



Uponor

Commercial solutions for mechanical contractors



Partnering with Uponor. More than pipe and fittings.

We mean progress.

A global partner in intelligent plumbing and climate solutions, Uponor has proudly led the industry forward for a century. Our trusted products and project-spanning partnerships build strong businesses while enriching the lives of millions around the world.



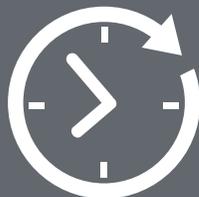
Improved health and safety

- No hot work
- No dangerous chemicals
- 60% lighter than copper
- Less stress on the body



Greater profitability and productivity

- Lower, more stable material costs
- Easy for trades to learn
- Up to 50% fewer connections, faster installs
- Eliminates fire watch requirements



On-time project delivery

- Estimation and design services
- Field training and technical support
- Fast installations
- Comprehensive system testing and commissioning



Reduced liability

- 25-year transferable limited warranty
- ProPEX® connection cannot be dry fit
- Resists corrosion
- Highly resistant to freeze damage

Leverage Uponor through every stage of your project

Support services that keep your project on time and on budget



Estimation services

Start your project off right with an estimation team that will quickly gather material and labor hours to ensure you have all the accurate information needed to bid.

Uponor estimation advantage

- Takeoffs via Trimble® AutoBid® Mechanical
- MCAA/PHCC labor data
- Alternative piping material comparisons
- Quick turnaround
- Free of charge

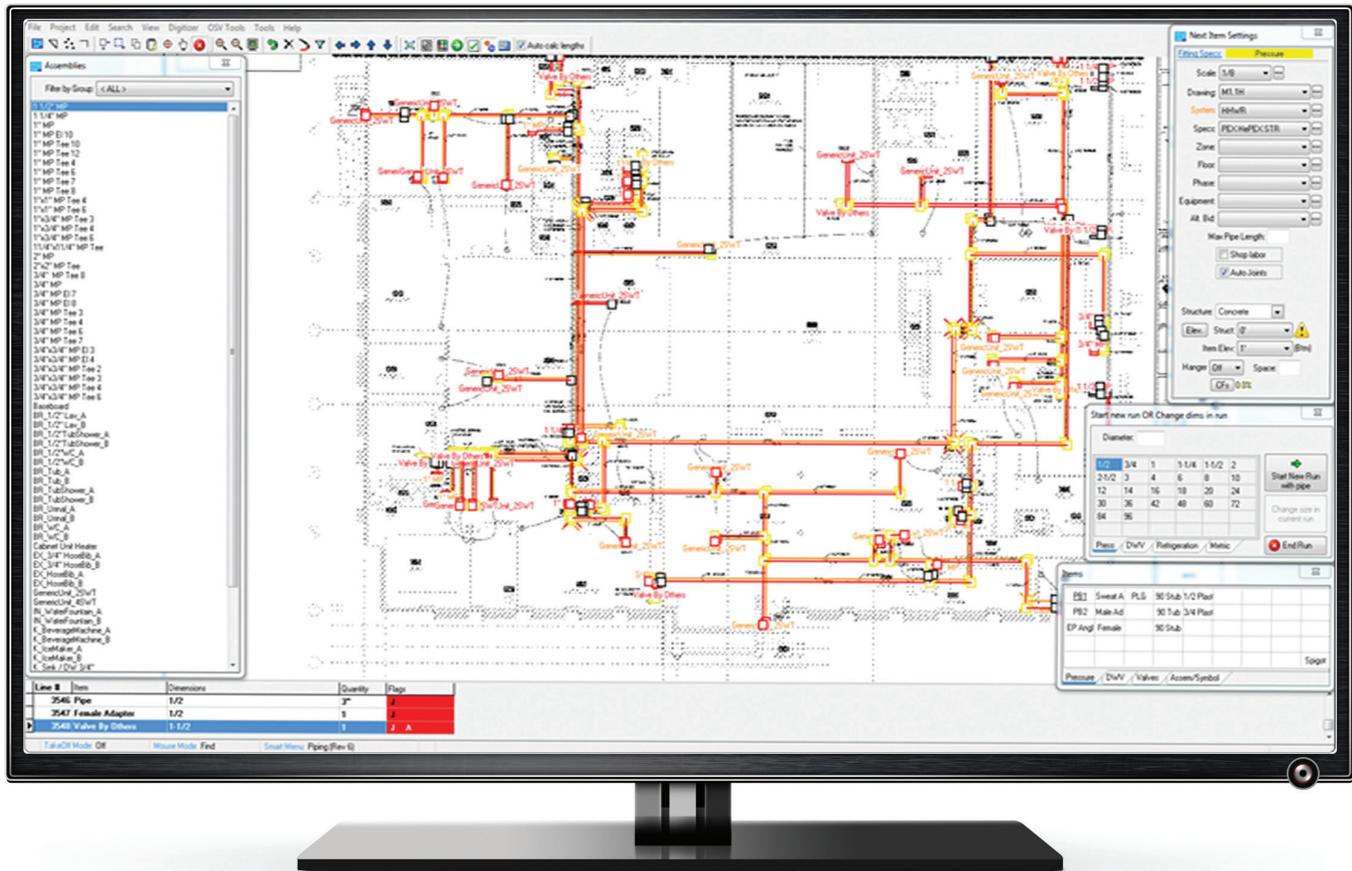
Submitted Cost Report

Project Name: 26612PT Page 1 of 3
 Bid ID: 26612PT Report Time: 5/16/2018 8:59:48AM
 Data Calculated: 5/16/2018 8:59:41 AM
 Base Bid

