uponor

Commercial Piping Systems

Intelligent solutions engineered to save time and resources and improve system performance

TABLE OF CONTENTS

Your Commercial Piping Systems Solution

With over 40 years of performance in structures around the globe, Uponor is the professional's choice for radiant heating and cooling and water distribution systems.

Using technologies proven in the most demanding environments, Uponor has perfected the art of providing systems that exceed expectations and deliver consistent quality for decades of use.

In the following pages, you will see how Uponor commercial piping systems are yielding a success in the design, construction and completion of structures — by offering solutions that promote energy and water efficiency, minimize waste and support sustainable building best practices.

That's Uponor Logic at work.

Uponor's Global Presence

- Corporate Headquarters in Helsinki, Finland
- North American Headquarters in Apple Valley, Minnesota
- Canadian Sales and Marketing Headquarters in Mississauga, Ontario
- North American Manufacturing Facility in Apple Valley, Minnesota
- North American Distribution in Lakeville, Minnesota; Brampton, Ontario and Calgary, Alberta

1620 Wirsbo company founded in Virsbo, Sweden

1968 PEX invented

1972 Wirsbo introduces PEX to market

1984 Wirsbo opens North American headquarters in United States

1988 Uponor acquires Wirsbo and is listed on the Helsinki Stock Exchange

2006 Uponor Wirsbo changes name to Uponor

2010 Uponor opens newly remodeled and expanded training center

2011 Uponor launches Uponorengineering.com

2011 Uponor launches the Professional Webinar Series

Today Uponor PEX systems sold in 100 countries worldwide

LEED® Rating: Platinum
Project: National Renewable Energy Lab (NREL)
Location: Golden, Colorado
System: Uponor Radiant Heating and Cooling
Product: Wirsbo hePEX™
Square Feet: 220,000
Engineer: Stantec
Design/Build: RNL & Haselden Construction
Contractor: Trautman & Shreve
Completed: 2010

Sustainable Building Practices with Uponor Commercial Piping Systems

In the commercial arena, sustainable building is no longer a fad. It is the new standard for superior design. And Uponor's commitment to sustainability reaches far beyond the products and systems in a building. It is a core business practice that brings people, planet and profit into a symbiotic model for success.

- Systems that maximize performance while using less energy, reducing resource demand and using alternative energy sources
- Design concepts that incorporate environmentally responsible materials and avoid potential contaminants
- Intelligent installation plans that minimize labor strain as well as construction waste
- Product transportation and delivery systems that reduce fossil fuel consumption
- Manufacturing processes that conserve energy, minimize waste and convert raw material waste through recycling or energy use

Domestic Hot and Cold Water Applications

- Main piping
- Riser piping
- Unit piping
- In slab
- Under slab
- Overhead
- Public flush banks
- Purified water systems
- Reclaimed (graywater) systems
- DHW Recirculation
- Building Service Supply Piping
- District Distribution Piping

Uponor PEX Plumbing Systems: The Superior Specified Water Distribution Solution

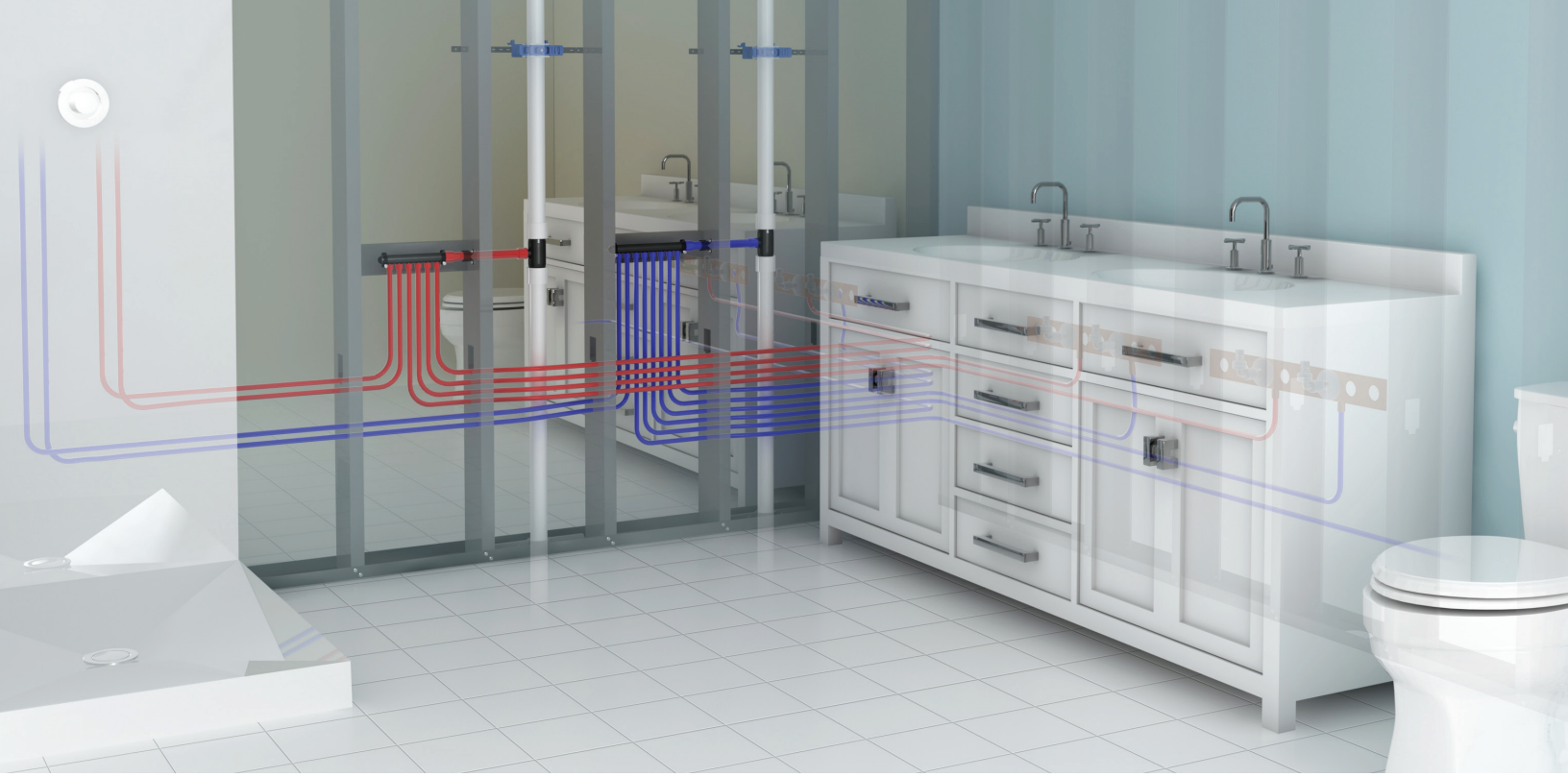
With 40 years of proven performance and 15 billion feet of crosslinked polyethylene (PEX) pipe installed worldwide, Uponor is the specified choice for commercial domestic-water applications.

