



EASE OF INSTALLATION AT COLLEGE MAKES EVERYONE A WINNER – ESPECIALLY THE CUSTOMER

The piping contractor's crew installed approximately 40 ft of 24-in. pipe, nearly 100 ft of 18-in. pipe, 20 ft of 16-in. pipe, 60 ft of 10-in. pipe, and 157 ft of 12-in. pipe.

PROJECT:

College, condenser water and cooling tower retrofit

PRODUCTS:

aquatherm blue pipe®

LOCATION/DATE:

New Jersey
Spring 2018

AQUATHERM ADVANTAGES:

- The lighter weight, ability to easily fabricate assemblies and ability to make pipe connections “in the air” presented considerable labor and cost savings over steel pipe
- The mechanical contractor offered the owner a corrosion-proof piping system with an anticipated service life of 60-plus years, with low operating and maintenance costs
- Aquatherm PP-R piping systems require no open-flame welding or solder, so no fire watch was required and work proceeded while the buildings were occupied

The aging chiller/boiler physical plant at a New Jersey community college had received some upgrades in recent years, but it was still missing a few crucial pieces to help it operate up to its full potential.

In 2012, the college had made improvements that included new Harsco 4.3 million Btuh gas condensing hot water boilers and Trane CenTraVac R-123 low-pressure chillers. However, equipment wasn't coming on when it should have, or was operating continuously, or wasn't modulating properly. In 2015 the college's facility manager improved the plant's efficiency via a Carrier i-Vu BACnet-enabled building automation system, and proper control is saving the college energy and money.

But one last big project remained — replacement of condenser water piping between the chillers and the cooling towers. The system's existing piping was black steel that was severely corroded and scaled.

Replacing large diameter black steel pipe in sizes up to 24 in. is a major undertaking because of the weight of the pipe and how long it takes to weld joints. Eighteen-inch Schedule 40 black steel pipe, for example, weighs nearly 105 lbs. per ft. Welding large diameter black steel pipe can take more than a day per connection, noted mechanical contractor Joe Estock, Estock Piping Co. LLC, Chesterfield, NJ.

FOUR-MONTH WINDOW

The material handling challenges, plus the length of time it takes to weld black

steel, bumped up against the college's time constraints: the issue being that the chillers kick on whenever the outdoor temperature goes above 60°F. That meant the college had a four-month window in the winter of 2017-2018 to get the piping changed out. The project included installation of two new Baltimore Aircoil four-cell cooling towers.

“The cost of using steel is not just the installation. It's the hidden costs that have to be recognized by the facility manager and the owner about the cost of a carbon steel or cast-iron system.”

— Lou Garavito, Wallace Eannace Associates Inc., Plainview, NY

In addition, chunks falling off the corroded black steel pipe were clogging the strainers and potentially damaging the pumps and chillers. When the college asked for a solution, the project's consulting engineer knew that Aquatherm Blue Pipe® had been used successfully in the United States for several years. The consulting engineer designed the retrofit with both black steel and with Aquatherm Blue Pipe. The design with Aquatherm pipe turned out to be less expensive because of the projected labor savings, plus the college preferred it, so it was an easy decision.



The easy configurability of Aquatherm Blue Pipe allowed it to work well in “heavy traffic” at this project.

THE HIDDEN COSTS OF STEEL

Corrosion of black steel or cast iron, especially when installed outdoors, is a significant problem. Pipe scale results in reduced inside diameter of the pipes and premature pump failure, noted manufacturers’ representative Lou Garavito, Wallace Eannace Associates Inc., Plainview, NY.

“The cost of using steel is not just the installation,” Garavito said. “It’s the hidden costs that have to be recognized by the facility manager and the owner about a metallic piping system.”