| Pipe | | | | | | | | |
|---|-------|-----|--------------|--------------|---------------|-----------|--------------|------------|
| Polyethylene - PEX Tubing - PETube | | | | | | | | |
| Item | Size | Qty | Price | Mat. Cost | Unit Lab. Hrs | Total Hrs | Labor Cost | Total Cost |
| White AquaPEX 20' | 1/2 | 25 | 2.27 | 56 | 0.06 | 1 | 0 | 56.16 |
| | 1-1/4 | 121 | 4.79 | 580 | 0.06 | 7 | 0 | 579.92 |
| | 1-1/2 | 14 | 5.64 | 77 | 0.06 | 1 | 0 | 77.10 |
| | 2 | 50 | 11.25 | 566 | 0.07 | 4 | 0 | 565.85 |
| White AquaPEX 300' | 1/2 | 712 | 0.75 | 520 | 0.05 | 36 | 0 | 510.88 |
| | 3/4 | 317 | 1.26 | 400 | 0.05 | 16 | 0 | 399.60 |
| Polyethylene - PEX Tubing - PETube Totals: | | | 1,239 | 2,199 | 65 | 0 | 2,199 | |
| Pipe Totals: | | | 1,239 | 2,199 | 65 | 0 | 2,199 | |

| Fittings | | | | | | | | |
|---|-------------|-----|-------|-----------|---------------|-----------|------------|------------|
| Polyethylene - Uponor - PEX Fittings - PETube | | | | | | | | |
| Item | Size | Qty | Price | Mat. Cost | Unit Lab. Hrs | Total Hrs | Labor Cost | Total Cost |
| 90 Stub Elb | 1/2 | 1 | 17.45 | 17 | 0.26 | 0 | 0 | 17.45 |
| | 3/4 | 2 | 39.15 | 78 | 0.32 | 1 | 0 | 78.30 |
| Drip Ear El PEX/FPT | 3/4 | 2 | 34.20 | 68 | 0.48 | 1 | 0 | 68.40 |
| EP Elbow | 1/2 | 33 | 2.10 | 69 | 0.09 | 3 | 0 | 69.30 |
| | 3/4 | 21 | 2.60 | 55 | 0.12 | 3 | 0 | 54.60 |
| | 1-1/4 | 7 | 13.25 | 93 | 0.17 | 1 | 0 | 92.75 |
| | 1-1/2 | 1 | 17.65 | 18 | 0.20 | 0 | 0 | 17.65 |
| | 2 | 2 | 68.70 | 137 | 0.25 | 1 | 0 | 137.40 |
| EP Plug | 1/2 | 54 | 1.30 | 70 | 0.05 | 3 | 0 | 70.20 |
| | 3/4 | 2 | 2.05 | 4 | 0.05 | 0 | 0 | 4.10 |
| EP Reducing Cplg | 3/4x1/2 | 3 | 3.55 | 11 | 0.10 | 0 | 0 | 10.65 |
| | 1x3/4 | 2 | 5.10 | 10 | 0.13 | 0 | 0 | 10.20 |
| EP Tee | 1/2 | 4 | 2.10 | 8 | 0.12 | 0 | 0 | 8.40 |
| | 3/4 | 2 | 3.55 | 7 | 0.15 | 0 | 0 | 6.70 |
| EP Tee Reducing | 3/4x1/2x1/2 | 7 | 3.20 | 22 | 0.13 | 1 | 0 | 22.40 |
| | 3/4x1/2x3/4 | 3 | 3.20 | 10 | 0.14 | 0 | 0 | 9.60 |
| | 3/4x3/4x1/2 | 13 | 2.70 | 35 | 0.14 | 2 | 0 | 35.10 |
| | 1x3/4x3/4 | 1 | 5.30 | 5 | 0.17 | 0 | 0 | 5.30 |
| | 1x1x1/2 | 2 | 5.55 | 11 | 0.17 | 0 | 0 | 11.10 |
| | 1-1/4x1x3/4 | 3 | 11.95 | 36 | 0.20 | 1 | 0 | 35.85 |

