to help consumers work through the expense.”

While drilling prices continue to be exceedingly high in some areas, Parsons noted that EarthLinked’s most successful installers use the small-bore technology that has been proven to reduce drilling cost by 40 percent or more. “Lack of available financing is also an issue but there are signs that the green banking industry is beginning to prosper. We look forward to working with companies that can provide turnkey financing.”

Another innovative solution that can address the first-cost issue comes from energy companies, several of which are opting to install loops at their own expense and then lease them back to the homeowner, said Sullivan. “This win-win proposition does two things: 1) it allows the homeowner to install a GHP without the upfront cost of the loop and enjoy the lower operating costs;



With reasonable drilling costs and federal tax credits, geothermal systems don’t cost that much more than high-efficiency air-source systems, and they have a quick payback.

and 2) the energy company now has a new revenue stream. More and more utility companies are looking into this option.”

Communicate the Benefits

Lack of communication about long-term benefits and misconceptions about the technology are some of the reasons why consumers may shy away from GHP systems. “Moving the conversation away from initial cost to other financial concepts like return on investment, cashflow, and total cost of ownership is important,” said Litton. “Also, discussing new drilling advancements, new technological advancements, and new financing options help tremendously. After decades of installations, the industry has come up with some very good solutions to address common objections. We just have to communicate them better.”

Raj Hiremath, director of marketing — residential products, ClimateMaster, agrees that poor communication is often the reason why consumers do not opt for geothermal systems. “Most of the time consumers in the market for HVAC systems are not even presented with geothermal options due to misconceptions that dealers have about geothermal and high drilling costs in some markets. With reasonable drilling costs and the tax credits, geothermal

systems don’t cost that much more than high-efficiency air-source systems, and the incremental cost has a quick payback due to operating cost savings.”

An undereducated audience continues to provide explanation as to why geothermal systems have a significantly smaller market penetration within the HVAC industry than they deserve, said McDiarmid. “There remains a clear lack of awareness, knowledge, and general understanding of the technology and its benefits. This lack of readily available information cuts across all facets of the industry — whether to the homeowners or commercial end use energy customers — and as a result, the technology is often branded with an undue perception of risk.”

To reduce that perception of risk, contractors should learn as much as possible about the technology, then share this information with consumers in order to create greater awareness, said Johnson. “Attend a geothermal class — many HVAC wholesalers are conducting them on a regular basis. Equipment installation is no more complicated than any conventional system installed today. The more knowledgeable contractors are, the better able they are to communicate the advantages and benefits of geothermal for their customers’ specific needs.” 

