



# Uponor

RADIANT HEATING AND  
COOLING SYSTEMS

RETAIL SUPERCENTRE

CASE STUDY

## Retail Supercentre Experiences Installation Efficiency with Uponor Radiant Rollout™ Mats

In January 2009, a supercentre retail chain opened its first environmental demonstration store. The new concept store uses about 60% less energy than the company's typical supercentre store and reduces carbon emissions by an estimated 141 tonnes (metric tons).

One of the key components to the supercentre's sustainable building practices is the Uponor Radiant Rollout™ Mat, which allows fast, efficient installation of crosslinked polyethylene (PEX) tubing for radiant floor heating and cooling systems, and offers several benefits over standard high-density polyethylene (HDPE) mat systems and other installation methods.

### Substantial Installation Efficiency

With the Radiant Rollout Mats, six contractors installed about 35,000 square feet (16 to 19 mats) per day, as opposed to only 4,500 square feet per day using conventional installation methods.

### Significant Labor Savings

Installing the Uponor Radiant Rollout Mat covers 7.7 times more square footage when compared to conventional installation methods for a store this size. Therefore, the radiant mat installation takes only two days instead of two weeks, saving significantly on labor costs.

### Helps Meet Tight Commercial Schedules

By using the Radiant Rollout Mat, the supercentre stayed on schedule and opened on time.

"The rollout mat does a great job; really speeds up the install," says Michael Hobson, section chief - mechanical at Nelco Mechanical Ltd., the mechanical contractor on the project. "This is going to open up whole new commercial markets for us to compete in. Normally, the commercial timeline is very tight, but the mat allows us to work within that aggressive schedule."

### Onsite Customization

One large advantage of the Radiant Rollout Mat over HDPE mat systems is the ability to perform onsite customizations. The design of the Radiant Rollout Mat allows quick and efficient modifications simply by using Uponor's ½" engineered plastic (EP) couplings.

"The rollout mat is flexible and easy to repair or make length changes onsite," says Scott MacDonald, foreman at Nelco Mechanical Ltd. "Using HDPE would have been much more difficult."

### EP Fittings Under Slab

Also, durable EP fittings can be buried in the slab; something other manufacturers' fittings simply cannot do.

### ProPEX® Connection Method

Unlike HDPE fusion-weld fittings, Uponor ProPEX® connections are made quickly, safely and efficiently without the need for heat, torches, cutting equipment or fusion-welding equipment. The ProPEX fitting system simply requires one tool, and takes advantage of the PEX tubing's unique shape memory to make solid connections.

### Consistent Performance Results

When the radiant heating and cooling system was ready to start up, the Radiant Rollout Mat gave consistent performance results.

"The performance of the Radiant Rollout Mat system was right on target," says Nuno Duarte, P. Eng., project engineer at Stantec, the engineering firm on the project. "After commissioning, the system's flow rates, pressures and heat exchange were performing to specs."

## Installer Safety

Installers appreciated how easy, comfortable and pain-free the Radiant Rollout Mat was to install. With HDPE, heavy equipment can become cumbersome.

“With HDPE, the equipment has to be lugged around, and working in the trench was difficult due to issues with power to the equipment,” says MacDonald. “Also, no one had to get on their hands and knees, so

there were no issues with back pain and no one was injured.”

## Project Data

<b>Type of Structure:</b>	Retail Supercentre	
<b>Mechanical System:</b>	Radiant Cooling and Heating with Geothermal Heat Pump	
<b>Total Heated and Cooled Square Footage:</b>	79,895 square feet	
<b>Number of Mats:</b>	73 total mats	
	54 – 125' x 9.5' mats	64,125 square ft.
	13 – 100' x 9.5' mats	12,350 square ft.
	6 – 60' x 9.5' mats	3,420 square ft.
<b>Mat Construction:</b>	½" Uponor AquaPEX® for mats	
	1" Uponor AquaPEX for supply and return headers	
	1" x 1" x ½" EP tees to connect to ½" tubing runs	
	Includes a capped 2' length of 1" Uponor AquaPEX at the end of every header for connection to isolation valves and HPDE supply and return mains	
	All mats shipped pre-pressurized at 20 psi.	
<b>Floor Construction:</b>	Slab-on-grade	
<b>Cooling Load:</b>	974,000 BTU/hr	
<b>Heating Load:</b>	1,689,000 BTU/hr	
<b>Cooling Range:</b>	68°F to 90°F, 20°C to 32°C, outside air temperature	
<b>Heating Range:</b>	50°F to 5°F, -46°C to -15°C, outside air temperature	
<b>System Off:</b>	50°F to 68°F, 10°C to 20°C, outside air temperature	
<b>System Supply Fluid Temperature at Design:</b>	Radiant Cooling, 62°F to 70°F, 17°C to 21°C	
	Radiant Heating, 80°F to 95°F, 27°C to 35°C	
<b>Feet of Tubing:</b>	159,790 ft.	
<b>Tubing Spacing:</b>	6" on center	
<b>Total Flow Rate:</b>	389 gpm, cooling	
	371 gpm, heating	



With the Radiant Rollout Mat, six contractors installed 35,000 square feet (16 to 19) mats per day. Installing the Uponor Radiant Rollout Mat covered 7.7 times more square footage when compared to conventional installation methods for a store this size.

The design information in this case study is provided for illustrative purposes only. The actual requirements of similar projects will 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.

**Uponor, Inc.**  
5925 148th Street West  
Apple Valley, MN 55124 USA  
Tel: 800.321.4739  
Fax: 952.891.2008  
Web: [www.uponor-usa.com](http://www.uponor-usa.com)

**Uponor Ltd.**  
2000 Argenta Rd., Plaza 1, Ste. 200  
Mississauga, ON L5N 1W1 CANADA  
Tel: 888.994.7726  
Fax: 800.638.9517  
Web: [www.uponor.ca](http://www.uponor.ca)

**Uponor**