Uponor's AquaPEX® pipe and ASTM F1960 ProPEX® expansion fittings are fully listed, easily specified products that deliver superior quality and long-term performance.

Our flexible pipe, cold-expansion fittings and unique engineered polymer (EP) multi-port tees offer a comprehensive domestic-water system that will support your engineering needs with greater installation efficiency, water conservation and more affordable material costs.

And when it's time to move forward on your project, you'll have the full backing of Uponor's engineering resources — from classroom and online training to CAD files for BIM support to specifications and submittals — Uponor has all the information you need.

LEED Rating: Certified
Project: Radisson Blu
Location: Bloomington, Minnesota
Square Feet: 570,000
System: Uponor PEX Plumbing
Contractor: Metropolitan Mechanical Contractors
Products: 23,637 ft. of ½"-2" Uponor AquaPEX® Pipe, ProPEX® Fittings and Engineered Polymer (EP) Multi-port Tees
Completed: 2013



Uponor PEX Pipe Advantages

- Most tested, trusted, listed and code-approved PEX for commercial applications
- More than 15 billion feet of pipe and 500 million fittings installed worldwide
- Cost-effective solution providing faster installs and stable material costs
- Most flexible of all PEX, reducing required fittings and potential leak liability
- Expands up to 3X its diameter, minimizing potential freeze damage
- Highly durable; resists corrosion, pitting and scaling
- Uponor PEX-a Pipe Support, PEX pipe, ProPEX EP fittings and/or WIPEX™ fittings listed to ASTM E84 for use in plenums without the need for insulation (½" to 3")
- Approved for fire-resistive construction
- Withstands potential oxidative effects of heavily chlorinated water
- Offers up to 40% reduction in surge pressure caused by quick-acting valves as compared to metallic piping
- Provides up to 30% better insulation value compared to metallic piping
- Sound intensity of PEX is at least 8 times less than that of copper pipe for a given change in velocity
- Shape memory ideal for cold-expansion fittings — no torches, glues, crimps, clamps or dry-fit leak concerns
- Expansion fittings offer up to 22% larger ID for up to 40% higher gpm compared to insert fittings
- Available in sizes up to 3" for potable applications and 4" for closed-loop hydronic applications
- PEX-a Pipe Support channel enables hanger spacing equal to that of copper
- Made in the USA, helps projects meet Buy American requirements
- Full-service design, training and technical support
- Uponorengineering.com — resource portal for CAD, Specs, Submittals, BIM, LEED®
- 25-year warranty on Uponor AquaPEX pipe and ProPEX expansion fittings*

*See www.uponorpro.com/warranties.

Project: Coborn's Grocery Store
Location: St. Joseph, Minnesota
System: Uponor PEX Plumbing
Product: 6,360 ft. of Uponor AquaPEX®
Square Feet: 36,330
Architect: Rice Building Systems
Contractor: Kiffmeyer Plumbing, Inc.
Completed: 2009

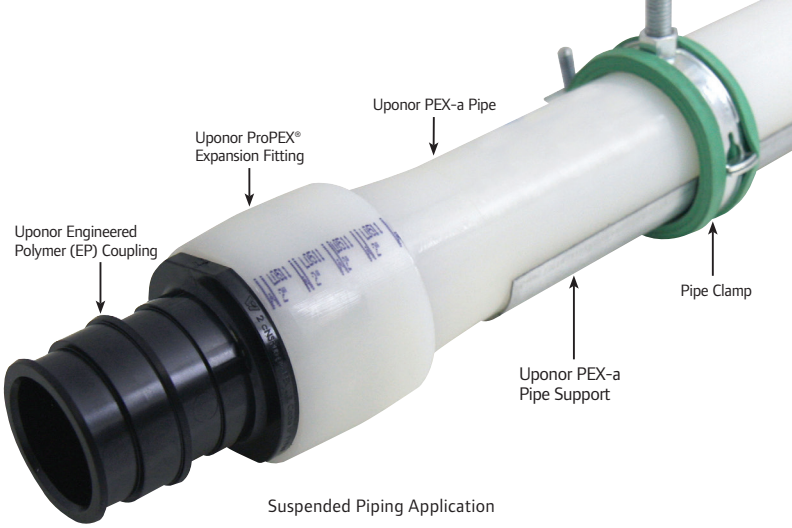
Uponor Ecoflex® for Underground Distribution

Going underground for your water distribution system? Look to Uponor's Ecoflex® pre-insulated pipe system for labor and energy savings. It features Uponor's PEX pipe encased in layers of closed-cell, PEX-foam insulation, covered by a flexible, water-tight, corrugated high-density polyethylene (HDPE) jacket.