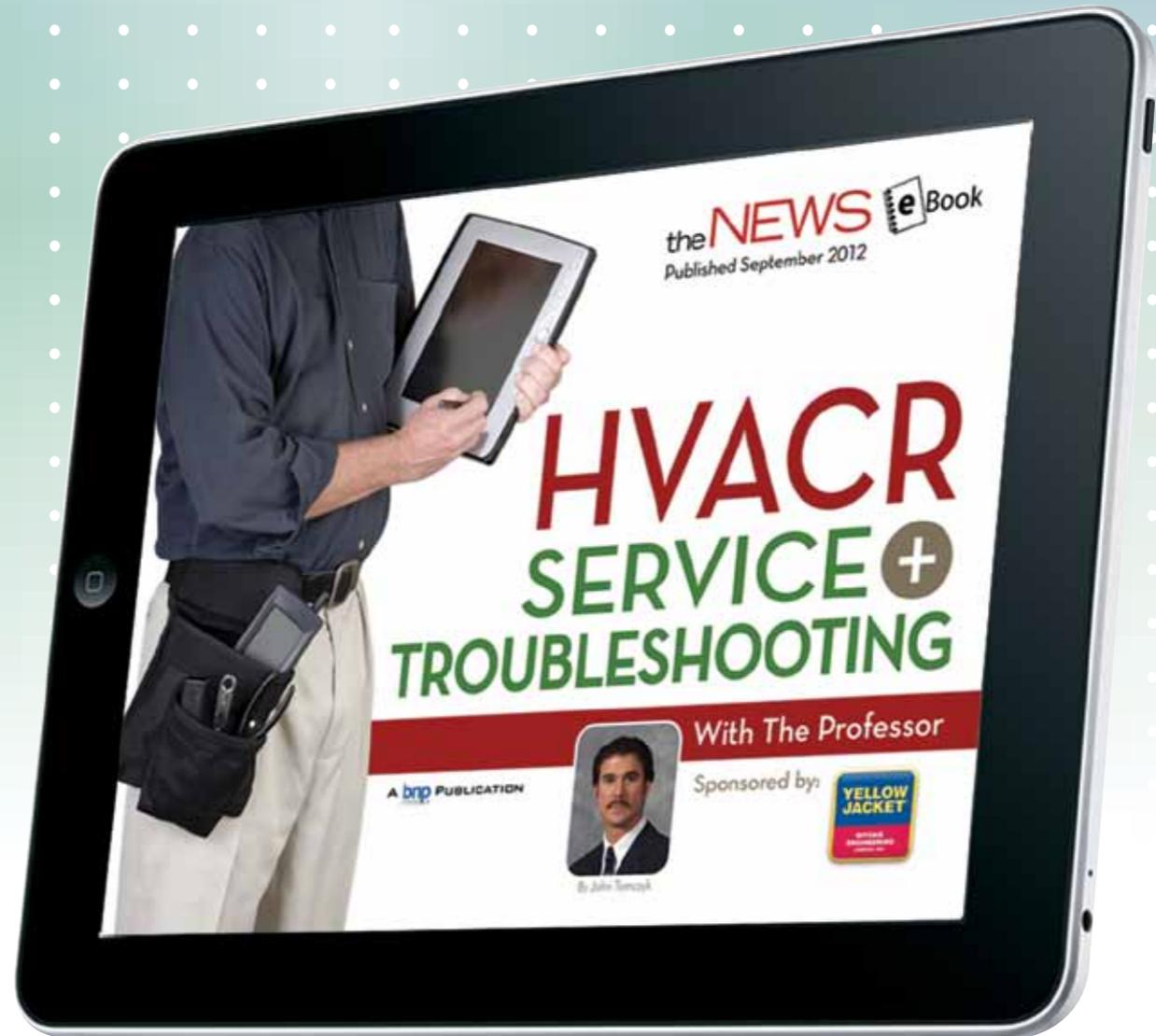
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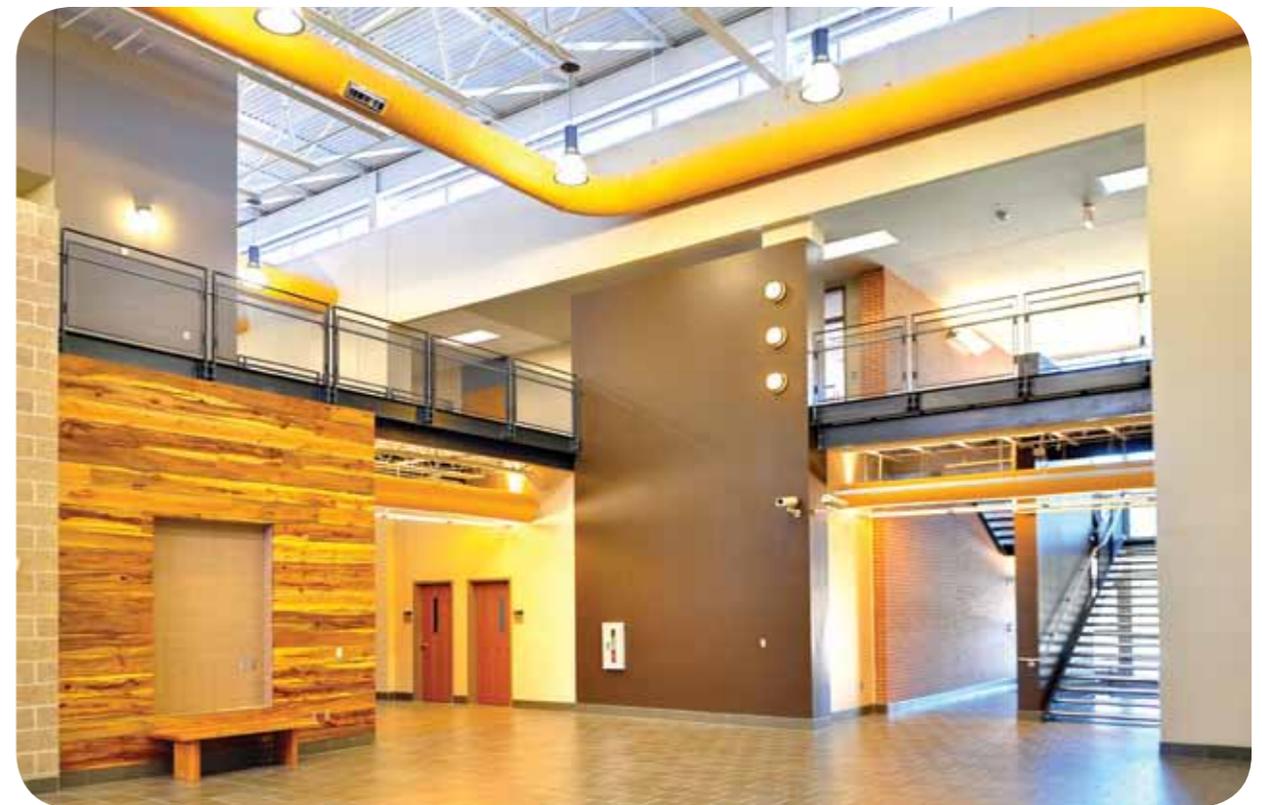
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Green Achieves Gold at Texas Elementary School

