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# PM

PLUMBING & MECHANICAL

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Kevin Maston, president and CEO of Mills, Wyo.-based CK Mechanical Plumbing & Heating.

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## The greening of Rivera Greens

*Geothermal heating and cooling helps neighborhood homeowners achieve an expected 60% savings on their utility bills.*



To reduce geothermal installation costs at Rivera Greens, Jens Ponikau of Buffalo GeoThermal Heating ruled out a vertical loop and a traditional horizontal loop, opting instead for a stacked slinky loop field. This system uses slinky coil rather than straight pipe, which is stacked in a horizontal trench, one at a depth of 8 ft. and a second directly above it at 5 ft.

Located in Clarence, N.Y., Rivera Greens is the first certified National Association of Home Builders Green Standards Eco-Friendly Development in the state. When completed, the development will include 35 single-family homes built to an energy-efficiency standard unparalleled in Western New York.

All home designs in the development are Energy Star-rated and are expected to save homeowners 60% to 100% of their utility bills. What's more, Natale Builders is committed to offering these homes at no extra cost to its customers, demonstrating a new standard in home building and leading the way by applying cutting-edge, energy-efficient technology, including geothermal heating and cooling systems.

Larry LaDuca, general manager at Natale, began researching the technology for a customer who wanted geothermal installed in his \$500,000 home. "In our market, geothermal is a no-brainer," he says. "It's particularly attractive when you're building a new home and can incorporate the cost of the system into your mortgage."

With an average lifespan of 24 years, a geothermal system takes advantage of free solar energy stored just below the surface of the earth. In the winter, it extracts heat from the earth via an earth loop and distributes it throughout the building using a ground-source heat pump. In the summer, the process is reversed — heat is extracted from the building and deposited in the earth.

Geothermal also ensures good indoor air quality because it doesn't require combustion, so byproducts such as carbon monoxide are not an issue. The U.S. Department of Energy and the Environmental Protection Agency identify a geothermal system as the most environmentally friendly way to heat and cool a home.

### Selling the geothermal idea

LaDuca convinced Natale Builders' owner Angelo Natale that geothermal was the way to go at Rivera Greens. After a three-to-four-month search, Natale Builders chose Cheektowaga, N.Y.-based Buffalo GeoThermal Heating and co-owner Jens Ponikau for the project.

"Jens can talk circles around anybody when it comes to geothermal," LaDuca explains. "It was his grasp of the subject and his passion for the technology that convinced us he was the contractor who could provide us with the best installation and service."

Ponikau is an International Ground Source Heat Pump Association certified geoexchange designer who brought more than 20 years of experience to the Rivera Greens project. The challenge for him was two-fold: to reduce his installation costs to meet the builder's commitment to provide energy-efficient homes at no extra cost and to provide a geothermal design that could be applied to all six model homes offered in the development.

To reduce installation costs, Ponikau ruled out a vertical loop and a traditional horizontal loop, opting instead for a stacked slinky loop field. This system uses slinky coil rather than straight pipe, which is stacked in a horizontal trench, one at a depth of 8 ft. and a second directly above it at 5 ft. This system saves space, fitting approximately 18 ft. of coil in each

Photo credit: WaterFurnace International

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# The greening of Rivera Greens

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Sizing the geothermal equipment was a challenge for Buffalo GeoThermal Heating. High-performance WaterFurnace 3-ton 5 Series units were installed in order to meet the unique heating and cooling requirements of each homeowner at Rivera Greens.

linear foot of trench, and significantly reduces the amount of time required to complete an installation.

The same basic design can be applied to all models in the development, making the technology cost-effective.

“We don’t have to re-engineer or re-market everything with each house we build,” Ponikau says. “Natale sells a house, gives us the purchase order and we get to work. It’s really that simple, and by reducing our costs and adding in tax credits for the installation of a geothermal system, the homeowner ends up with a home heating and cooling system that is very close in cost to a gas-fired system and far more efficient.”

Sizing the geothermal equipment to meet the requirements of homeowners at Rivera Greens was another challenge for Ponikau. “We decided to install the WaterFurnace 3-ton 5 Series, which provides great performance and the versatility to meet everyone’s unique needs,” he notes.

Rivera Greens homeowner **Duane Pusch** agrees. The new fan of geothermal technology freely admits he was unfamiliar with and even a bit skeptical of geothermal before building his home. But he read the literature provided to him and, like LaDuca, realized geothermal technology seemed to make good sense. Eventually Pusch made the decision to install a geothermal system and became the first homeowner in the development to do so.

Pusch heated his prior home with gas, so he was well-positioned to make a comparison of that system to his new geothermal system. “First of all, the geothermal system is far more comfortable,” he explains. “I don’t feel any of the hot and cold spots that were common in my former house. The geothermal system provides a much more consistent level of heating and cooling.”

It’s also cleaner than his gas-fired system, he notes; seven months after the system was installed, his air filter was still clear. And you

can’t mention geothermal without talking about the energy savings, he says. His average electricity bill from July through January was \$85 — lights, cooking, hot water and running the heat pump.

“It was great not to have a gas bill on top of that,” he says.

The success of the geothermal installations at Rivera Greens is being repeated in other Natale homes. In fact, 90% of the builder’s clients — including homes ranging from \$200,000 to \$2 million — are opting for green-built, geothermal-supplied homes.

The Rivera Greens model home is set between 68° F and 70° F, so the house is never too cold or too warm for a showing. “It’s a great demonstration of just how comfortable a geothermal heating and cooling system is,” Ponikau says. “And by combining the efficiency of the geothermal system with a solar roof, the house runs at completely net zero, sending excess power to the grid.”

To help potential customers better understand the operating cost and the performance of a geothermal system, Ponikau streams live data from a Rivera Greens home on his company’s website (<http://tinyurl.com/Rivera-Greens-feed>).

“Seeing is believing,” he says. “We’re getting positive feedback from homeowners in the development, from the people at Natale Builders and now from potential customers who can see the system perform live online. It’s hard to argue with data that regularly reinforces what we already know and the message we want to share — that geothermal is an efficient, economical and environmentally friendly way to heat and cool a home.”

## Additional green features

Rivera Greens features a number of other environmentally friendly features. Homes are less than a half mile from shopping centers, recreation facilities and religious centers. Half of the development (10 acres) is dedicated to green space. A freshwater well and pond are home to natural vegetation and protected wildlife. Walking paths, composting areas and protected lands lie within 100 ft. of homes.

Streetlights, the pond pump and the Rivera Greens sign are powered by a windmill. A community greenhouse is available to all residents to grow plants and vegetables. Recycling is located at the rear of the development and encouraged. Special grass in the common area has low watering needs. A public gazebo was constructed using 150-year-old wood taken from a barn that once stood on the property.

The homes themselves boast their own brand of environmental compatibility. Beyond the geothermal systems, the list of green features includes cradle-to-grave products such as bamboo and cork flooring, low-VOC paint, precast basements, LED lighting, solar photovoltaic panels, Energy Star-rated appliances, recycled tile and low-flow plumbing.

“People are responding positively to all these offerings,” LaDuca says. “Even the geothermal system is definitely becoming more and more of a selling point, with more people asking for it. They want to see the bills for the model we built. When we show them an electric bill with no gas bills and lower air-conditioning costs, they are impressed. Then, when you explain how to offset the electric bill with solar power, well, that’s a home run!”

*About the author: Tim Litton is director of marketing communications for WaterFurnace International ([www.waterfurnace.com](http://www.waterfurnace.com)).* **PM**