Bill of materials estimate

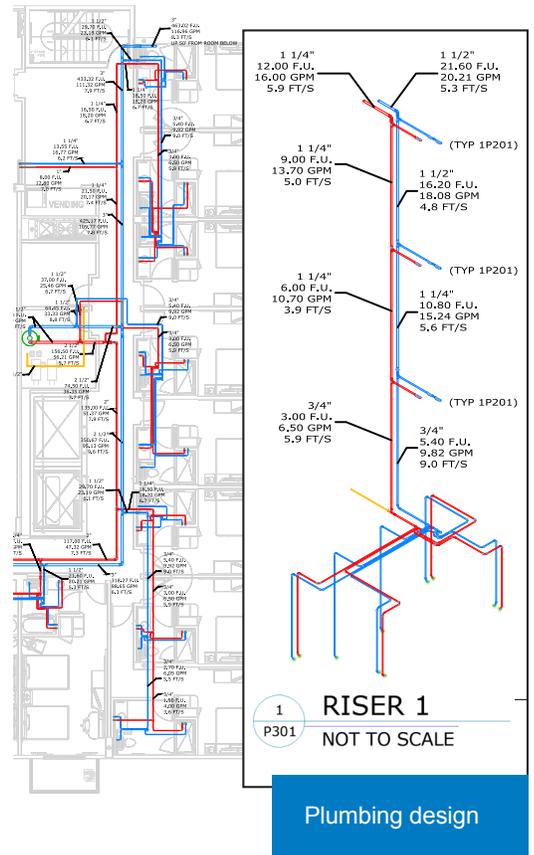


Design services

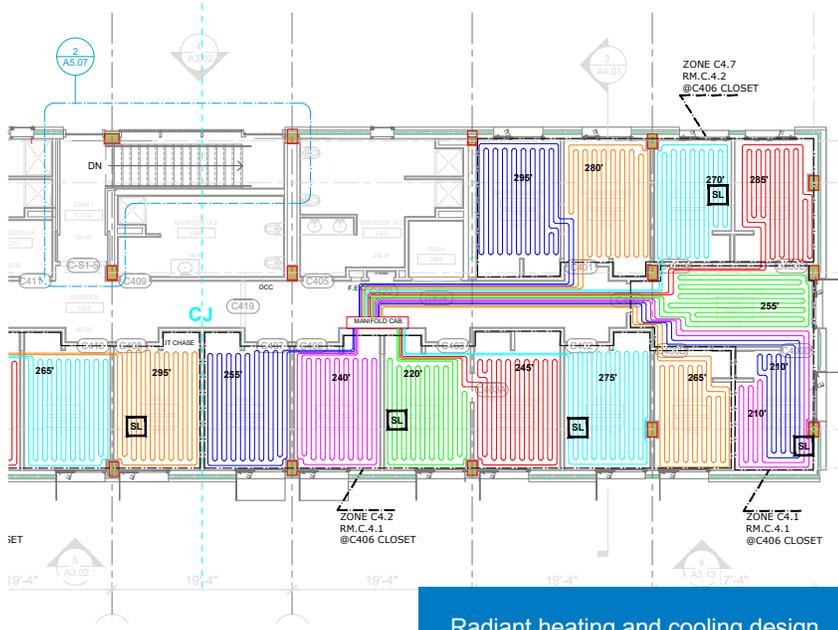
Experienced designers and project managers specializing in PEX system design will employ best practices while optimizing piping layout and sizing procedures to meet the demanding needs of code requirements and industry standards.

Uponor design advantage

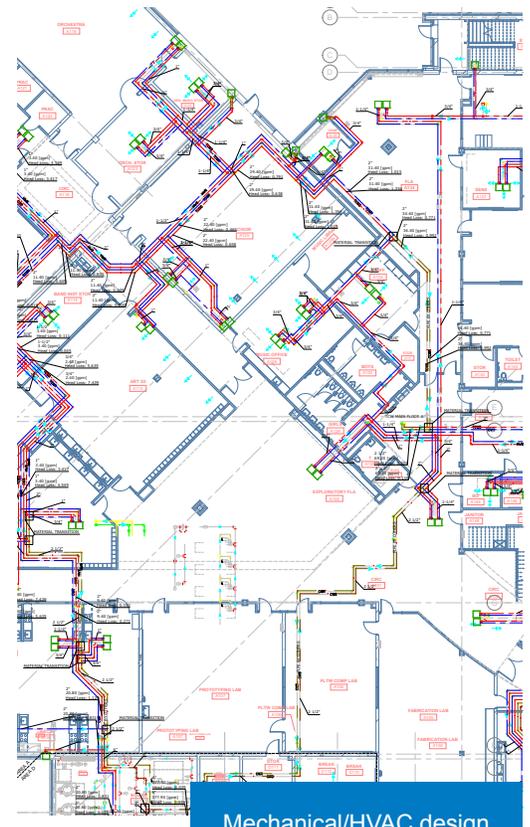
- Experienced, industry-affiliated, ASHRAE and ASPE certified staff of professionals
- Personalized project consultants for tailored support based on project phase
- Broad suite of services from concept to construction
- Pipe sizing using unique properties of Uponor PEX systems
- Customized bill of materials (e.g., units, risers, floors)



Plumbing design



Radiant heating and cooling design



Mechanical/HVAC design

Building information modeling (BIM)

Uponor offers product data in the right formats and in the right places to quickly and accurately design your PEX project.

Our on-demand library of BIM files and CAD details allow professionals to access hundreds of product parts in 32 available file formats that can be downloaded, inserted directly or emailed via CAD cart for quick, accurate designs and estimations. The top 100 contracting firms in North America are vetting and using Uponor content every day, so you can feel confident in our product data to meet your project design needs.



Revit templates

Leverage Uponor product-specific routing preferences with our pre-loaded Revit templates for plumbing, radiant, hydronic (mechanical/HVAC) and underground pre-insulated piping systems on uponorengineering.com.



Technical resources

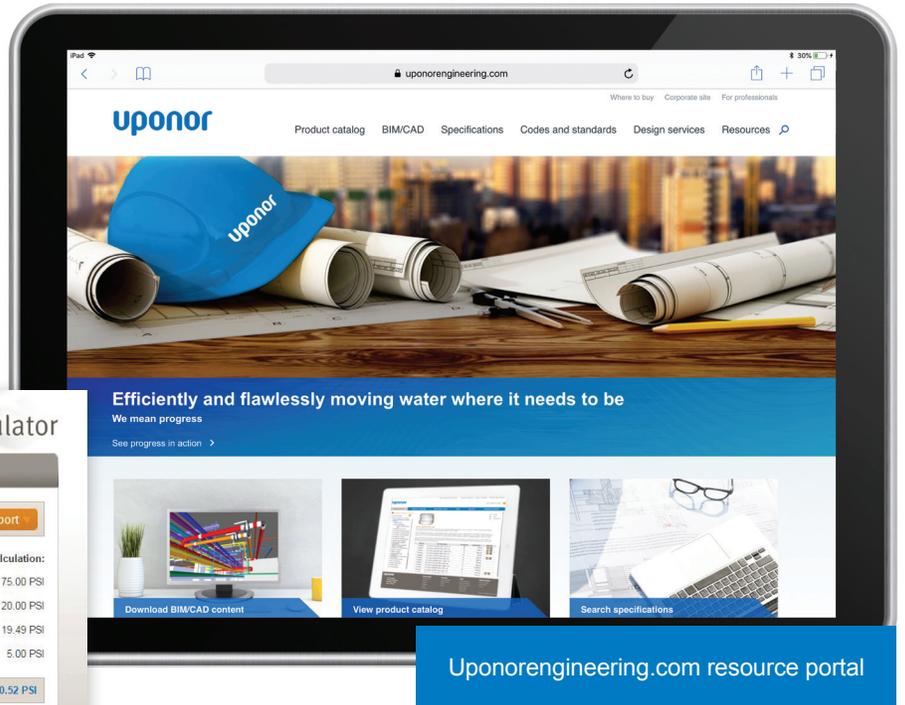
From comprehensive online resources to extensive field support, Uponor delivers what you need for a successful project schedule and an on-time project delivery.