When the Spring Independent School District (ISD) began planning for the construction of its newest elementary building, of primary focus was sticking to a proven, budget-conscious design. However, school administrators quickly discovered that smart architectural planning — coupled with the right combination of contractors and materials — could mean the construction of a school on budget and on trend with the latest in sustainable building methods.

Working with architectural firm SHW Group, Spring ISD's administration was successful in designing what would become one of the leading green educational facilities in all of Texas. Contributing to this achievement, the two-story, 105,000-square-foot Gloria Marshall Elementary School, which was built by Purcell Construction and completed in September 2010, features numerous sustainable building elements that promote both conservation and energy efficiency. Successfully securing a LEED® (Leadership in Energy and Environmental Design) Gold certification from the U.S. Green Building Council (USGBC), the school has also been designed to earn an Energy Star rating from the U.S. Environmental Protection Agency (EPA), and was bestowed a Houston AIA Honor Award in 2011.

An on-site wind turbine and 10 kilowatts of roof-mounted photovoltaic cells provide Gloria Marshall elementary school with independent renewable energy sourcing capabilities, while passive solar features and a reflective



The Spring Independent School District in Texas used geothermal in an elementary school.

white roof contribute to heat management. Also, daylighting and a smart controls sensor system enable the school to harvest 75 percent natural light for illumination needs. An above-ground cistern collects rainwater in a way that can be observed by students, and supplies it to an outdoor eco-pond. A 20,000-gallon underground tank that is also fed by the roof drainage system



Gloria Marshall elementary school is saving close to 50 percent in energy costs.

supplies water for the school's bathrooms, and further water conservation is achieved via an irrigation-free landscaping design. A science garden, river table, recycled-content materials, and other sustainable construction materials additionally contribute to the school's notability as both a truly green structure and a hands-on learning environment for students.

"Gloria Marshall elementary school is an amazing facility in many ways," said Jeff Windsor, Spring ISD director of construction and energy. "We are

not only saving the district money — close to 50 percent when compared with our older building prototypes — but have created a dynamic building that will be used daily as an instrument of learning."

According to Windsor, many systems in the school serve a dually functional and educational purpose. "For example, the roof-mounted photovoltaic cells are not only a learning tool, they are a trial to determine if we will replicate their use on a much larger scale to supply most of the electricity for our next

school. This also applies to the onsite wind turbine. Also, a touchscreen display, located in the school's foyer, monitors the real-time activity of the mechanical and electrical systems of the building and is being tested for future use throughout the district."