Ecoflex Pre-insulated Pipe

Uponor PEX vs. CPVC and Copper

Pipe Comparisons	PEX	CPVC	Copper
Flexible; fewer required connections; reduces potential leak liability	Yes	No	No
Expands up to 3X its internal diameter to help resist freeze damage	Yes	No	No
Manufactured fitting connection; eliminates dry-fit leak concerns	Yes	No	No
One simple tool; no torches, glues, gauges, crimps or clamps	Yes	No	No
Resists corrosion, pitting and scaling	Yes	Yes	No
NSF International certification for water purity	Yes	Yes	No
Stable material costs; no scrap value, eliminates theft concerns	Yes	Yes	No

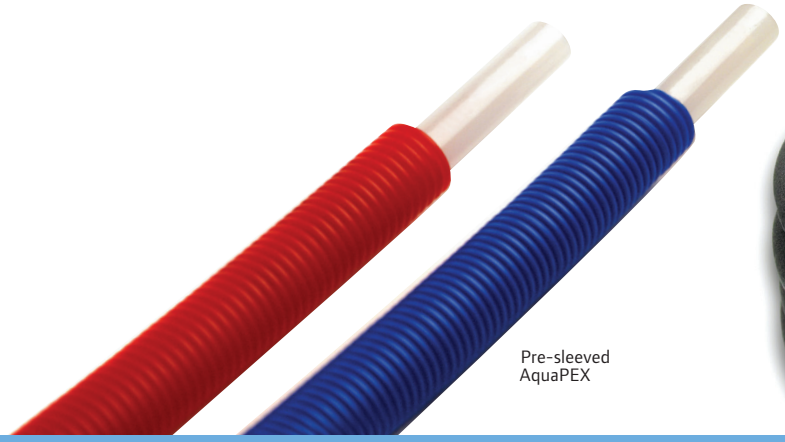


Suspended Piping Application


Commercial EP Multi-port Tee

Milwaukee® M18™ ProPEX Expansion Tool


Pre-insulated AquaPEX


Pre-sleeved AquaPEX

Hydronic Distribution with Uponor PEX

Using Uponor PEX for chilled water and heating hot water distribution is a very durable, cost-effective solution for transporting water to terminal units such as chilled beams and fan coil units. Uponor even offers a PEX-a Pipe Support steel channel for suspended piping applications that enables hanger spacing equal to that of copper. In fact, Uponor's suspended piping assembly with Uponor PEX-a Pipe Support, Uponor's PEX pipe, ProPEX connections, ProPEX engineered polymer (EP) fittings and/or WIPEX™ fittings (½" to 3") is listed to ASTM E84 for use in plenum applications without the need for insulation, making it an even more cost-effective and specifiable solution.

- Economical alternative to metal pipe
- Won't pit, scale or corrode
- ProPEX expansion fittings offer faster installs
- PEX-a Pipe Support enables hanger spacing equal to that of copper
- Uponor PEX-a Pipe Support, PEX pipe, ProPEX EP fittings and/or WIPEX™ fittings (½" to 3") listed to ASTM E84 for use in plenums without the need for insulation
- Backed by a 30-year warranty on Wirsbo hePEX pipe*

*For details, see www.uponorpro.com/warranties.


Chilled Beam


VAV Terminal Unit


Fan Coil


Baseboard Radiator

Ecoflex Pre-insulated Pipe Systems for Underground Distribution

Going underground can be a highly effective method for hydronic distribution applications. Uponor's Ecoflex is a complete system that is designed to go underground, providing the best solution for maximum energy efficiency and system performance.

Project: The Mayo Hotel and Lofts
Location: Tulsa, Oklahoma
System: Uponor PEX Plumbing and Hydronic Distribution Piping
Product: Uponor AquaPEX and Wirsbo hePEX
Size: 18 stories, 102 hotel suites, 70 residences
Architect: Kinslow Keith and Todd
Contractor: Palmer Mechanical
Completed: 2010

LEED Rating: Platinum
Project: Manitoba Hydro Place
Location: Winnipeg, Manitoba
System: Uponor Radiant Heating and Cooling
Product: Wirsbo hePEX
Square Feet: 695,742
Executive Architect: Smith Carter Architects & Engineers
Design Architect: Kuwabara Payne McKenna Blumberg Architects
General Contractor: PCL Constructors Canada
Structural Engineer: Halcrow Yolles, Crosier Kilgour & Partners
MEP Engineer: AECOM
Completed: 2009

Uponor Radiant Heating and Cooling: Superior Comfort and Energy Savings

Creating a comfortable environment in a commercial structure is critical. Comfortable employees are more productive and comfortable customers are more relaxed, contributing to the success of a business. Hydronic radiant systems are hands down the most efficient and comfortable way to heat and/or cool a structure. That's because water has the capacity to transport energy 3,500 times greater than air, so it can heat and cool using less energy than forced-air systems.

Low-exergy Design

Radiant systems are based on the principle of low-temperature heating and high-temperature cooling. This is also known as low-exergy design, meaning a system that creates greater output using less energy. Radiant systems can also be designed as "passive" systems that run primarily during off-peak periods when buildings are unoccupied.

A Solution for Every Type of Building

Uponor (formerly Wirsbo) was the first company to bring radiant floor heating to North America more than 40 years ago. And Uponor is the global leader in radiant solutions for commercial structures worldwide. So whether your project involves new construction or renovation, Uponor has the proven experience and innovative technology to offer unique advantages — including the ability to work with existing HVAC systems to conserve energy.