Online resources

- Uponorengineering.com custom portal for contractors and engineers
- Codes, standards, listings, reports, manuals, submittals, specifications
- Pipe sizing calculator
- Online design request form
- Technical support

Field support

- Pre-construction meetings
- Jobsite training
- Quality audits to ensure proper installation



Water Size Chart for Uponor AquaPEX:

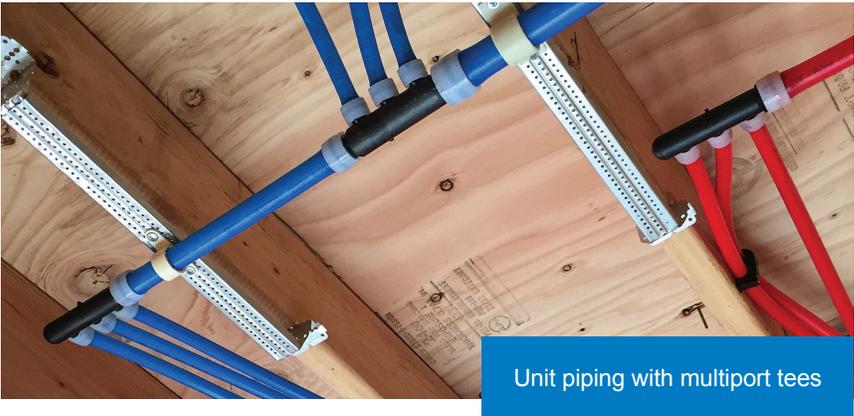
| Uponor AquaPEX Water Size Table 2012 UPC - Flush Tank 100% Water @ 60°F 10.849 PSI/100ft. Max. Velocity = 10 ft./sec. | | | | Uponor AquaPEX Water Size Table 2012 UPC - Flush Tank 100% Water @ 120°F 10.849 PSI/100ft. Max. Velocity = 8 ft./sec. | | | | Uponor AquaPEX Water Size Table 2012 UPC - Flush Tank 100% Water @ 110°F 10.849 PSI/100ft. Max. Velocity = 2 ft./sec. | | | |
|---|------------|---------------------|-------|---|------------|---------------------|--------|---|------------|---------------------|-------|
| Pipe Size | WSFU Range | Velocity (ft./sec.) | GPM | Pipe Size | WSFU Range | Velocity (ft./sec.) | GPM | Pipe Size | WSFU Range | Velocity (ft./sec.) | GPM |
| 3/8" | 0 -- 0 | 3.80 | 1.14 | 3/8" | 0 -- 0 | 4.20 | 1.26 | 3/8" | 0 -- 0 | 2.00 | 0.60 |
| 1/2" | 1 -- 2 | 4.80 | 2.65 | 1/2" | 1 -- 2 | 5.30 | 2.93 | 1/2" | 0 -- 0 | 2.00 | 1.10 |
| 3/4" | 3 -- 7 | 6.10 | 6.72 | 3/4" | 3 -- 8 | 6.70 | 7.39 | 3/4" | 1 -- 1 | 2.00 | 2.20 |
| 1" | 8 -- 16 | 7.30 | 13.28 | 1" | 9 -- 20 | 8.00 | 14.55 | 1" | 2 -- 3 | 2.00 | 3.64 |
| 1 1/4" | 19 -- 35 | 8.40 | 22.85 | 1 1/4" | 21 -- 33 | 8.00 | 21.76 | 1 1/4" | 4 -- 6 | 2.00 | 5.44 |
| 1 1/2" | 36 -- 67 | 9.40 | 35.61 | 1 1/2" | 34 -- 54 | 8.00 | 37.68 | 1 1/2" | 7 -- 9 | 2.00 | 7.60 |
| 2" | 68 -- 199 | 10.00 | 64.97 | 2" | 55 -- 134 | 8.00 | 100.00 | 2" | 10 -- 13 | 2.00 | 10.00 |
| 2 1/2" | 200 -- 375 | 10.00 | 98.01 | 2 1/2" | 135 -- 270 | 8.00 | 135.00 | 2 1/2" | 14 -- 18 | 2.00 | 14.00 |

A blue box at the bottom right contains the text 'PEX piping sizing charts'.

Plumbing applications

Uponor plumbing solutions, available in sizes up to 3", deliver confidence, efficiency and high performance in every application.

- Main piping
- Riser piping
- Unit piping
- In-slab piping
- Below-grade piping
- Purified water systems
- Reclaimed (graywater) systems
- Flush banks
- Domestic hot-water recirculation
- Water service supply piping
- Pre-insulated piping
- Pre-sleeved piping



Mechanical/HVAC applications

Using Uponor PEX for chilled water and heating hot-water distribution is a very durable, high-performing and cost-effective solution for transporting water to terminal units.