Even treated pipe will rust and scale over time in condenser piping applications,

Garavito pointed out, especially if the pipe is exposed to chemicals. That makes Aquatherm polypropylene-random (PP-R) pipe, which is hydrophobic and will not scale or corrode, an ideal solution for projects like the one at this college. Garavito noted that a similar condenser water re-piping project was recently completed at Rutgers University, where Aquatherm pipe also was the solution. That project used Aquatherm pipe in sizes 6-in. through 12-in.

Additionally, polypropylene’s total installed cost is becoming even more attractive in light of volatile steel prices caused by tariffs.

ELIMINATES WELDING HAZARDS

Use of Aquatherm PP-R pipe also solves several other problems for a mechanical contractor, Garavito said. The contractor doesn’t have to store acetylene. No fire watch is required. It offers significant material handling advantages over steel pipe. And it eliminates the risk of eye injuries that can be caused by grinding steel pipe.

Since there’s no welding, there are no welding fumes, Estock noted. He explained that he performs a lot of work at schools, and school administrators don’t want students exposed to welding fumes. That forces the contractor to work at odd hours.

Polypropylene-random pipe, which is hydrophobic and will not scale or corrode, is an ideal solution for projects like the one at this college.

Estock, who has been piping boiler rooms since 1988, won the project against 10 other bidders. The Aquatherm pipe cost more than black steel, he said, but the labor savings more than made up for it.

However, after he won the job, Estock became worried; he had zero experience with Aquatherm pipe and admits he didn’t know what he had “gotten himself into.” He was even more nervous when he was told he would be performing the largest Aquatherm job in New Jersey.

“Put yourself in my shoes,” he said. “I’m a contractor who had never used this product before, plus the job itself had difficulties like 18-inch pipe going over top of new boilers. That made me very nervous at the beginning, honestly.”

He didn’t have to worry for long, though. The local Aquatherm distributor provided extensive training and his highly skilled fitters quickly got the hang of fusing Aquatherm.

Estock’s crew needed some scissor lifts and a couple of forklifts to move the Aquatherm Blue Pipe around the jobsite, but it was light enough that they could easily make fusion joints with the pipe in the air. The Aquatherm 18-in. Blue Pipe SDR 17.6 used on this job weighs 22.9 lbs. per foot and comes in 5.8-meter lengths, or about 19 ft.





This installation is made even more impressive by the fact that the college had a four-month window in the winter of 2017-2018 to get the piping changed out.

FABRICATING ASSEMBLIES ONSITE

Estock's crew did all the fabrication themselves for assemblies such as manifolds inside the college's large mechanical room. All told, the crew installed approximately 40 ft of 24-in. pipe, nearly 100 ft of 18-in. pipe, 20 ft of 16-in. pipe, 60 ft of 10-in. pipe, and 157 ft of 12-in. pipe.


The main advantage of the Aquatherm Blue Pipe was the weight, Estock said. His crew could carry 10-in. and 12-in. pipe sections without using material handling equipment. A standard 21-ft length of 18-in. steel pipe weighs 2,200 lbs; installing 18-in. pipe over the boilers as Estock had to do would have been extremely difficult with black steel.

The second big advantage was the speed of making heat-fused joints in PP-R pipe. Estock said he could heat fuse 18-in. Aquatherm pipe in one hour, compared with more than a day to weld an 18-in. joint in black steel.

"With the time constraints, God knows what would have happened if this were black pipe," the college's facility manager said. "We might still be welding down there."

ALL-AROUND WINNER

"[Aquatherm] is a phenomenal way to go," the facility manager concluded. "The dollars are neck and neck, but with the durability and no scaling and the 'green' element it brings, it's

leaps and bounds ahead of black steel now. Of course, we'll find out in five to 10 years from now how it goes, but if you maintain it, it should be years and years and years of success. I see no issues with it. We're glad that the school invested in this. It's a great installation for all the parties involved. Everybody's a winner in this." 

The German-manufactured pipe has been one of the world's most durable and greenest piping systems for 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 more per inch 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 percent compared to plastic piping



Aquatherm Blue Pipe was used to replace large diameter black steel pipe in sizes up to 24 in.

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