Rounding out Gloria Marshall's host of renewable and energy-efficient components, the school also features a high-performance HVAC system that incorporates geothermal technology, which is expected to facilitate at least a 25 percent energy savings beyond that specified by code. The 275-ton system — the first of its kind to be used for heating and cooling in a Houston school — includes a network of 180 300-foot deep vertical wells and geothermal heat pump technology from ClimateMaster. It is comprised of 64 Tranquility® 20 Single-Stage (TS) and Tranquility® 27 Two-Stage (TT) units, as well as two Tranquility® 340 Modular Water to Water (TMW) units, all of which include the new environmentally friendly EarthPure® HFC-410A refrigerant technology.

"As our first project with the SHW Group, Spring ISD and in the Houston area overall, this needed to be a home run for CMTA," said Mark Seibert, principal at CMTA Consulting Engineers Inc., the project MEP firm. "This was also the first time a school would be built with a geothermal system in the



The school's high-performance HVAC system incorporates geothermal technology, which is expected to facilitate at least 25 percent energy savings beyond the specified code.

Houston area, and we wanted to make sure we had a manufacturer on board who would be a partner on the project — not just an equipment supplier."

According to Seibert, the ClimateMaster units used enabled CMTA to design a system that would deliver the required 25 percent energy savings for

the project, while also helping to earn all available energy points for LEED certification at the Gold level.

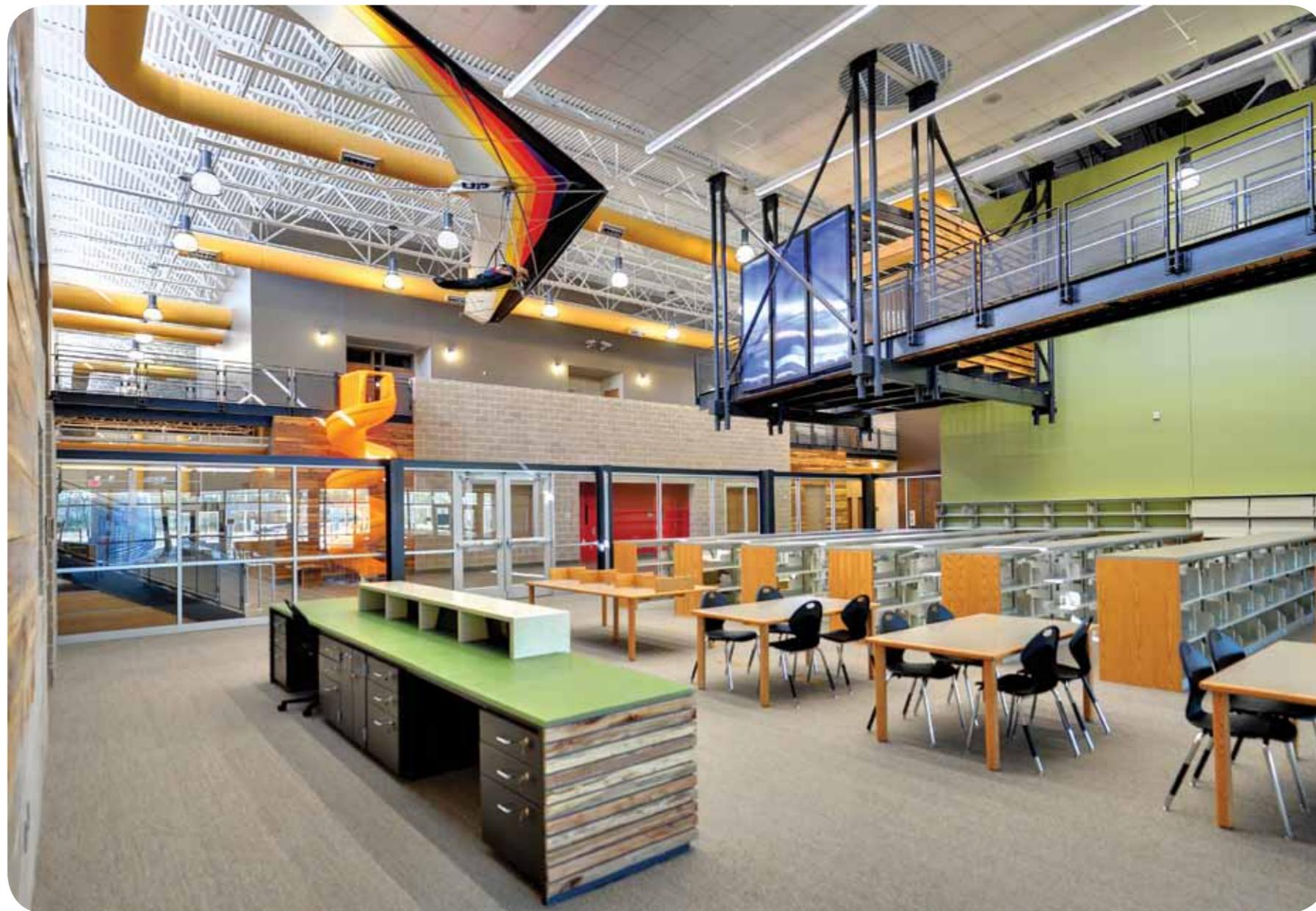
“ClimateMaster was with us on this job every step of the way,” said Seibert. “This has been an example of how the trust and professionalism in a true partnership with your equipment supplier can make great things happen.”