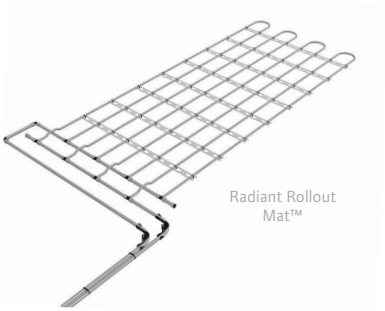
Radiant System Installation Options

Radiant systems are configured in one of two basic ways. High mass systems incorporate the mass of the building, with tubing embedded in structural concrete. Low mass systems use tubing embedded in surface-mounted ceiling, floor or wall panels. Typically, the same panels are used for heating and cooling functions. Installation options for high and low mass systems can include the following:

Radiant System Components

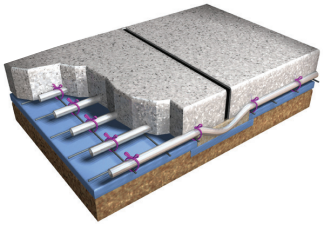
Engineered Polymer (EP) Manifold

TruFLOW™ Manifold

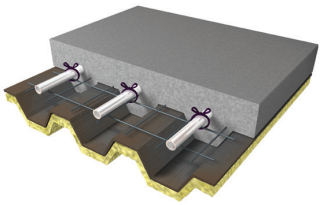


Radiant Rollout Mat™

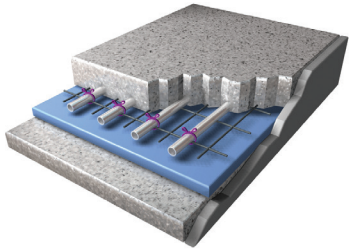
High Mass



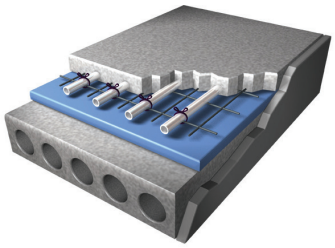
On-grade with expansion joint



Concrete on metal decking

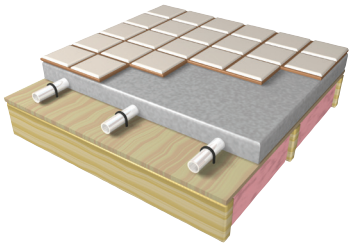


Slab-on-slab over high density insulation

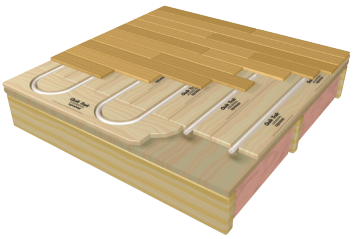


Concrete on pre-stressed decking

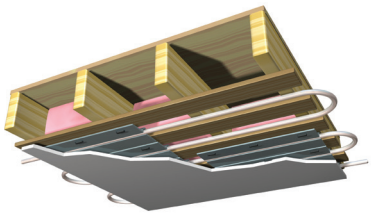
Low Mass



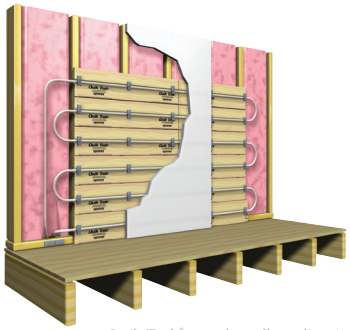
Poured-floor underlayment



Quik Trak® panels over wood subfloor



Radiant ceiling with Uponor aluminum heat emission plates

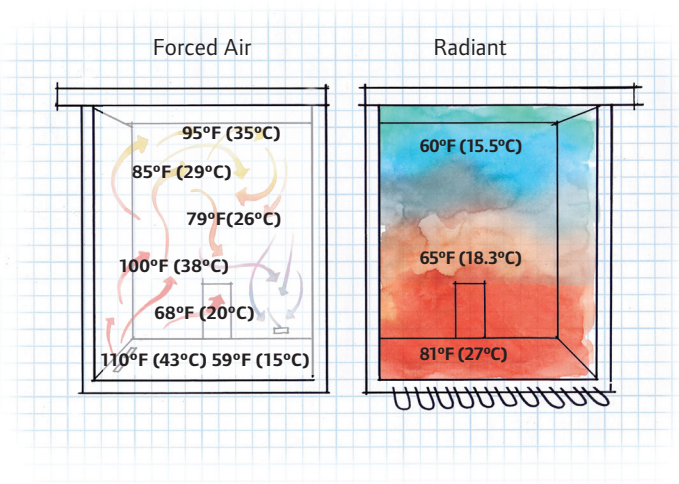


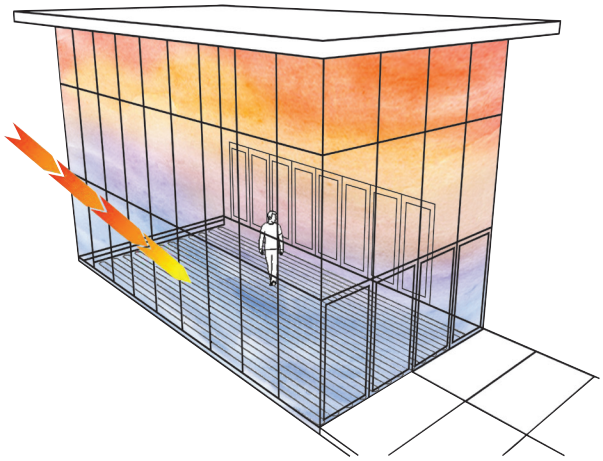
Quik Trak® panels wall application

Radiant Heating:
Energy and comfort comparison

Radiant heating provides greater thermal comfort at a lower temperature set point than forced-air heat.

Energy savings with a radiant heating system can range from 20-40% over traditional forced-air systems.



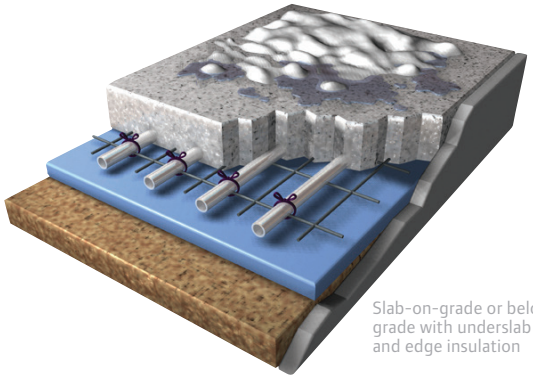


Radiant Cooling:
Focus the cooling effect at the occupant level

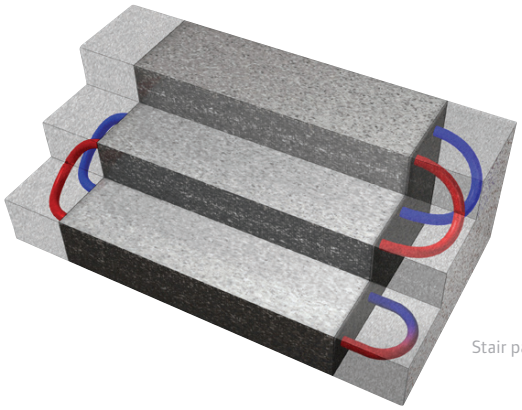
Average energy savings with a radiant cooling system can range from 17% in cold, humid climates to 53% in warm, dry climates.

