



**aquatherm**

Provide lasting pipe performance

# AQUATHERM PRESENTS SOLUTION FOR PIPING NEEDS TO FEDERAL MODERNIZATION PROJECT

PROJECT INFORMATION

PROJECT	PRODUCTS USED	LOCATION / DATE
Edith Green-Wendell Wyatt Federal Building, Domestic, Radiant, & Harvested Rainwater	Greenpipe®, Climatherm®, Lilac	Portland, OR 2010 (multiphase)

## THE CHALLENGE

Designers sought the most environmentally friendly pipe systems in keeping with the overall goal of the \$139 million retrofit project

## THE SOLUTION

Greenpipe, Climatherm, and Lilac were deployed for domestic, radiant, and rain water distribution, resulting in savings and ecological benefits

## AQUATHERM ADVANTAGES

- Recyclable, energy efficient, and toxin-free
- Fusion outlets provided huge labor savings, allowing installers to simply drill into the supply pipe then heat fuse the outlet fitting into place
- Resistant to the corrosive rainwater, and allowed for the same pipe material to be used in potable and nonpotable systems
- Reduced need for insulation due to PP-R's natural R-value of 1



## About the Project

The Edith Green — Wendell Wyatt Federal Building in downtown Portland, OR, is currently undergoing a massive modernization that is making it an operationally and economically efficient high-performance green building.

Constructed in 1974, many of the Green-Wyatt building systems were at the end of their useful life and needed to be replaced. The \$139 million modernization project, part of the 2009 American Recovery and Reinvestment Act, will make necessary upgrades to the aging building infrastructure while achieving a 50% reduction in energy use from the existing building.

The newly-renovated Edith Green-Wendell Wyatt Federal Building will include a number of efficient, sustainable,



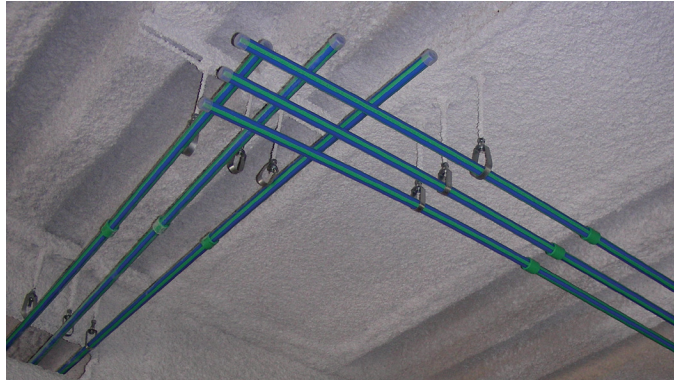
and innovative technologies that are expected to achieve a Leadership in Energy and Environmental Design (LEED) Platinum rating from the U.S. Green Building Council, the highest possible rating for sustainable building practices.

The 372,000-sq-ft high-rise is operated by the U.S. General Services Administration (GSA) and houses offices of the Federal Bureau of Investigation, the Drug Enforcement Agency and the Internal Revenue Service, among others

## Pipe Priorities

Interface Engineering, headquartered in Portland with several offices worldwide, is serving as the project's plumbing engineer. Based on its reputation for idealism, ecological sensitivity, technical expertise, and cost-efficient design over its 40-year history, the firm was an obvious fit for the project.

According to the firm's Portland-based senior plumbing designer, Dennis Kangas, CPD, the original systems were



old and using more energy than updated systems would. He added that energy saving and sustainability measures were top priorities from the earliest stages of design.

And a typically overlooked aspect of green building – the plumbing, HVAC and rain harvesting pipe systems – played a large role in achieving those measures. McKinstry, a full-service design, build, operation, and maintenance firm, is serving as the project's mechanical and plumbing contractor, and project manager Eric Peterson explained that he wanted to improve the building's efficiency while keeping an eye on costs.

At the start of the project, Ridgeline Mechanical Sales presented Aquatherm to Interface. Because the project's goal was a Leadership in Energy and Environmental Design (LEED) Platinum rating, Aquatherm's polypropylene-random (PP-R) piping was chosen to fulfill the structure's plumbing requirements. Interface principal, Jon Gray, was quite familiar with Aquatherm's highly engineered plastic pipe systems, which have been used around the world for nearly 40 years in a huge range of applications.

"We have been doing work overseas for many years and I had seen Aquatherm used on jobs throughout Europe and the Middle East. I had also visited the Aquatherm factory in Germany and seen the product made. I've been sold on the product for many years and had been waiting for the market to ripen, and it seemed like the Edith Green building was a perfect fit for the project," Gray said.



He explained that PP-R was ideal for a number of reasons; "With reclaimed/re-used water using copper is not your first choice for rainwater distribution because the copper will get eaten up by the soft water. With Aquatherm we were able to use the same pipe material for potable and non-potable water so you're not mixing piping

materials in the system, which can cause a lot of problems. Also, the pricing came in about the same as copper."

The project needed to follow the Facilities Standards for the Public Buildings Service (P-100), which establishes design standards and criteria for new buildings, major and minor alterations, and work in historic structures for the Public Buildings Service (PBS) of the GSA. Since the P-100 stated that no plastic could be used, Interface used a variance to allow for Aquatherm's use.

"We also explained that using this pipe instead of the other options was going to be to their advantage," Kangas added, noting that PP-R's natural insulation value (a natural R-value of 1) was also a big selling point.