Seibert additionally shared that the high-efficiency ClimateMaster units notably contribute to Gloria Marshall’s current use of half the energy of the district’s existing school buildings.

“We were looking at a groundbreaking situation with the first geothermal job at a school in Houston, and to be honest, people were a little nervous about it at first,” said Michael Glasner, president of Southern Mechanical and the project’s mechanical contractor.

According to Glasner, while his team navigated a few learning curves as to the best way to install this type of system, his first experience with geothermal ground-source heat pump technology was favorable.

“By the end of the job, we had a solid understanding of how best to integrate geothermal into a school, and why, overall, this is a great system for saving on energy costs,” Glasner said. “In fact, we’ve now completed a second



When students began classes in August of 2011, they were welcomed into an environmentally friendly facility.

geothermal job at Sheldon Elementary No. 5 School, and I expect we’ll be seeing more in the future.”

“In all our geothermal job experience, we’d never seen a project quite like this one,” said Russell Buras, president at LoopTech, the project’s geothermal

drilling contractor and ground loop installer.

Buras and LoopTech oversaw drilling of the well field, which was created in part under Gloria Marshall's parking lot and in part under a field on the school grounds. The company used enhanced thermal grout in all the wells and additionally installed the ground loop field for the geothermal system. LoopTech also aggregated HDPE piping from the field into an outdoor vault, from which the supply and return mains circulate water to and from the HVAC system's HDPE piping inside the building via a distributed pumping configuration. In addition, Purge Rite provided system flushing services to ensure optimal water flow prior to the system going online.

"From an overall project perspective, everything went smoothly," Buras said. "We also have a lot of pride in it as a company, including our work in helping to create the student learning experience with the exposed geothermal heat pumps inside the school. Since completing the job we've used it several times as a showcase for our potential customers — people have even flown in from out of state to see it. In addition to many accolades for the impressive nature of this project overall, I'm expecting Gloria Marshall will see tremendous savings on their energy bills."

When students began classes at Gloria Marshall elementary school in August of 2011, they were welcomed into a beautiful, environmentally friendly

facility that offers unique opportunities for learning about their world and how it works.

"Everywhere you look there are teaching tools incorporated into the campus. In fact, the building itself is a teaching tool," said Kathy Morrison, Gloria Marshall principal. "Using discovery learning, our students are involved in engaging projects that incorporate core subjects and have been designed with the learner in mind."

As one example, Morrison shares that students have access to outdoor classrooms next to an eco-pond where plans are being developed for using underwater cameras and other equipment to study the ecosystem, compare living and non-living things, investigate the life cycle of plants and animals and collect data on the impact of environmental factors.

Additional learning features include: an indoor tree house made from reclaimed wood; a helix-shaped indoor slide; a series of windows designed to enable students to track the sun's movement throughout the year; and outdoor gardens designed for a host of interdisciplinary learning activities.