Radiant floor capacity averages 12-14 Btu/h/ft^2 (38-41 W/m^2). When used in areas with high solar gain potential, or in ceiling applications, it increases to 25-32 Btu/h/ft^2 (79-101 W/m^2).

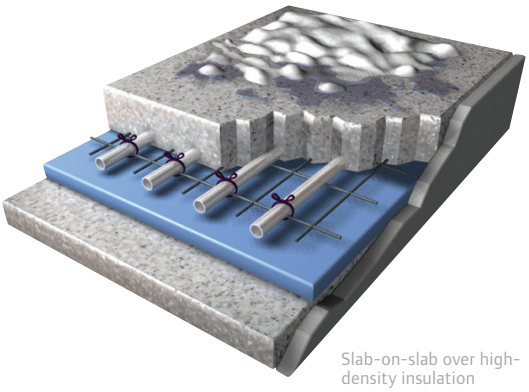
LEED Rating: Platinum
Project: Pier 15 Exploratorium
Location: San Francisco, California
System: Uponor Radiant Heating and Cooling
Product: Radiant Rollout™ Mats with Wirsbo hePEX
Square Feet: 330,000
Engineer: Integral Group
Completed: 2013



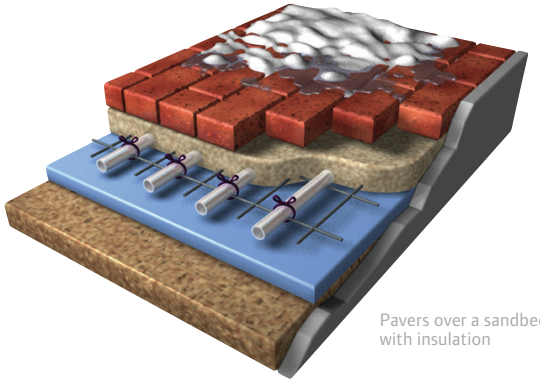
Slab-on-grade or below grade with underslab and edge insulation



Stair pattern



Slab-on-slab over high-density insulation



Pavers over a sandbed with insulation

Snow and Ice Melting: Put waste energy to use and put away the shovel

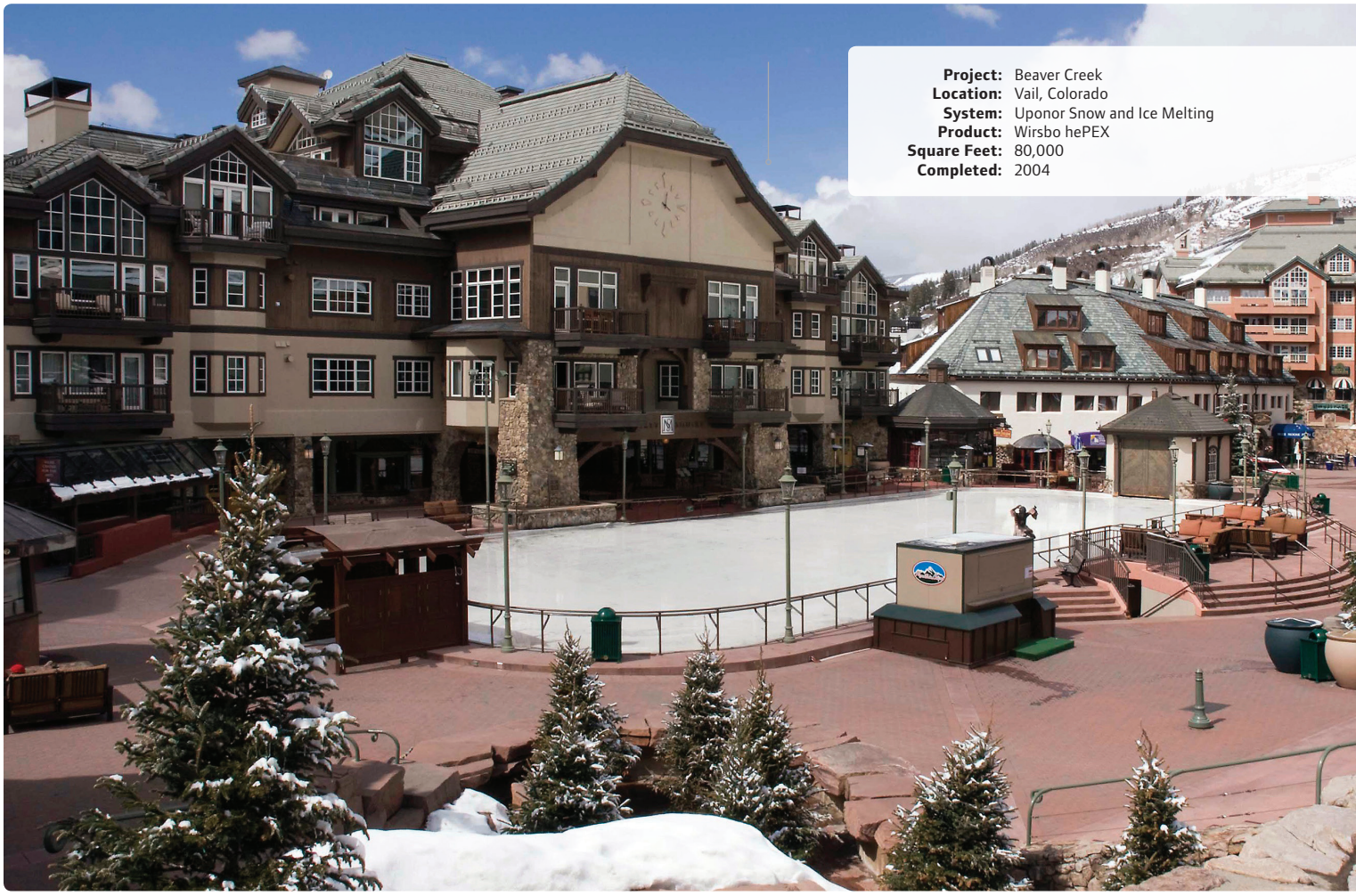
Uponor commercial Snow and Ice Melting Systems offer a safe, convenient, energy-efficient and affordable alternative for snow and ice removal. Durable Uponor PEX tubing buried in concrete, asphalt or sand circulates a warm, water-glycol solution to heat the surface and melt ice and snow, eliminating the need for shoveling, salting and sanding.

