



aquatherm

Deliver safe, healthier water

PROJECT INFORMATION

AQUATHERM'S POLYPROPYLENE PIPE HELPS CINCINNATI GREENSOURCE "WALK THE TALK"

PROJECT	PRODUCTS USED	LOCATION / DATE
Green Building Showcase (Renovation)	Greenpipe® Climatherm® Lilac®	Cincinnati, Ohio Winter 2009

AQUATHERM ADVANTAGES

- Material savings
- Installation savings halved thanks to heat fusion process, use of jigs and prefabrication
- Reduced need for insulation due to its natural R-value of 1
- Environmentally friendly



THE CHALLENGE

Cincinnati GreenSource wanted to highlight the most cutting-edge sustainable projects in its working demonstration located in a renovated building downtown.

THE SOLUTION

Aquatherm, along with several other leading companies, partnered with the organization. Aquatherm Greenpipe®, Climatherm and Lilac were all deployed on this project for potable, heating and gray water, delivering material and installation savings, along with a natural R-value of 1 and several other benefits.

The brainchild of an innovative contractor, GreenSource Cincinnati is a working building that showcases cutting-edge green technologies including: Plumbing; HVAC; electrical; water reclamation, roofing; data center; and other sustainable building products.

A few years ago William, "Ez" Housh III realized that the Midwestern green building movement was severely lacking in one area: A working, breathing demonstration of green building technology.

As president of Monroe Mechanical, Inc., a 57-year-old, family owned HVAC and mechanical design company, Housh decided that Monroe Mechanical was the right company – and Cincinnati was the right city – for what would evolve into GreenSource Cincinnati.

Monroe has been on the forefront of applying the most energy efficient mechanical systems since its inception. "It's so important that people be able to see, touch, and understand these products for real-world applications," said Will Housh IV, the company's COO.

As Monroe approached business partners and shared its vision, the building evolved from a mixed-use building into



Monroe Mechanical President William "Ez" Housh and his son Will Housh IV, Chief Operating Officer

an educational resource and meeting center. Approaching GreenSource Cincinnati as a family affair (Elizabeth Housh-Reynolds, Ez's daughter and Will's sister, works as business development manager), the firm identified a 135-year-old, 9,500-sq-ft building in downtown Cincinnati.

GOOD BONES TRANSLATE INTO HARD WORK

While the building was selected because of its “good bones,” the infrastructure (including 16-inch-thick brick walls) and maintaining historical accuracy presented several challenges. Also, displaying the different technologies while keeping the systems flexible and not exceeding the fixed budget was quite challenging, according to Shawn Jacobs of SJ Engineering, whose firm, along with Gerald Noe, Jr. of Gerald Noe Jr. Architects LLC, helped in the project’s architecture and design aspects.



Using Aquatherm’s heat fusion to connect the pipes in this tight crawl space was considerably easier and safer than using a welding torch, according to the Monroe staff.

“The building became more of a live trade show. Some equipment manufacturers were great about donating equipment to get it into the building and on display. That really helped us to keep different types of systems in the building and keep things affordable. However, it also created many last minute changes as we implemented new products,” Ez said.

Demolition began in winter 2009, and Monroe handled 90% of the construction work in-house. Extensive work was necessary because the last major MEP improvements occurred during the 1960s. Also, the main criteria needed to make the building LEED Gold-certified were accommodated.

“We could accomplish a large part of that by using green mechanical systems,” Will said. Noe and Jacobs worked with Monroe to ensure all the necessary LEED points were achieved while keeping the original 1800s architectural features.

PERFECT PIPING ALTERNATIVE

Among that variety of systems is Aquatherm, Inc.’s polypropylene-random (PP-R) piping systems. The Houshes had been introduced to Aquatherm by Zak Schultz with the company’s local representative, StreamKey Engineered Plumbing and Waste Water Solutions. “We immediately identified this project as an application to try out this product, thanks to its numerous environmentally friendly qualities,” said Ez.

Aquatherm has been one of the world’s greenest piping systems for nearly four decades and proven successful in 70-plus countries. It requires less energy for initial production than other piping and involves none of the environmental effects associated with mining operations.

Since it is joined by a simple heat fusion process there are no

flames, chemicals, or mechanical connections, and once fused the pipes and fittings have the same physical properties, thus eliminating systematic weaknesses. It is also fully recyclable and has a natural R-value of 1, which can reduce or eliminate the need for insulation.

Roughly 400 linear feet of Aquatherm Climatherm, which is designed specifically for HVAC applications, was used for the building’s four heating lines (two for supply and two for return). They run off of two Lochinvar® Silent Knight® Boilers located in the second floor mechanical room and also two Slant/Fin® baseboard heaters at the front of the building. The boilers were integrated with a PEX in-floor radiant system under concrete flooring in the hospitality room. A Daikin AC air-to-air variable refrigerant fan heat pump system was also employed on the project.

