Geothermal success in an urban environment

Case Study

Company Name:
HES Properties I

Location:
Siano Building
363 Grant Street
Buffalo, NY

Square Footage:
12,600 Sq. Ft.

Technology:
Ground source heat pump

Siano Building voted best urban fill-in in 2017 by Buffalo Rising Magazine

Setting the Precedence for Neighborhood Sustainability

Innovative, eco-friendly development is breathing new life into cities and towns in Western New York. Public initiatives are connecting with private development firms, sparking projects to revitalize communities in and around the city of Buffalo. These public-private partnerships are investing in a diverse range of opportunities for communities to significantly benefit both economically and environmentally. Industry experts are evolving traditional construction methods to remove existing barriers to implementing clean energy technology in urban areas. The objective is clear—bolster commercial and residential projects that will promote walkable neighborhoods to encourage economic growth and environmental sustainability.

Two Brothers, One Vision

Christopher and Matthew Siano, owners of HES Properties I—a community-minded real estate development company—made a commitment to reshape neighborhoods in Buffalo's West Side. In 2014, they purchased property, which sat vacant for 15 years, located at 363 Grant Street and transformed it into a 12,600 square foot mixed-use building. Although building plans were approved prior to the adoption of Buffalo's Green Code, the Sianos decided to alter their plans to comply with the code. Dubbed the Siano building, the $2.3 million project was structured to contain both retail space and residential apartments and is heated and cooled entirely by geothermal technology.

Making it Happen

Buffalo Geothermal Heating (BGH)—an environmentally conscious company with a mission to provide high-quality GSHP systems to ensure clean energy efficiency—was contracted to install a closed-loop geothermal system large enough to support a building of this size. In some situations, installing a loopfield can present a challenge in dense urban areas due to size and space constraints. However, BGH had the insight to position the system directly beneath the building. This resolved spacing issues and set an example for GSHP system installation in highly populated areas.

Buffalo Geothermal LLC wins 1st Runner Up for TOP JOB at the 2018 NY-GEO conference for the Siano Building

Geothermal projects provide economic growth and jobs

"We only had to use a small portion of the space below the building, and only drilled down 225 ft. The building and geothermal design are so efficient that we could have had a loop field large enough for a 20-floor building underneath."

— Jens Ponikau, cofounder, Buffalo Geothermal Heating

Each of the 11 spacious apartments, with ten-foot floor-to-ceiling windows, has an individual heat pump for zone control, which provides both heat and air conditioning. Additionally, the domestic hot water for the entire building is generated by the GSHP system—a central variable pressure ECM pump adopts to all load scenarios with ultimate efficiency. This not only adds to the quality of the tenants' experience, but significantly reduces carbon emissions as the system does not require traditional fuel to operate.

Efficient and Affordable

As a New York State Energy Research and Development Authority (NYSERDA) approved contractor, BGH was able to use NYSERDA's Ground Source Heat Pump Rebate program to help offset costs. By utilizing available rebates and the 10 percent tax credit, the overall cost of installing the GSHP was several thousand dollars less than a conventional system, dispelling the notion that these systems always have much higher upfront costs over their traditional counterparts. In total, rebates and tax credits covered nearly 30% of the overall system cost—with the savings achieved, this project has a payback period of zero.

Additionally, infrastructure expenses were also much lower since GSHP systems do not require gas lines, cooling towers, furnace exhausts, etc. The building owners will continue to see significant annual savings in their operating and maintenance costs for both the heating/cooling and hot water systems.

Representing the Future of Urban Revitalization

This stand-out project encompasses everything it takes to promote clean energy solutions as well as neighborhood revitalization and sustainability. Developing properties like the Siano Building, which combines residential with commercial and incorporates high-quality clean energy technology, helps transform neighborhoods into vibrant and environmentally sound communities. To continue advancing similar projects well into the future, the Siano brothers have two additional property transformation projects planned for Grant Street.

The NYSERDA Ground Source Heat Pump Rebate Program

Through the Ground Source Heat Pump (GSHP) Rebate Program, NYSERDA is making $15 million available to eligible designers and installers of renewable heating and cooling systems for the installation of ground source heat pump systems at residential, commercial, institutional, and industrial buildings. This program helps GSHP professionals provide customers with multiple benefits at lower costs and reach communities for which this clean technology could otherwise be unaffordable.

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