## Heat Fusion Connects Pipe Systems

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— JON GRAY CPD, PRINCIPAL, INTERFACE ENGINEERING

McKinstry used 1½-in.-diameter Aquatherm Climatherm® PP-R piping for the building's new radiant system. The Climatherm runs around the perimeter of the building; fusion outlets connect the perimeter piping into the rest of the system. The fusion outlets were huge labor savers on the project since they allow installers to simply drill into the supply pipe, then heat fuse the fusion outlet fitting into place wherever needed.

All Aquatherm pipe is connected via heat fusion, a process often used in natural-gas piping because of its reliability. Heat fusion bonds both sides of a joint into a single, homogenous material without the use of chemicals or mechanical connections, which eliminates systematic weaknesses and fail-points in the pipe.

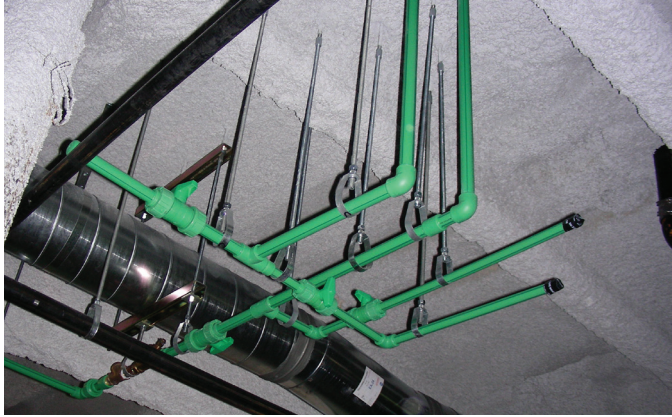
Because the Green-Wyatt building was the first project in



which Howard S. Wright and McKinstry had used Aquatherm on a large scale, "the learning curve for installing it has been steep," said Bob Blodgette, McKinstry's plumbing supervisor.

"We are getting more comfortable with it. It can be a bit time-consuming, but recently we have been seeing faster times."

For the potable water supply lines, McKinstry utilized Aquatherm's 1/2-in.-diameter Greenpipe® pressure piping, which is especially suited for hot and cold potable water and food-grade applications. Corrosion resistant, Greenpipe is made with environmentally friendly Fusiolen PP-R material and is recyclable, energy efficient, and PVC-free.



## Using Gray Skies for Good

Additionally, Howard S. Wright wanted to capitalize on the rain that soaks the Pacific Northwest every winter. While a gray water system was initially considered, it was determined that substantial water conservation could be achieved by harvesting the area's generous rainwater.

The rainwater is gathered from the main building roof and the PV solar array, in addition to plaza level drainage. It was initially going to be stored in large tanks in the penthouse. However, that plan was switched to one incorporating a large storage tank in the basement, which had previously been the FBI's shooting range. Finally, the entire shooting range was used as a cistern that holds 150,000-160,000 gallons.

The rainwater then is UV sterilized and used in the reclaimed system, with Aquatherm's Lilac piping transporting it to the low-flow toilets and urinals. Lilac is the same PP-R material

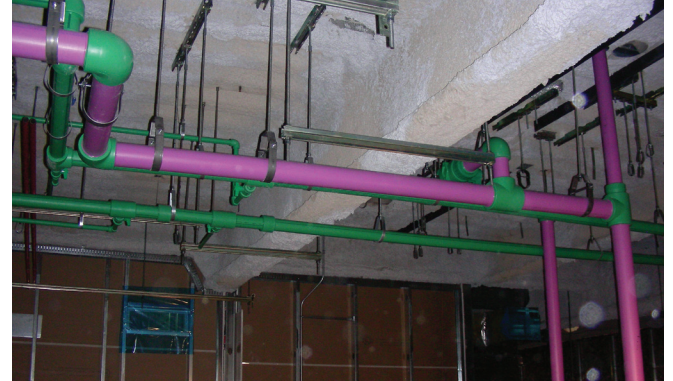
as the rest of Aquatherm's products, but is aptly colored to differentiate it from potable water.

Even though Aquatherm PP-R piping was relatively new to both the general contractor and installer on the job, "it has been a matter of staying with it," said Dave Lusher, sales representative for Harrington Industrial Plastics, the project's Aquatherm piping distributor. Ridgeline Mechanical Sales, which has offices throughout the Northwest and a reputation for detailed product knowledge and support, worked extensively with Harrington to present, train, and shorten McKinstry's learning curve.

"Slowly but surely the old-school people came over and accepted that Aquatherm is a good alternative. It's one of those situations where the customers say, 'We've always used carbon steel.' It's a paradigm shift for them," explained Lusher.

McKinstry was also impressed with the piping system's warranty. When installed by Aquatherm-trained and certified technicians, the piping and fittings carry a 10-year, multimillion-dollar warranty covering product liability, personal injury, property damage, and even incidentals.

While the building will not likely be completed until sometime in 2013, as of October 2011 McKinstry had installed Aquatherm pipe for the building's first eight stories or so for the domestic, radiant, and harvested rainwater. In all, the firm estimates that over 130,000 linear feet of Aquatherm PP-R piping will be used on the project.



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 fiber-composite layer in the pipe reduces linear expansion of the pipe by up to 75% compared to plastic piping

**CONTACT:**



500 W 500 S • Lindon, UT 84042 • 801-805-6657