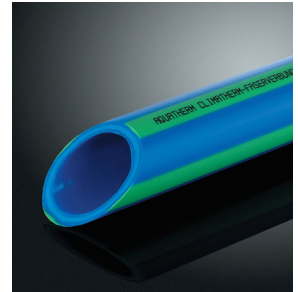
In keeping with the re-use theme, much of the original copper domestic hot water supply and return piping was retained since it was intact, but Monroe Mechanical used Aquatherm Greenpipe® (designed for potable water systems) for all the domestic cold water supply and return lines. The lines supply Kohler® fixtures throughout the building.

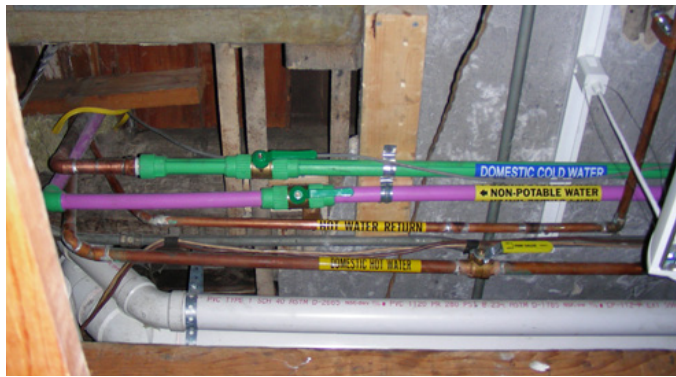
“I LOVE WORKING WITH AQUATHERM PIPE. YOU’VE GOT TO GET USED TO IT, BUT ONCE YOU DO, IT’S PRETTY SLICK AND YOU CAN REALLY INSTALL IT QUICKLY.”

-MARK VINCENT, MONROE’S PLUMBING SUPERVISOR

Also, Aquatherm Lilac, which is designed for reclaimed/recycled water applications, was used on the job. Lilac (thusly named and colored in order to differentiate it from potable water) was run from the basement mechanical room to the second and third floor toilets (two toilets to a branch) to and from the Brac Grey Water Recycling System, which feeds the building’s five water closets, and the sanitary drain. Lilac was also used for the drain line of the building’s backflow system. Finally, an AcornVac Vacuum Plumbing and is also deployed.

“We are now experiencing a 30-40% reduction in water usage through utilization of the Brac Gray water reclamation





system and Kohler’s line of water conservation fixtures,” said Will. “In the near future our energy savings will be displayed on monitors throughout the building down to the individual circuit level.”

Jacobs notes the building’s gray water system is believed to be the first one approved in the city of Cincinnati. “With the overall design, the goal was to use as little city water as possible,” Jacobs said.

The green theme also ended up speeding up the project’s timeline. Mark Vincent, Monroe’s plumbing supervisor and a 30-year industry veteran, oversaw the design and installation of the domestic cold water and grey water system, while co-worker Sheldon Garber did the hot water piping systems. Both Vincent and Garber, and several others became familiar with the PP-R heat fusion welding process via a three-hour training session conducted by Aquatherm at StreamKey’s office.

“We picked it up really quickly, I think partially because we do a lot of fusing with HDPE for inground geothermal piping, so it was familiar,” said Vincent. “We were completely comfortable with it in a day or two.”

One of the only real challenges in the piping installation came when running piping through walls and studs, but that was made easier by doing a lot of prefabrication on the ground and using jigs.

“I love working with the Aquatherm pipe. You’ve got to get used to it, but once you do, it is pretty slick and you can really install it quickly,” said Vincent. He estimated that each of the stacks that run from the basement tank room to the third floor

(one in the front and one in the rear of the building) took about an hour to install, and that installing the same runs in copper would have taken at least two hours apiece.

On the entire job, Vincent estimated that Aquatherm was installed in about half the time it would have taken for copper. Throughout the hundreds of fusion connections they didn’t have a single leak and Vincent also added that using the fusion welding iron in a tight crawl space installation was easier than using a welding torch.

GREEN: “THE ONLY GAME IN TOWN”

When asked about skeptics of all things green, Ez said he doesn’t pay attention to such talk. “We’ve always made our projects energy efficient, and now that’s the only game in town. Energy savings and upgrades and making things more efficient are what it’s all about,” he said.

Associations such as Building Owners and Managers Association International; the Institute for Real Estate Management; American Society of Heating, Refrigeration and Air-Conditioning Engineers; and the U.S. Green Building Council; and companies such as APC and Square D have also held meetings at GreenSource, and a number of groups and individuals have also toured it.

“The feedback we’ve been getting is that GreenSource Cincinnati is truly one of a kind in the U.S.,” said EZ. “We and our partners are on the leading-edge of showcasing these technologies. Cincinnati has become the epicenter of green in the Midwest as the result of ours and other business leaders’ efforts.”

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The German-manufactured pipe has been one of the world’s most durable and greenest piping systems for nearly four decades and proven successful in 70-plus countries. Aquatherm piping systems offer many performance and environmental benefits, such as:

- Eliminating toxic materials, glues and resins, and open flames from the piping installation equation
- An R-value of 1 or greater depending on pipe size and SDR
- The fusion welding process, which creates seamless connections that last a lifetime without leaking or failing
- An optional faser-composite layer in the pipe reduces linear expansion of the pipe by up to 75% compared to plastic piping

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