"Gloria Marshall is an exciting place to teach and learn. We are all enjoying the opportunities that this unique facility provides for both students and staff," Morrison said.

For additional information, visit www.climatemaster.com. 

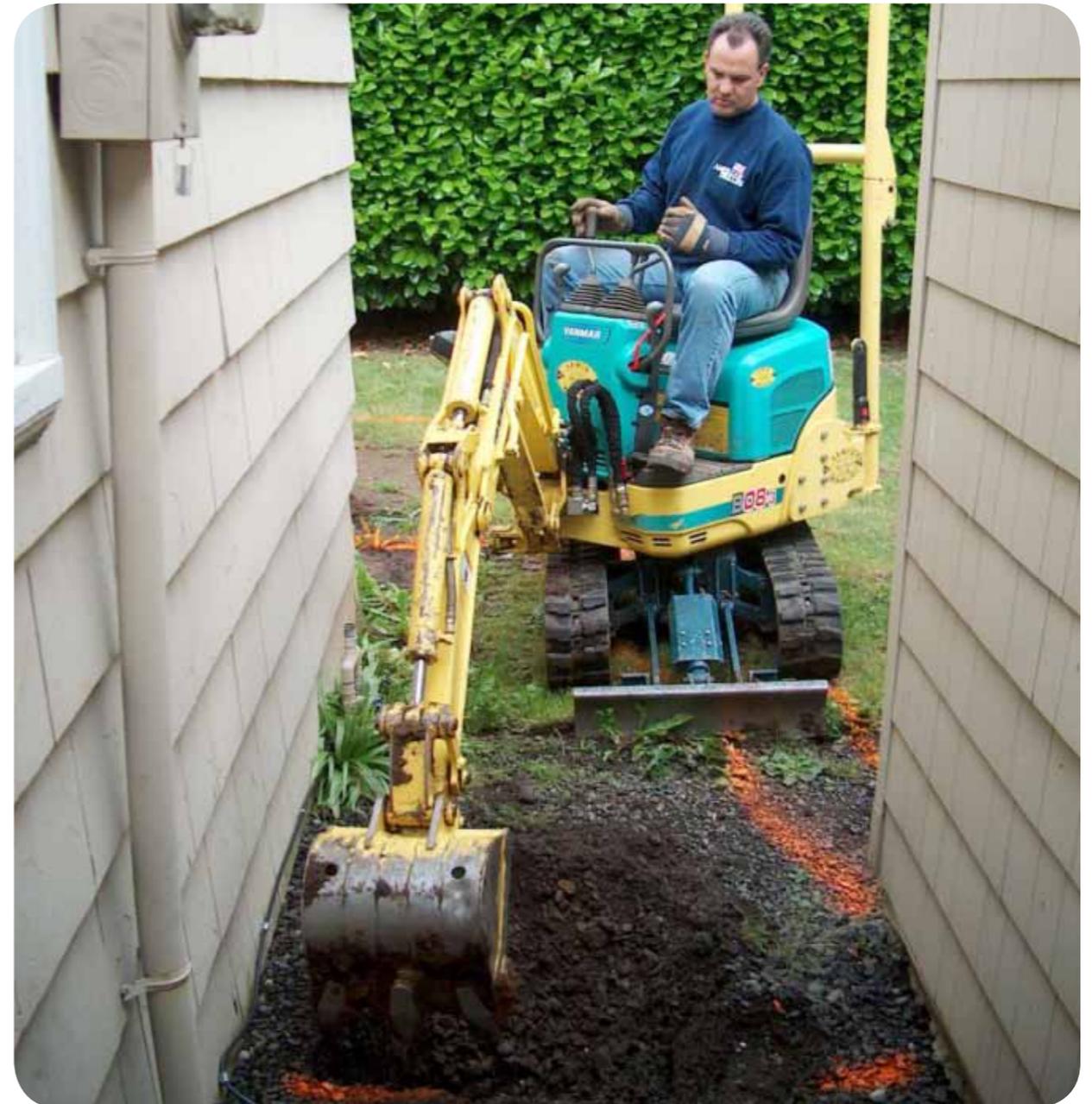
Big Things Come in Small Packages

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uite often, customers who are interested in renewable energy solutions are apprehensive of the aesthetics and potential disruption of property during the installation process either through personal affinity, homeowner association bylaws, or other architectural covenants. With geothermal, the fear is exacerbated when a salesperson begins to talk about the drilling required for loop installation. These words evoke negative images of massive machines tearing up yards and slinging mud and dirt everywhere. This was certainly the case when a family in a historic district of Portland, Ore., wanted to replace its aging furnace and add space cooling to its 80-year-old Victorian home.