An Uponor Snow and Ice Melting System is a surprisingly affordable way to perform a critical task for commercial structures, and can be paired with alternative energy sources to operate nearly cost-free.

- Helps comply with Americans with Disabilities Act (ADA) regulations and reduces liability
- Extends the life of paved surfaces
- Conserves gas and prevents pollution by eliminating the need for snow blowers and plows
- Keeps interior floors cleaner by eliminating snow and ice that gets tracked inside
- Takes advantage of alternative heat sources such as biomass, geothermal or waste heat from within a structure for virtually cost-free operation

Snow and Ice Melting Applications

- Ski resorts
- Wheelchair access ramps
- Hospital emergency entrances
- Driveways
- Parking lots, garages and ramps
- Hotels
- Helipads
- Streets and sidewalks
- Loading docks and shipping areas
- Airport hangars



Project: Beaver Creek
Location: Vail, Colorado
System: Uponor Snow and Ice Melting
Product: Wirsbo hePEX
Square Feet: 80,000
Completed: 2004

Project: Northstar Commuter Rail Platform
Location: Ramsey, Minnesota
Square Feet: 22,000
System: Uponor Snow and Ice Melting
Product: 51,300 ft. of Wirsbo hePEX; TruFLOW Manifolds
Engineer: Steen Engineering
Contractor: Klamm Mechanical
Completed: 2012

Project: Strawberry Park Elementary
Location: Steamboat Springs, Colorado
System: Uponor Snow and Ice Melting
Product: Uponor Multi-layer Composite (MLC) Pipe
Engineer: M-E Engineers
Contractor: Aspen Grove Mechanical
Completed: 2010

Project: US Army Corps of Engineers
Location: Fort McCoy, Wisconsin
System: Permafrost Prevention System
Product: ⅝" Wirsbo hePEX

Permafrost Prevention: Subterranean protection against sub-zero temperatures

Soil that freezes due to continued exposure to sub-freezing temperatures is called permafrost. The frozen soil results in expansion that can destroy the concrete floors in a freezer plant. Permafrost prevention represents another creative problem-solving use of Uponor radiant heating technology.

Combining a radiant heating system with thick layers of insulation, the system contains frigid temperatures inside the freezer structure while maintaining a continuous soil temperature to ensure a stable and reliable surface for the building's foundation. You can even capture waste heat from freezer machinery for a cost-effective and environmentally sound power source.

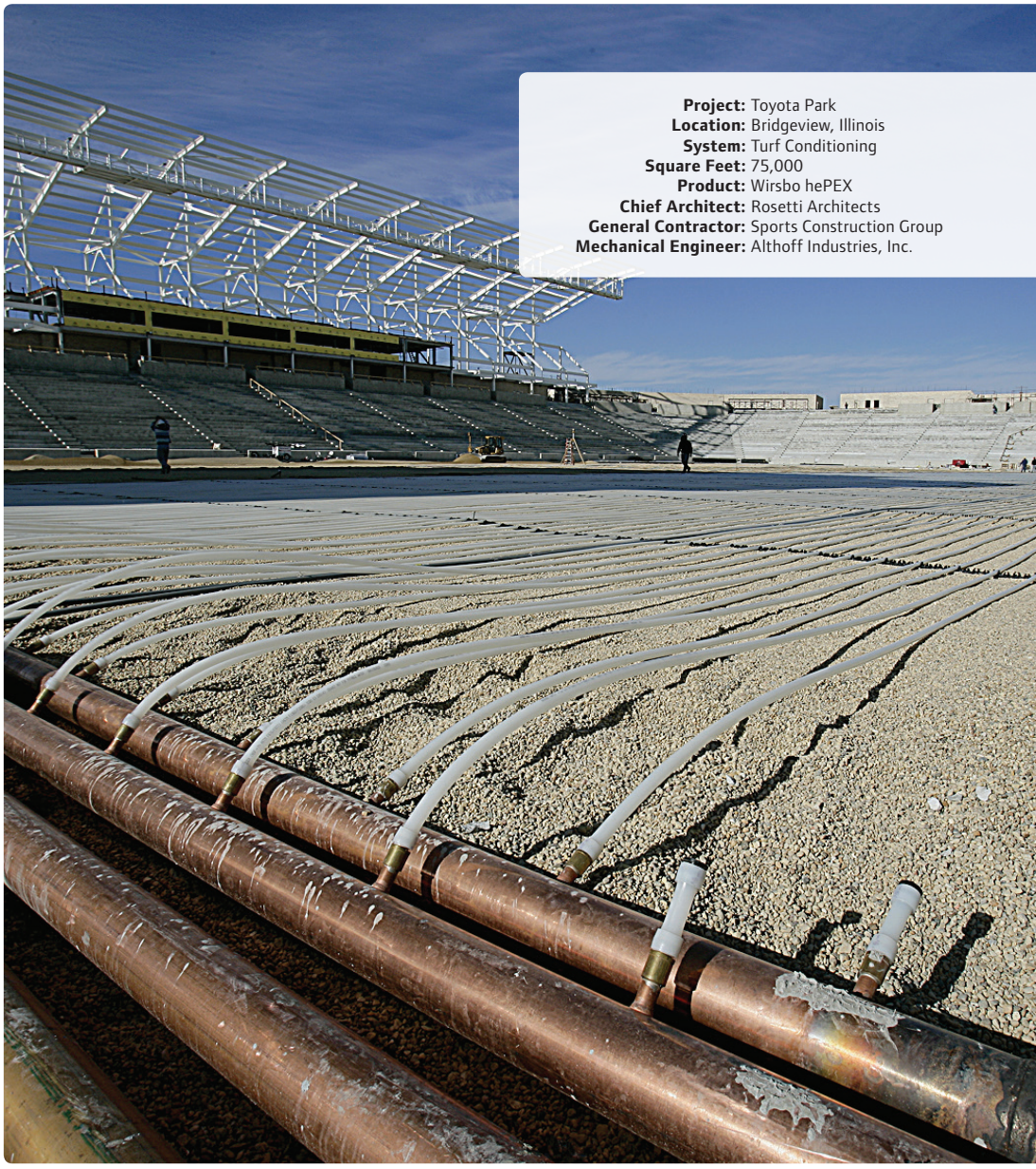
- Protects foundations against freezing damage, stress fractures, heaving and cracking
- Preserves the structural integrity of a building
- Ensures the safety of occupants and prevents costly foundation repairs
- Promotes durability and long life in sub-floors, even in severe climates

