



RADIANT HEATING SYSTEMS
COMMERCIAL
DISTRIBUTION CENTER

CASE STUDY



Comfortable Workers are Happy Workers

When Federal Express outgrew its regional dispatch terminal in Lebanon, N.H., Piascik & Fitzgerald, a real estate management company in Camillus, N.Y., was selected to provide a bigger building. Because Piascik & Fitzgerald had worked with Federal Express on several other projects, the firm knew that employees' comfort was a constant problem in dispatch buildings. As bay doors are opened to allow delivery trucks in and out, warm air escapes and the workers get cold. By doubling in size, the Lebanon facility could have ended up doubling its heating problems.

Enter Uponor. John Piascik had heard about Uponor's radiant floor heating systems and had received samples of Uponor crosslinked polyethylene (PEX) tubing. He was convinced that the dispatch center would be more comfortable if heat could be stored in the massive concrete floor. Piascik chose the Uponor system because it was capable of meeting the design needs better than forced air and other heating systems.

Thirteen weeks after construction began, Federal Express moved into its new 24,500-square-foot building, complete with a hydronic radiant



Warmth is quickly recovered in the dispatch areas, where large doors open for truck traffic. Workers are more productive in the comfortable environment.

floor heating system. The Uponor PEX tubing, easily placed on top of steel reinforcement and covered with concrete, helped expedite the process. The system is zoned for independent temperature control in office, dispatch and service bay areas.

"This is the first time we've used radiant floor heating in a Federal Express distribution center and I've noticed a big difference," says Andrew Argento, senior manager of the Lebanon facility. "We've never had a working environment this comfortable."

Comfort was important to Federal Express, but it was not the only issue. Convenience and cost efficiency were

also required. Control systems had to be simple, versatile and within budget.

"Being able to warm this building with half the energy, while providing superior comfort and fast heat recovery — even with those large doors — is exciting," says Eric Olsen, president of Earthstar Energy, Waldoboro, Maine, and the Uponor system designer and distributor for the project. "Hydronic radiant heat technology allows us to engineer a heating program without the waste of forced-air systems."



Summary of Benefits

Comfortable

Employees perform better when they are comfortable. Radiant floor heating provides consistent, even warmth so office workers are free from drafts, and staff in the dispatch and service areas don't feel chilled. Additionally, the system allows mechanics to service vehicles right on the floor.

Cost-efficient

Because employees are warmed by the floors, temperatures are programmed and controlled in individual areas throughout the distribution center. The concrete slab acts as thermal storage for the building, so when the bay doors open and close, temperature quickly returns to setpoint.

Convenient

Radiant floor heating helps keep the dispatch area drier, even after the heaviest snowfalls. If packages fall on the Uponor radiant floor, they don't get as wet or as dirty.

Ease of installation

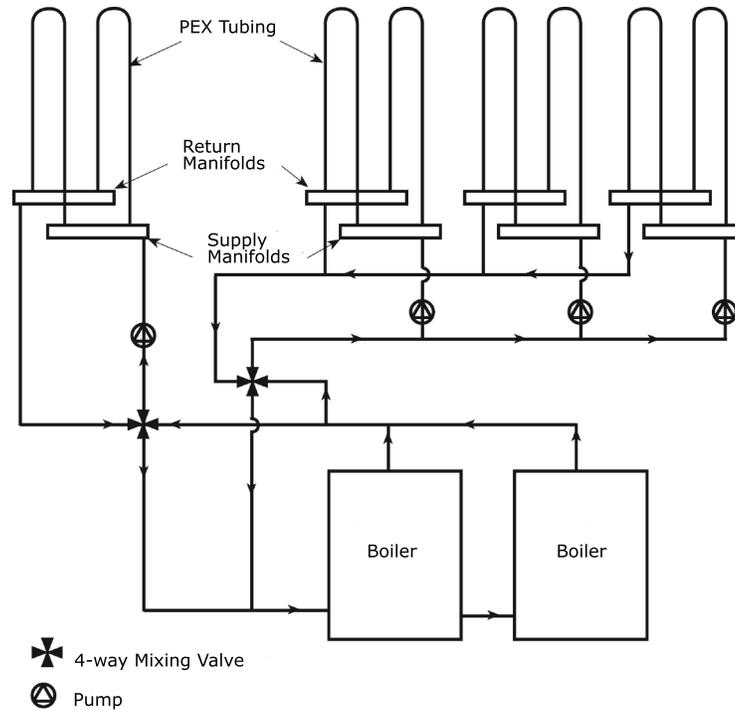
The Federal Express Distribution Center was a fast-track project, when design and construction occur almost simultaneously. The Uponor system was delivered on time, installed in a matter of days and best of all, works as promised.

The design information in this case study is provided for illustrative purposes only. The actual requirements of similar projects depend on regional climatic conditions, project-specific heat loss, owner expectations, applicable building codes, etc. Please contact your Uponor representative for assistance in designing your specific projects.

Mechanical System Information

The Federal Express Distribution Center features three distinct areas totaling 24,500 square feet. The 288,000 BTU/h boilers act independently and are dedicated to these areas of the building. Two mixing valves adjust water temperatures within the overall system. One valve

feeds the office area and adjusts the loop temperature while the system recirculates water continuously. The second valve regulates the water temperature delivered to the rest of the building, monitored by an Uponor multi-zone controller to adjust for the heat demand.



Project Data

Size of Structure:	24,500 square feet
Type of Construction:	Steel frame
Floor Construction:	6" slab on grade
Outside Design Temperature:	-20°F
Room Setpoint Temperature:	65°F in the dispatch area; 70°F in the office area
Heat Plant Size:	576,000 BTU/h
System Supply Water Temperature:	96°F
Tubing Type:	¾" PEX
Number of Loops, Average Length:	59 loops, 387 feet
Number of Manifolds:	8
Tubing Spacing:	12" on center
Pumps and Pump Size:	Two three-phase, three-speed, ½-horsepower pumps
System Flow:	94 gallons per minute (gpm)