The site was anything but optimal for traditional geothermal. The available open space in the yard was very small and a narrow 5-foot path that separated the garage from the neighbor's fence was the only access point to the backyard. Still, the homeowners were interested in renewable energy and didn't want noise outside their home so the discussion turned to EarthLinked Technologies Direct GeoExchange space heating and cooling system. Direct GeoExchange technology uses small diameter copper refrigerant lines buried in the ground with environmentally friendly non ozone depleting refrigerant flowing through them, rather than a water or glycol heat exchange fluid. Using a small, highly portable drill rig, the drill was easily maneuvered in and out of the customer's yard and the loop field was completed within a day.

The EarthLinked® compressor units feature small footprints which contribute installation flexibility. Using a split compressor and air-handler system, the installers were able to locate the air-handler unit in the place of the existing furnace and install the compressor unit in the garage adjacent to the



A family with a home in the historic district of Portland, Ore., chose geothermal technology.



Left: Available open space in the yard for the installation was very small. **Right:** Using a small, highly portable drill rig, the drill was easily maneuvered in and out of the customer's yard and the loop field was completed within a day.

house. This increased the usable square footage of the basement and provided essentially silent operation. The small size of the units didn't sacrifice performance. The single unit was able to heat and cool the home for about what the homeowners were spending on heating costs alone with the old system.

The reliability of the system has been exceptional. The 5-year compressor and 20-year earth loop warranties gives the homeowners peace of mind that

their investment is protected and backed by EarthLinked and the installers of the local HVAC contractors.

Overall, the simplicity and speed of the installation, flexibility of the design, and exceptional performance made this a cost-effective and environmentally responsible solution for this complex and aesthetically sensitive design challenge. 

Unique Skills Make Tax Credits ‘Icing on the Cake’

by Angela D. Harris of *The NEWS* Staff 

Geothermal is a way of life for the contractors at Michigan Energy Services Inc. in Whitmore Lake, Mich. The leadership there has dedicated itself to the understanding of geothermal technology, as well as made a commitment to training its employees to do the job correctly.

Rob Derksen is the vice president at Michigan Energy Services and one of the owners of the company which is dedicated and committed to geothermal technology and its installation.

“Continual advancements and improvements in geothermal over the years has made it difficult for any business not immersed in the technology to keep up,” he explained. “Specializing as we have in this industry has made all of our staff truly experts in their craft.”

The company installs Enertech Global products.

Training for the staff is offered on an annual basis, and the company has hosted and provided training for other geothermal contractors in Michigan as well.

“Our service technician Kevin Woidan has over 25 years of experience in maintaining and servicing all makes and models of geothermal equipment,”



Rob Derksen is the vice president at Michigan Energy Services in Whitmore Lake, Mich. The leadership there has dedicated itself to the understanding of geothermal technology.

noted Derksen. “He has conducted one-on-one training sessions for contractors in northern Michigan.”

Derksen’s business partner, Tim Mahoney, is the other owner of the company. Mahoney initially started the business as a geothermal loop installation company. Derksen began his career working for a geothermal distributor and later worked with a heating and cooling contractor. In 1998, he and Mahoney combined their heating and cooling and geothermal loop installation skills. According to Derksen, his knowledge of the geothermal industry from multiple sectors and Mahoney’s skill for installing geothermal loops has created a successful and enduring combination.

A typical week at Michigan Energy Services results in the installation of two or three geothermal systems. The company has streamlined the installation process by offering all of the elements necessary to complete an entire install. This

includes geothermal equipment, ducting, radiant in-floor tubing, geothermal closed loop systems, and electrical. By offering all of the necessary pieces of equipment and installation, the overall jobs have a tendency to move more quickly, according to Derksen.