Permafrost Prevention applications

- Refrigerated warehouses
- Freezer storage facilities
- Ice skating rinks
- Coolers
- Chill coolers
- Holding freezers
- Blast freezers

"The field is warm and moist enough that it can actually grow grass in December or even January. The freezing point for the glycol mixture is -25°F (-32°C), so the system can be filled with fluid year-round, without the hassle and expense of draining and re-filling it prior to each season."

Chris Bennett,
Senior Vice President,
Althoff Industries



Project: Toyota Park
Location: Bridgeview, Illinois
System: Turf Conditioning
Square Feet: 75,000
Product: Wirsbo hePEX
Chief Architect: Rosetti Architects
General Contractor: Sports Construction Group
Mechanical Engineer: Althoff Industries, Inc.

Turf Conditioning: Keep the grass greener all year long

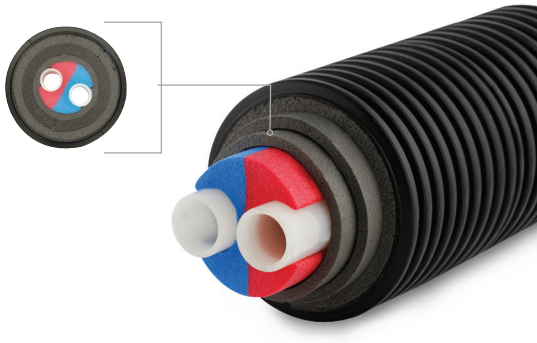
Uponor was the first to use PEX for hydronic turf conditioning systems. These systems are now used by the National Football League (NFL) and in numerous soccer and other athletic stadiums in Europe, Canada and the United States to preserve natural turf year-round. An Uponor Turf Conditioning system uses PEX installed in the soil beneath the turf to maintain an optimum soil temperature for the root bulb of grass plants. This promotes growth, faster recovery, a longer playing season and superior field conditions, which, in turn, protects athletes from serious injury in all climates and seasons.

Project: Wolf Ridge Environmental Learning Center
Location: Finland, Minnesota
Size: 2,000-acre Campus
Application: District Energy with Underground Distribution System
Product: Ecoflex® Pre-insulated Piping System
Heated Square Footage: 85,000
Contractor: Shannon's Plumbing
Completed: 2010

Pre-insulated Pipe Systems: Protection from cold, heat and energy loss

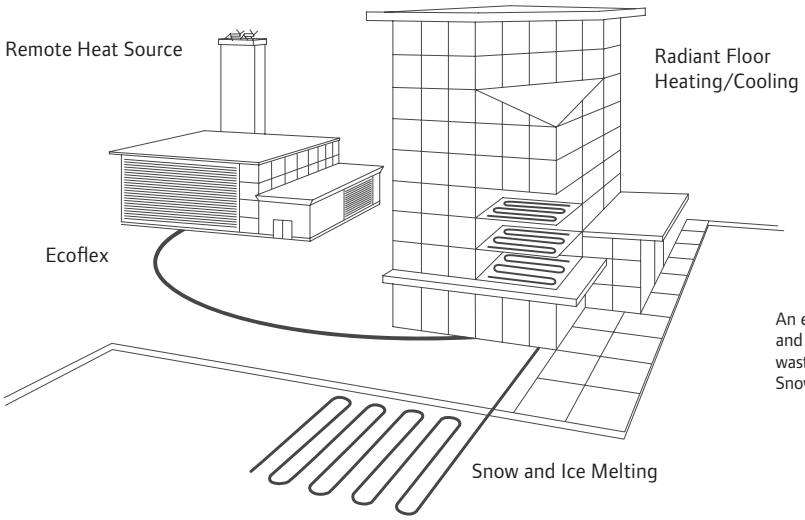
The Uponor Pre-Insulated Pipe System uses Ecoflex® piping to transfer hot and cold liquids within and between commercial and industrial structures. Ecoflex incorporates PEX pipe surrounded by closed-cell foam insulation that retains thermal properties, and a watertight outer jacket that protects against punctures and guards against moisture contamination. It can be installed directly off the coil into the trench across a maximum span of 656 feet without joints. Installing a pre-insulated pipe system simplifies installations and minimizes the risk of leaks and liability in challenging soil conditions and temperatures:

- Lightweight, durable and flexible; easy to transport and install
- Bends around existing utilities, rocks, tree roots and other obstructions that would require additional connection time and materials with other products
- Corrosion-resistant; stands up to harsh soil conditions
- Outer jacket manufactured using recycled plastic
- Custom configurations available



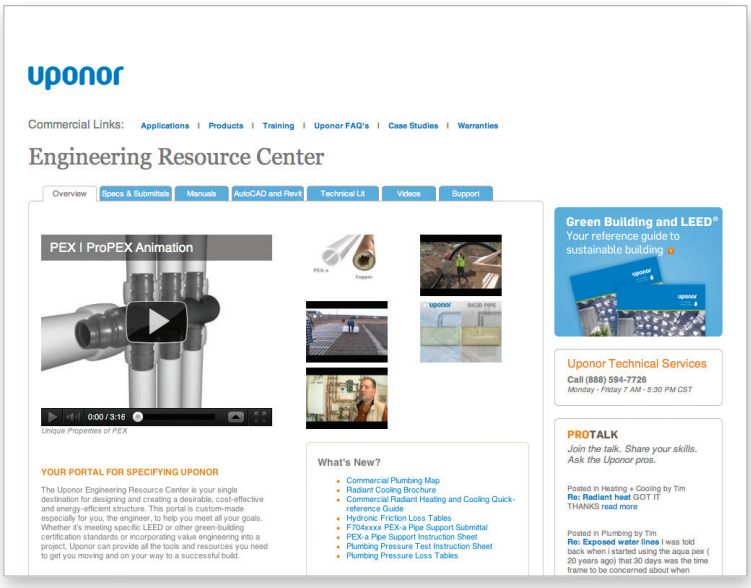
Ecoflex commercial and industrial applications

- District heating and cooling systems
- Chilled water and hot water systems
- Potable water systems
- Transport of fluids
- Transport of select chemicals
- Process water systems



An example of a Radiant Heating and Cooling System in which waste heat is captured for a Snow and Ice Melting System.

Engineering Resources



Uponorengineering.com
The Engineer's Resource Portal

The Uponor Engineering Resource Center is your single destination for designing and creating a desirable, cost-effective and energy-efficient structure. This portal is custom-made especially for you, the engineer, to help you meet all your goals. Whether it's meeting specific LEED or other green-building certification standards or incorporating value engineering into a project, Uponor can provide all the tools and resources, including specifications, submittals, CAD details, instructional manuals, design guidelines and even industry resource links to get you moving and on your way to a successful build.

Building Information Modeling (BIM)

AutoDesk Seek®
Search "Uponor"
http://seek.autodesk.com

Building-DATA.net/TSI®
Uponor parts included in Building Data's content library for use with TSI MEP modeling software.
www.building-data.net

Specifications

SpecAgent®
Import specification selections directly into your specification text.
www.specagent.com

Uponor Design Services

Uponor's full-service design department is staffed with professional designers and project managers with the experience, expertise and knowledge to lead your project from start to finish. Our team holds the necessary credentials and qualifications to ensure your project meets all code requirements and incorporates the most efficient use of time and materials to maximize system performance.

U.S. 888.594.7726
design.services@uponor.com

Canada 888.994.7726
design.ca@uponor.com

Uponor Training

Uponor's training program is part of a long legacy of commitment and support to the building professional. Since 1993, the program has educated more than 100,000 radiant, plumbing and fire safety professionals either at the factory, onsite via local manufacturer representatives or online.

Uponor Academy

Uponor Academy is an 11,000-square-foot teaching and learning hub, located at Uponor's North American Headquarters in Apple Valley, Minn., dedicated to educating professionals in the radiant, plumbing and fire sprinkler industries. It offers classroom training and hands-on learning in a real-life applications lab, so professionals can see, hear and feel the innovative technologies of today. The training program offers a comprehensive class curriculum that includes everything from hydronic radiant systems to plumbing systems to controls — all in a professional environment dedicated to pursuing excellence through education.

Learn more at www.uponorpro.com/training.

Professional Webinar Series

Uponor's webinar series allows professionals to learn about the latest in radiant heating and cooling and plumbing system applications and design. These free, one-hour online training sessions are available live or recorded and offer everything for the commercial building professional — from radiant cooling design concepts to underground distribution systems to commercial PEX plumbing applications. See how fast and easy it is to advance your knowledge in the radiant and PEX plumbing world.

Learn more at www.uponorpro.com/webinars.

Project: Uponor Academy Remodel
Location: Apple Valley, Minnesota
Square Feet: 11,000
System: Uponor Radiant Heating
Product: Wirsbo hePEX
Completed: 2010

Project: University of Louisville Student Housing
Location: Louisville, Kentucky
System: Uponor PEX Plumbing
Product: Uponor AquaPEX Pipe, ProPEX® Fittings
General Contractor: Whittenberg Construction
Plumbing Contractor: Patriot Plumbing
Architect: 5G Studio
Completed: 2012

LEED Rating: Gold
Project: Clemson University Lee Hall III
Location: Clemson, South Carolina
System: Uponor Radiant Heating and Cooling
Product: Wirsbo hePEX™
Square Feet: 56,000
Architects: Thomas Phifer and Partners; McMillan Pazdan Smith
Engineer: Talbot & Associates
Contractor: Holder Construction
Completed: 2012

LEED® Rating: Gold
Project: CityCenter Crystals
Location: Las Vegas, Nevada
System: Uponor Radiant Heating and Cooling
Product: Wirsbo hePEX
Square Feet: 60,000
Architect: Studio Daniel Libeskind
MEP Engineer: Flack + Kurtz
Contractor: Perin Building Company
Completed: 2009

Uponor, Inc.
5925 148th Street West
Apple Valley, MN 55124 USA
Tel: 800.321.4739
Fax: 952.891.2008

Uponor Ltd.
2000 Argentia Rd., Plaza 1, Ste. 200
Mississauga, ON L5N 1W1 CANADA
Tel: 888.994.7726
Fax: 800.638.9517

uponor

www.uponorengineering.com