Piping solutions for

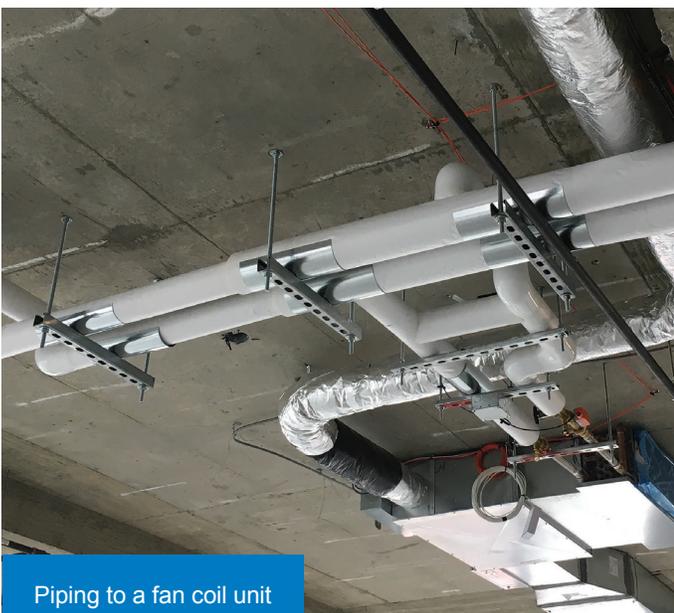
- Reheat coils
- Fan coils
- Baseboard radiators
- Heat pumps
- Chilled beams



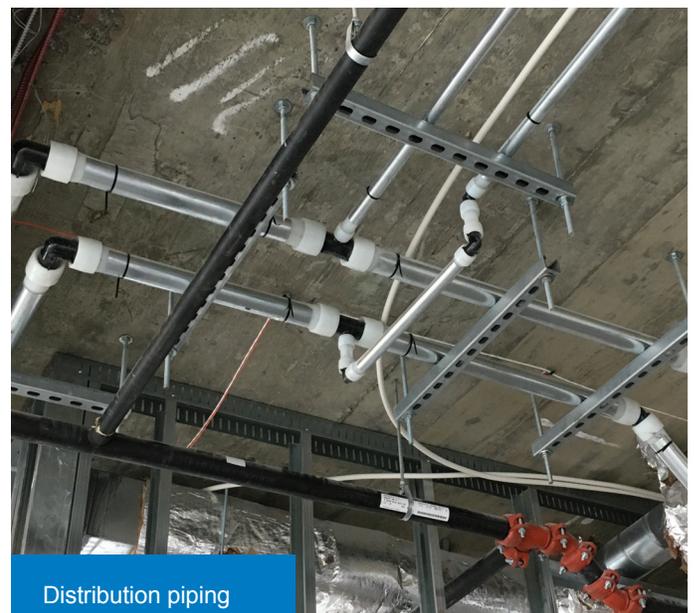
Piping to a variable air volume (VAV) system



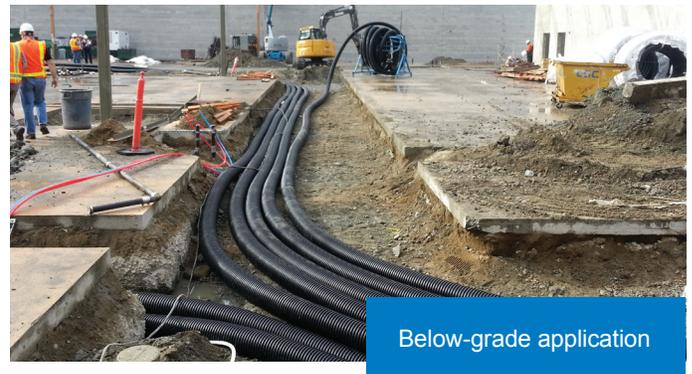
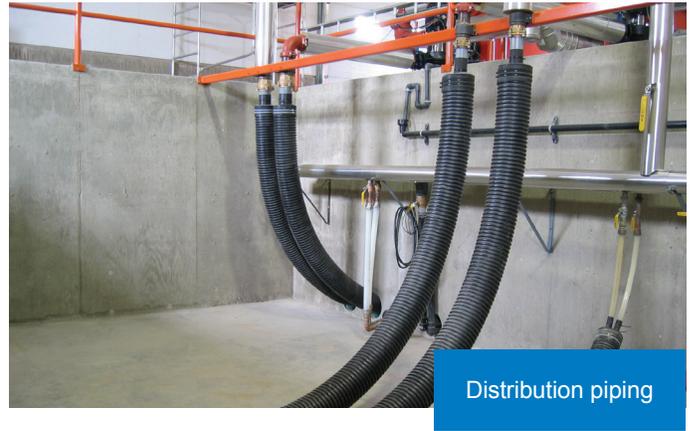
Four-pipe application



Piping to a fan coil unit



Distribution piping



Underground applications

Look to Uponor's Ecoflex[®] pre-insulated pipe system for labor and energy savings.

The Ecoflex advantage

- 60% less installation time vs. rigid systems
- Flexible and lightweight
- Eliminates the need for straight or level trenches
- No expansion loops necessary
- Bends around obstacles
- Fewer (or no) underground connections
- Continuous runs up to 1,000 feet
- No welders or robust tooling required
- System performance and longevity
- Available in ¾" to 4" PEX service pipe sizes





Radiant manifold cabinet

Radiant applications

Radiant heating and cooling, snow and ice melting and turf conditioning systems maximize energy performance for today's commercial projects.