The primary focus of the company is geothermal and since 1994, geothermal has been the only type of heating and cooling systems Michigan Energy Services installs. The company has been involved in over 4,000 geothermal installations altogether.

Value Beyond Tax Credits

Geothermal has grown in popularity over the past few years. Regional rising energy costs and an increasing interest in environmentally friendly technology has helped push geothermal further.

Another propellant of geothermal has been government tax credits. When these credits began, many contractors started into the geothermal arena. Selling the tax credit became the primary strategy of many who jumped on the band wagon, but for the team at Michigan Energy Services, the tax credits for geothermal installs are more like icing on the cake for their customers.

“Geothermal systems stand on their own merit, and while having the federal tax credits available has been beneficial for our industry, it has not been the reason for our success,” said Derksen. “With the expiration of the tax credits, I would anticipate a reduction in the number of contractors offering geothermal options to their customers.”

Michigan Energy Services has a plan to compensate for the expiring tax credits — go about business as usual.

“We have provided our customers with sound designs and educated them on all the benefits that geothermal offers. The vast majority of them will likely come to the same conclusion they did before the tax credits were available,” explained Derksen.

“Geothermal is the most efficient, comfortable, Earth-friendly system available, and it will still represent a sound investment for our customer.”



A typical week at Michigan Energy Services results in the installation of two or three geothermal systems. The company has streamlined the installation process by offering all of the elements necessary to complete an entire install.

Unique Skills Streamline Installs

Part of the company's speed is the unique skills each of its 15 employees bring to Michigan Energy Services. For example, the design and sales team of Brandon Mahoney and Gary Moore can design and price a system on average in 24 to 72 hours. Brandon's background in automotive management helps provide a detailed and organized side to the design and pricing of a project. Moore has longevity and vast knowledge of geothermal technology. He is also able to custom fabricate the company's sheet metal.

“Adding Gary to our team brought us the ability to custom fabricate our own sheet metal which helped reduce time and cost, and improved the overall fit and finish of our projects,” noted Derksen.

Geothermal Market Predictions

There has been discussion as to what the geothermal market may experience in the near and far term. Derksen pointed out that currently the geothermal market is seeing a rise in the number of new construction starts. He thinks that energy efficiency and environmental stewardship are playing greater roles in new housing overall.

“I expect that this mindset will continue long term and become more of the norm as opposed to an exception,” he said. “With the existing home market, I see more people investing in core improvements to their homes instead of just the cosmetics.”

The fall in housing values is a factor that Derksen feels is pushing geothermal popularity as well. With people staying in their homes for longer terms, many see geothermal as a wise choice for capital improvements.

Tips for Geothermal Beginners

For those looking to become involved in geothermal installations, Derksen suggests that the most important thing a contractor can do is align themselves with a manufacturer and/or distributor that can provide them the support and training they are going to need to learn the business.

“Many suppliers offer geothermal equipment, but few offer the kind of support a contractor needs to ensure a quality installation and a happy customer,” he said. “Enertech Global is our supplier, and their commitment to supporting their network of dealers is unsurpassed. A strong relationship with a local geothermal loop installer is a must as well.”

Loop installation requires special training, equipment, and knowledge of excavating. According to Derksen, these are things that most contractors are not prepared or equipped to handle. Michigan Energy Services not only excavates their own loop systems, but they also provide this service



Left: For the team at Michigan Energy Services, the government tax credits for geothermal installs were more like icing on the cake for their customers. When the credits expire, the company has a plan to compensate — go about business as usual. **Right:** For contractors looking to get involved in geothermal install, Derksen suggests that the most important thing a contractor can do is align themselves with a manufacturer and/or distributor that can provide them the support and training they are going to need to learn the equipment and the business.

to other area contractors and continue to grow that segment of their geothermal business.

“Purchasing a geothermal system is a big decision and we recognize that,” said Derksen. “By finding the best solution to fit our customer’s needs we have grown our business on our solid reputation and offer our customers a system that is efficient, has low maintenance requirements, and has the strongest warranty in the industry.”

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