



CONTRACTOR UNCOVERS UNIQUE DIRECT-BURIED PIPE SOLUTION

PROJECT:

SSM Cardinal Glennon Children's Medical Center, Direct Buried Condensate Piping

PRODUCTS:

aquatherm blue pipe®

LOCATION/DATE:

St. Louis
Winter 2010

AQUATHERM ADVANTAGES:

- The polypropylene pipe was able to withstand the high temperatures of the condensate
- Since PP-R is chemically inert, no protective chemicals are necessary for the pipe – unlike steel
- Returning the condensate to the facility at a higher

SSM Cardinal Glennon Children's Medical Center is a not-for-profit, 190-bed inpatient and outpatient pediatric medical center in St. Louis. The hospital is home to the Bob Costas Cancer Center, Dana Brown Neonatal Intensive Care Unit, St. Louis Fetal Care Institute, Dorothy and Larry Dallas Heart Center, St. Louis Cord Blood Bank, and the Missouri Poison Center.

Serving children locally and internationally, the hospital focuses on caring, commitment and excellence, and that focus carries over to its physical plant and facilities. The facility staff strives to ensure all systems are performing at their optimum levels.

In late 2010, the staff learned that the buried 650-foot, Schedule 40 carbon steel condensate line running from the Pediatric Research Institute to the main boiler room had completely corroded. The 2-inch low-pressure line had been installed approximately 20 years ago, and due to corrosion, had stopped returning condensate for re-use in the power plant.

KEEPING THE DRIVE ALIVE

Rock Hill Mechanical Corporation (RHMC), which is the mechanical contractor for Cardinal Glennon and works with other SSM facilities, was called in to help solve the problem. However, in order to replace the line, it was going to be necessary to tear up nearly 300 feet of concrete/asphalt, in addition to closing off the drive (a main thoroughfare).

Terry Banister, RHMC service manager, came up with a much more cost effective plan of lining the existing pipe as opposed to excavating and removing the pavement and re-piping the line. Initially high-density polyethylene (HDPE) was going to be used to line the steel pipe but there were concerns that the pipe would not be able to handle the high constant temperatures, which could exceed 180 °F.

Coincidentally, the Aquatherm distributor in St. Louis had just introduced RHMC to Aquatherm Inc.'s polypropylene-random (PP-R) pipe systems, which are designed to handle constant temperatures of 180°.

A NEW/OLD SOLUTION

For nearly 40 years, Aquatherm pipe systems and the simple heat fusion welding process have been proven in applications around the globe, and they are rapidly gaining acceptance in North America. Aquatherm Climatherm®, with an optional fiber-composite layer hangs rigidly even when subjected to high operating temperatures (up to 200°) and reduces linear expansion of the pipe by 75% compared to other plastics. Fully recyclable, Climatherm is designed specifically for HVAC and industrial applications and offers a natural insulation value of R-1 and excellent flow rates – translating into energy savings.

Banister said hospital staff had concerns about the high condensate temperatures breaking down the PP-R, which might have led to a premature failure of the pipe itself. Additionally, there were concerns about how



to get the pipe underground using directional boring without pulling the pipe apart or damaging it during installation.

“What we did to resolve or reduce major concerns was to install a 5-inch HDPE carrier pipe to serve as a conduit during the directional boring process. This allowed us to assemble the pipe and pull it through the carry pipe without damaging the main pipe,” Banister explained.

The conduit also provided additional protection of the Aquatherm pipe, allowing it to expand and contract without any worries of the pipe being damaged by any underground debris. This was a particular concern since old train tracks and other debris are known to be buried in the area.

The 2-inch Climatherm was heat fused together above ground and then pulled through the HDPE conduit. The system was tested to 150% of the working pressure and held for four hours prior to putting the piping into service. Adding one more layer of protection to the system, RHMC added a couple sections of finned piping to the system before it exits the building to ensure the exit temperature would be 190° or less.

PP-R DELIVERS SAVINGS AND SATISFACTION

The overall project was completed in less than three weeks and the condensate now reaches the power plant at a temperature of

165°. The hospital saves resources by reusing the condensate, which takes much less energy to convert into steam than the much lower temperature municipal supply water.

It also saves cost since the system doesn't

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– Terry Banister, Rock Hill Mechanical Corporation (RHMC), St. Louis, MO

require chemical treatment, and all parties are satisfied with this groundbreaking underground installation. The Cardinal Glennon power plant personnel monitored the water temperature and chemical levels for the first couple of weeks and were very satisfied with the outcome.

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several thousand dollars less expensive than the true excavation method,” Banister concluded. Additionally, thanks to the energy savings, the new condensate line will pay for itself quickly while the PP-R system should function for decades to come.



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



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