Uponor radiant advantage

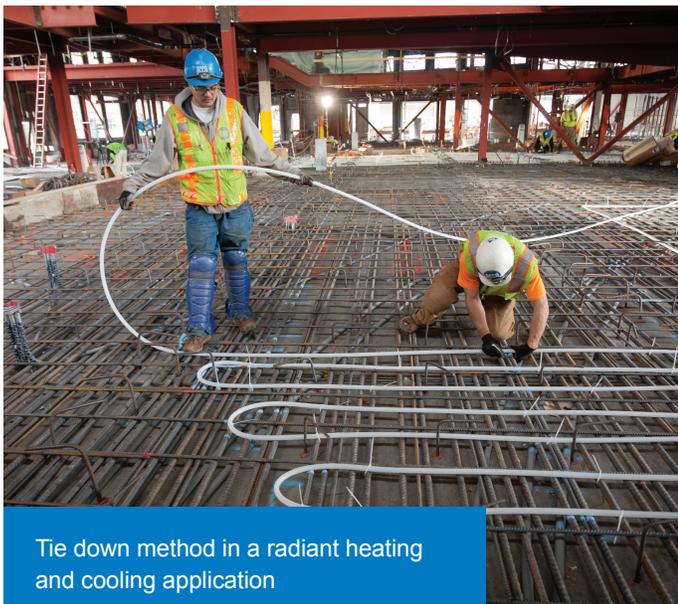
- First to bring radiant heating to North America more than 40 years ago
- 30% energy efficiency (over other HVAC solutions) when paired with a DOAS system
- Radiant cooling a key component of any high-performance, LEED®, or net-zero building
- Maximizes thermal comfort and indoor environmental quality (IEQ)

Radiant Rollout™ Mat advantage

- More than 50% labor savings over traditional installation methods
- 60% to 80% fewer manifold loops
- Reduces manifold cabinets and locations
- Custom designed to speed installation and commissioning
- 25-year transferable warranty on the Uponor PEX pipe and ProPEX fittings



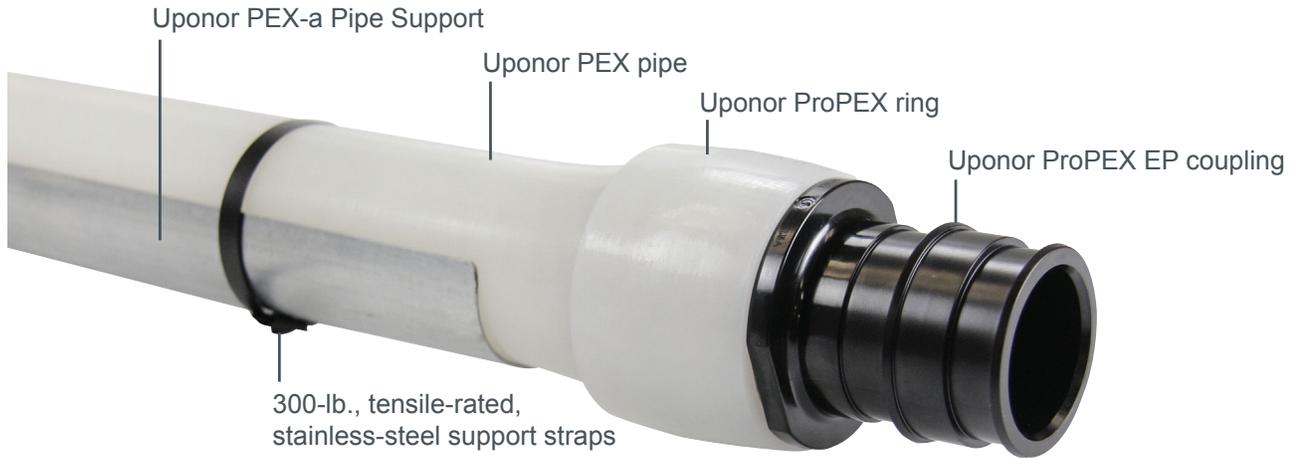
Radiant Rollout™ Mat in a turf conditioning application



Tie down method in a radiant heating and cooling application



Radiant Rollout™ Mat



Uponor PEX pipe

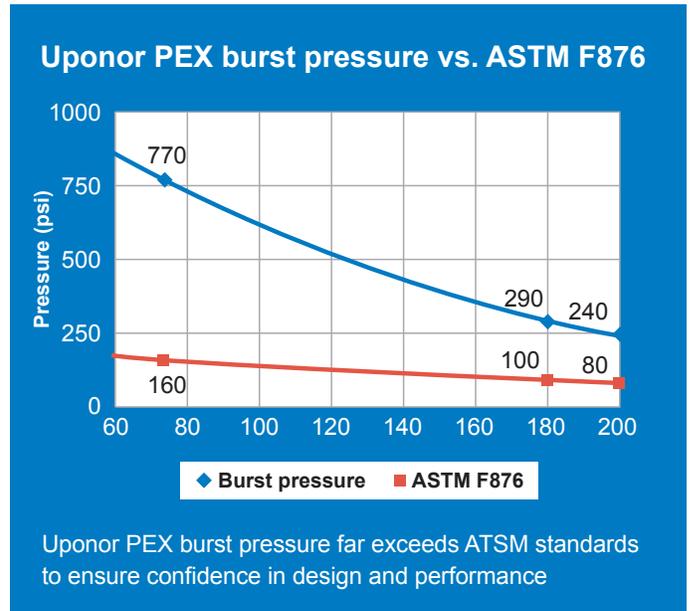
Most tested and third-party listed PEX in the industry

Uponor PEX advantage

- 40 years of proven performance
- 17 billion feet of pipe in service
- Resists corrosion, pitting and scaling
- Flexible for fewer required fittings
- Highly resistant to freeze damage
- Reduces chemicals and concentration levels needed to protect metallic components in hydronic systems

Uponor PEX-a Pipe Support

- Provides continuous support of Uponor PEX pipe
- Enables hanger spacing similar to copper
- Listed for plenum applications (ASTM E84/S102.2)
- Easily insulate around both pipe and support
- Helps to minimize expansion/contraction
- Available for 1/2" to 3 1/2" pipe sizes



