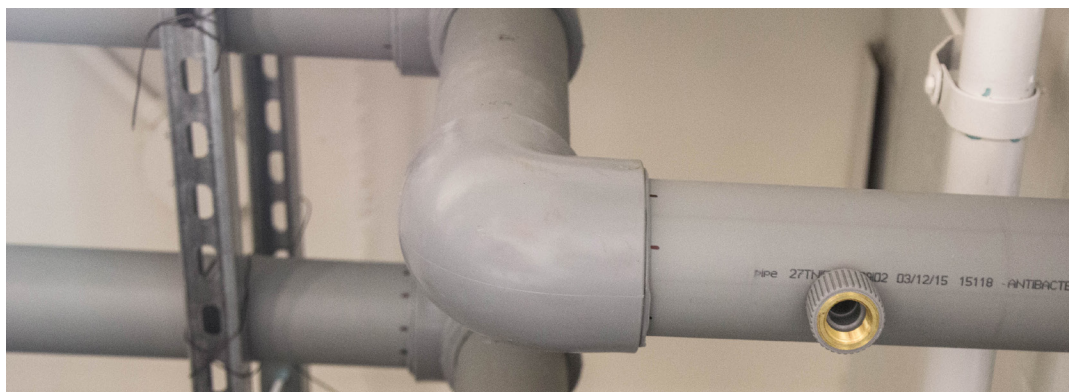


# FIELD REPORT

## PP-RCT: A PIPE THAT CAN HANDLE THE HEAT



Durable, corrosion-free pipe installed over an operational laboratory.

### HVAC Upgrade Uncovers Unique Challenge

Upgrading an aged air handling system at a large university is not a new challenge. Installing a network of pipe to connect that system over an active laboratory – that’s entering murkier waters. However, PP-RCT, a polypropylene product from ISCO Industries, exceeded the demanding guidelines and allowed pipefitters to complete the job in a fraction of the time with ease.

The University of Illinois-Urbana/Champaign operates on a campus chilled water system, encompassing 26 miles of underground pipelines connecting 90 buildings to five chilled water production plants. The system circulates 37,500 tons of chilled water to the buildings.

### No Disruptions Allowed

In the Environmental Engineering and Science Laboratory in the Nathan Newmark Civil Engineering building, the HVAC system had aged itself into near failure, requiring an upgrade. E.L. Pruitt Mechanical Contractor was awarded the bid to complete the system overhaul. In the building, there is a biological-safety, Level II lab, fully equipped for research into

waterborne pathogens, one of the most pressing and significant water-quality issues. The disinfection lab includes a cold room and microscopy suite. It occupies 1,700 square feet, including a mechanical equipment room. The occupancy shifts from instruction in the morning to research in the laboratories at night.

Therefore, there really is no “down time” in the space. Experiments are on-going throughout the night and day, year-round.

When plans were laid out to renovate the air handling system, material for the chilled water and hot water return lines were an important consideration. The constant operation of the lab means no flames, sparks, or chemicals would be allowable during the installation process. It was clear a thermoplastic piping system was the best option.

### The PP-RCT Solution

Over the course of more than a year, the university and contractor carefully considered potential products for installation. Steel piping would require welding that would emit sparks. Copper would require flames.

### PROJECT

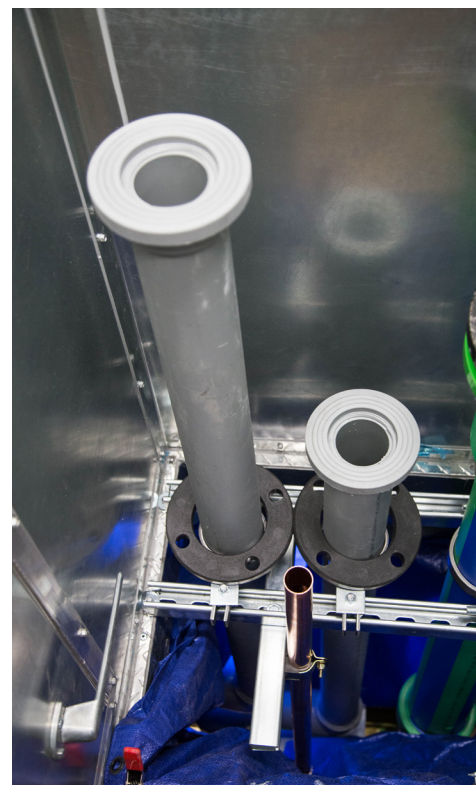
Hot water return lines at major university.

### LOCATION

University of Illinois-Urbana/Champaign

### THE NEED

A hot water return line installed over an operational laboratory.







Another product was specified for the chilled water line but was not approved for the hot water return. In the end, PP-RCT, which is approved for both chilled and hot water, was specified for the hot water return line. The product from ISCO Industries is made using a unique random copolymer polypropylene high-crystallinity resin.

The pipe and fittings have an encapsulated layer that reduces thermal expansion by up to 75%, meaning fewer expansion loops, elbow offsets, and expansion joints. The coefficient of linear expansion with PP-RCT is similar to copper piping systems. The mix of materials produces high temperature and pressure ratings than standard, commercially available polypropylene products.

When it came to installation, PP-RCT joined by socket fusion made the job infinitely easier. It is joined via heat fusion, meaning there are no flames, sparks, glues, or solvents. Kelly Harris, a pipefitter with 17 years of experience, installed the pipe system. "It was the first time I've ever fusion welded thermoplastics," he explained.

"It was easy to learn and I was able to complete three fusion welds in the time it would have taken to complete one welded carbon steel joint. This project was a remodel with a lot of turns in tight spaces. Welding on new construction would have gone even faster."



The new air handling system was designed with a dedicated outdoor air (DOA) unit that was installed on the roof of the building. The hot water return line needed to run from the mechanical room, over the lab, and up through the roof pipe enclosure to the DOA.



ISCO provided three inch DR 7.3 PP-RCT for the job. "A large part of our success was having the right attitude about using a new product on this job," Harris said. "The fusion process is easy to learn, but it takes a true craftsman to weld the pipe together making sure it is plumb, level, and square." The piping

system will require less maintenance over the years and will last for decades to come.