Metals corrode



CPVC cracks

ProPEX[®] fittings

The only connection that gets stronger over time

ProPEX advantage

- Hundreds of millions of fittings in service worldwide
- Simple, fast, reliable
- Visual connection cannot be dry fit
- No hot work or chemicals required
- Fitting burst pressures over 3,000 psi
- 70% greater flow versus other PEX fitting systems
- Broad offering of transition fittings in sizes up to 3"



ProPEX engineered polymer (EP) fittings



ProPEX brass transitions and valves



Sampling of Uponor projects

P = Plumbing | H = Mech/HVAC | R = Radiant | U = Underground pre-insulated piping | S = Snow melt | T = Turf conditioning

| Project | Location | System | Project | Location | System |
|-------------------------------------|----------------------|---------|----------------------------------|-------------------|---------|
| NAIT's Centre for Applied Tech | Edmonton, AB | H | Santa Clara Condominium | Key West, FL | H |
| Wasilia Public Library | Wasilia, AK | H | Aventura Universal Resort | Orlando, FL | P, H |
| Wyndham Hotel | Huntsville, AL | P | Omni Hotel | St. Augustine, FL | P |
| Bryce Hospital | Tuscaloosa, AL | P | Le Meridien | Tampa, FL | P |
| Hilton Garden Inn | Phoenix, AZ | P | Waiea Ward Village | Honolulu, HI | H |
| Luhrs Marriott | Phoenix, AZ | H | Disney Aulani Resort | Kapolei, HI | P |
| Oxford Street Flats | North Vancouver, BC | H | Waihonua at Kewalo | Kewalo, HI | P |
| Peninsula Seniors Village | Surrey, BC | H | Microtel Inn & Suites | Ames, IA | P |
| ARIA Vancouver | Vancouver, BC | H | Kootenai Health Phase II | Coeur d'Alene, ID | H |
| David Brower Center | Berkeley, CA | R | St. Luke's Wood River Med Center | Ketchum, ID | H |
| Lawrence Berkeley National Lab | Berkeley, CA | R | Rexburg Water Reclamation | Rexburg, ID | H |
| Maurice J. Gallagher Jr. Hall | Davis, CA | R | Toyota Park | Bridgeview, IL | T |
| Water + Life Museum | Hemet, CA | R | Soldier Field | Chicago, IL | T |
| Chateau at the Village | Lake Tahoe, CA | H | Hampton Inn & Suites | Schaumburg, IL | P |
| UCLA Wasserman Eye Center | Los Angeles, CA | R | Candlewood Suites | Springfield, IL | P |
| San Diego State Aztec Center | San Diego, CA | R | Henri Studio | Wauconda, IL | R, S |
| California Academy of Sciences | San Francisco, CA | R | Cook Pharmica | Bloomington, IN | H |
| First Look Media | San Francisco, CA | H | Indiana University | Bloomington, IN | H |
| Moscone Center | San Francisco, CA | H | Kansas University GSP Hall | Lawrence, KS | P |
| Pier 15 Exploratorium | San Francisco, CA | R | University of Louisville Dorms | Louisville, KY | P |
| The Battery Social Club | San Francisco, CA | P | Children's Museum | New Orleans, LA | R |
| IDeAS Headquarters | San Jose, CA | R | The Jung Hotel & Residences | New Orleans, LA | H |
| San Jose Civic Center | San Jose, CA | R | Amherst College Science Center | Amherst, MA | H |
| Nvidia | Santa Clara, CA | H | D Condos | Winnipeg, MB | H |
| CSU Monterey Building | Seaside, CA | H | Value Place Hotel | Frederick, MD | P |
| Hall Winery | St. Helena, CA | R | Maine Medical Center | Augusta, ME | R |
| Bandimere Speedway | Arvada, CO | R | The Union at Dearborn | Dearborn, MI | H |
| Rubey Park | Aspen, CO | H | Health Pointe | Grand Haven, MI | H |
| Masters at Copper Creek | Breckenridge, CO | H | Amway Hangar | Grand Rapids, MI | H |
| Creede Jr-Sr High School | Creede, CO | H | Linden Square Assisted Living | Saline, MI | P, H, R |
| Four Seasons Resort | Denver, CO | P | JW Marriott | Bloomington, MN | P, H, S |
| Sports Authority Field at Mile High | Denver, CO | T | Radisson Blu Mall of America | Bloomington, MN | P |
| Erie Elementary School | Erie, CO | H | Wolf Ridge Learning Center | Finland, MN | U |
| Colorado State Univ Power House | Fort Collins, CO | P, H, R | Talo Apartments | Golden Valley, MN | P |
| National Renewable Energy Lab | Golden, CO | R | American Swedish Institute | Minneapolis, MN | P, S |
| The Viceroy Snowmass | Snowmass Village, CO | P | Loring Park Tower | Minneapolis, MN | P |
| The Lion | Vail, CO | H | Millworks Lofts | Minneapolis, MN | P, H |
| Ritz-Carlton | Vail, CO | P | US Bank Stadium | Minneapolis, MN | P, H, S |
| West Bristol School | Bristol, CT | H | Carleton College | Northfield, MN | R |
| Westin Hotel | Wilmington, DE | P | River Bluff Elementary | Red Wing, MN | H |

For a comprehensive list of projects in your area, contact your Uponor sales representative or visit uponorpro.com/casestudies.

P = Plumbing | H = Mech/HVAC | R = Radiant | U = Underground pre-insulated piping | S = Snow melt | T = Turf conditioning

| Project | Location | System | Project | Location | System |
|-----------------------------------|-------------------|---------|------------------------------------|----------------------|---------|
| The Homestead of Rochester | Rochester, MN | P, H | Holiday Inn | St. George, SC | P |
| Laketown Elementary | Waconia, MN | H | Marriott Courtyard | Saskatoon, SK | P |
| Fulton State Hospital | Fulton, MO | H | Sequoia Square Phase III | Saskatoon, SK | H |
| Laurel Water Treatment Plant | Laurel, MT | H | Embassy Suites | Chattanooga, TN | P |
| Missoula College | Missoula, MT | H | Hunter Museum of American Art | Chattanooga, TN | R |
| Ferreira Construction Company | Branchburg, NJ | R | Belmont University Center | Nashville, TN | P, H |
| CityCenter | Las Vegas, NV | R | Apartments on Esperanza Crossing | Austin, TX | U |
| The Residence Inn | Kingston, NY | P | Fairway Village | Austin, TX | U |
| Hearst Tower | Manhattan, NY | R | HEB Mueller | Austin, TX | P, R, U |
| Cooper Union | New York, NY | R | SkyHouse Condos | Austin, TX | P |
| DeChantal Apartments | Saranac Lake, NY | P | Homewood Suites | Dallas, TX | P, H |
| Country Inn & Suites | Asheville, NC | P | El Paso Communications Center | El Paso, TX | H |
| Quail Hollow Condominiums | Charlotte, NC | U | Marriott Marquis | Houston, TX | P |
| Hyatt Place | Durham, NC | P | Katy Cimmeron Elementary | Katy, TX | P |
| North Carolina State Univ Housing | Raleigh, NC | P | The St. Regis | Deer Valley, UT | P |
| Cleveland Clinic | Cleveland, OH | R | High West Distillery | Park City, UT | P, H |
| Dayton Metro Library | Dayton, OH | H | Paragon Station | Salt Lake City, UT | H |
| Comfort Suites | Lorain, OH | P | Marriott Courtyard | Alexandria, VA | P |
| The Wick Tower | Youngstown, OH | H | St. Thomas Aquinas Seminary | Dillwyn, VA | H |
| WinStar World Casino Hotel | Thackerville, OK | P | Institute for Contemporary Art | Richmond, VA | H |
| Aloft Tulsa | Tulsa, OK | P, H | The Cavalier Hotel | Virginia Beach, VA | P |
| Mayo Hotel | Tulsa, OK | P | The Residence at Quarry Hill | South Burlington, VT | H |
| Vandever Historical Building | Tulsa, OK | P | Avalon Bay Apartments | Alderwood, WA | P |
| Hamilton Port Authority | Hamilton, ON | H | Bellevue Towers | Bellevue, WA | P |
| JW Marriott | Minett, ON | P | Enatai Elementary School | Bellevue, WA | H |
| Hilton Hotel and Suites | Niagara Falls, ON | P | WSU Clean Technology Lab | Pullman, WA | P, H |
| Delta Toronto Hotel | Toronto, ON | P, R, S | Ballard Manor Retirement Home | Seattle, WA | R |
| Shangri-La Hotel | Toronto, ON | P, R, S | Pan Pacific Hotel | Seattle, WA | P |
| Western Oregon University | Monmouth, OR | R | SIERR at McKinstry Station | Spokane, WA | R, S |
| George Fox University Dorms | Newberg, OR | H | 1441 L Street | Washington, DC | P |
| Cambria Suites | Troutdale, OR | P | AVEC on H Street | Washington, DC | H |
| Renaissance Hotel | Allentown, PA | P | JFK Center for the Performing Arts | Washington, DC | H |
| Urban Outfitters Headquarters | Philadelphia, PA | R | The Garrett | Washington, DC | P |
| Carnegie Mellon Tepper School | Pittsburgh, PA | R | Wharf Parcel | Washington, DC | H |
| Mohegan Sun at Pocono Downs | Wilkes-Barre, PA | P | Wormley Row | Washington, DC | R |
| Aloft Montreal Airport | Dorval, QC | P | Lambeau Field | Green Bay, WI | T |
| AC Hotel Montreal | Montreal, QC | P, R | The Charmant Hotel | La Crosse, WI | H |
| Westin Hotel and Resort | Montreal, QC | P | Anchor Bank Building | Madison, WI | H |
| Holiday Inn Express | St. Hyacinthe, QC | P | Arbor Crossing Apartments | Madison, WI | P, R |
| Clemson University Lee III | Clemson, SC | R | Vortex Optics | Middleton, WI | R |



Wharf Parcel, Washington, DC
Uponor Mechanical/HVAC Piping



The Jung Hotel, New Orleans, LA
Uponor Plumbing System



Waiea Tower, Honolulu, HI
Uponor Mechanical/HVAC Piping



Cavalier Hotel, Virginia Beach, VA
Uponor Plumbing System



Belmont Univ. Center, Nashville, TN
Uponor Plumbing, Mech/HVAC Piping



WSU Clean Tech Lab, Pullman, WA
Uponor Plumbing, Mech/HVAC Piping



Clemson Univ Lee Hall, Clemson, SC
Radiant Heating and Cooling



High West Distillery, Park City, UT
Uponor Plumbing, Mech/HVAC Piping



Marriott Marquis, Houston, TX
Uponor Plumbing System



Aventura Universal, Orlando, FL
Uponor Plumbing, Mech/HVAC Piping



Shangri-La Hotel, Toronto, ON
Plumbing, Radiant, Snow Melt



National Renewable Energy Lab
Golden, CO, Radiant Heating/Cooling



NAIT's Centre for Applied Technologies,
Edmonton, AB, Mech/HVAC Piping



Pier 15 Exploratorium, San Francisco,
CA, Radiant Heating and Cooling



**Wolf Ridge Environmental Learning
Center**, Finland, MN, Ecoflex



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Uponor Turf Conditioning

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