4 New Park Rd, East Windsor, CT 06088
phone 413-543-8733 fax 413-543-8737
Email: info@hydronicalternatives.com

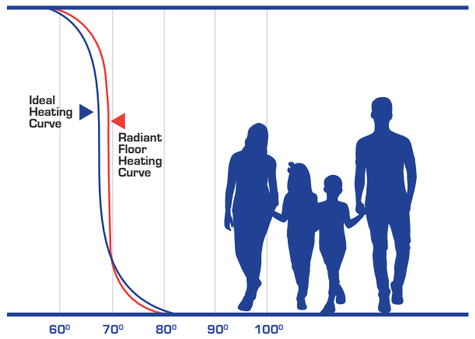
www.hydronicalternatives.com

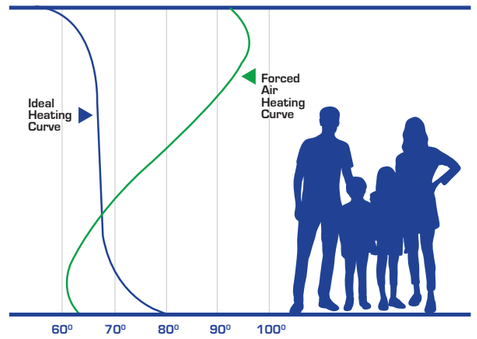
www.hydronicalternatives.com

Hydronic Radiant Floor Heating

What is Hydronic Radiant Floor Heating?

Hydronic Radiant Floor Heating is a system that uses warm liquid circulated through pipes in the floor to uniformly heat a space. These pipes, typically made of polyethylene tubing (PE-RT or PEX), are strategically placed in a pattern within concrete and above or below a subfloor. Warm water continuously circulates through the pipes (connected to a central heating source and manifold), transferring heat through radiation to the floor. This method provides efficient and even heating, addressing environmental concerns and reducing utility costs.





The radiant floor heating curve most closely resembles the ideal heating curve

Benefits:

- QUIET: Unlike forced air or Hydro-Air systems, Hydronic Radiant Floor Heating operates silently without air duct noise or drafts, as air movement happens naturally through convection. This also minimizes the spread of dust and allergens.
- COMFORTABLE: The system delivers warmth near the floor, eliminating cold surfaces that draw heat away, ensuring a cozier environment.
- ENERGY EFFICIENT: Heating systems account for nearly 45% of the average energy bill, constituting the highest energy consumption in the US. Hydronic Radiant Floor Heating outperforms traditional heating systems (e.g., forced-air), as it heats directly instead of relying on rising hot air. Operating at lower temperatures (maximum 84 degrees Fahrenheit) speeds up warming, cutting energy bills by approximately 15%.
- FURNITURE FRIENDLY: The Hydronic Radiant Floor Heating system is invisible and will not impact furniture arrangement.
- LOW MAINTENANCE: With few moving parts and no filter replacements, the system is easy to maintain. Yearly boiler inspections and pressure tests for leaks are recommended.

Types of Floor Installations

There are two primary methods of floor installations: wet installation and dry installation.

Wet installation involves embedding the tubing in concrete, whether in a concrete slab or a thin layer of concrete or gypsum. Concrete slabs efficiently store heat, but they have a slower response time for heating and cooling. To counter this, we suggest strategies like constant circulation, modulating mixing or diverter valves, and controls that help temper the floors to manage the gradual and even distribution of heat. This approach helps control what's referred to as the "flywheel effect".

Dry installation is a popular choice for installations above or below a subfloor within traditional framing. One method involves placing radiant boards over the subfloor, with grooves to hold the tubing. Another approach is fitting tubing into extruded aluminum diffusers attached to the subfloor between joists. Regardless of the method, insulating the joist bays is essential to create a thermal break that directs the heat upward. This insulation is necessary whether the installation is done from above or below the subfloor.

Types of Floor Installations

There are two primary methods of floor installations: wet installation and dry installation.

Wet installation involves embedding the tubing in concrete, whether in a concrete slab or a thin layer of concrete or gypsum. Concrete slabs efficiently store heat, but they have a slower response time for heating and cooling. To counter this, we suggest strategies like constant circulation, modulating mixing or diverter valves, and controls that help temper the floors to manage the gradual and even distribution of heat. This approach helps control what's referred to as the "flywheel effect".

Dry installation is a popular choice for installations above or below a subfloor within traditional framing. One method involves placing radiant boards over the subfloor, with grooves to hold the tubing. Another approach is fitting tubing into extruded aluminum diffusers attached to the subfloor between joists. Regardless of the method, insulating the joist bays is essential to create a thermal break that directs the heat upward. This insulation is necessary whether the installation is done from above or below the subfloor.

Applications

- Commercial: Offices, retail spaces, hotels, restaurants, warehouses, industrial facilities, healthcare centers, maintenance garages
- Residential: Single-family homes, multi-family residences, condominiums, townhouses, bathrooms, mudrooms, kitchens

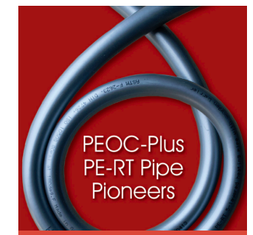
Overview of System Components

- CreteHeat: Provides under-slab insulation for concrete applications.
- RadiantBoard: Suitable for above-subfloor applications.
- Radiant SideTrack: Designed for below-subfloor applications.
- PE-RT (or PEX) tubing: Distributes hot water from a boiler to the floors.
- Manifold: Distributes hot water across various hydronic piping circuits.
- 3 or 4-way Valves: Used for mixing and diverting to regulate water temperature sent to the floor.
- Motorized actuators: Controls the mixing and diverting valves, modulating system water temperature.
- Control pack: Operates the system based on user-defined settings.
- Thermistor (Thermostat): Allows users to set and maintain the desired temperature.


CreteHeat Insulation


Radiant Board


Radiant SideTrack

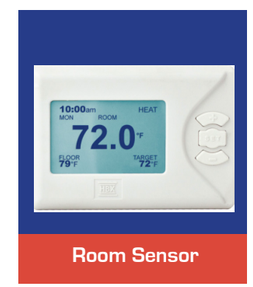


PE-RT Tubing


Distribution Manifold


Mixing Valves & Actuator


Radiant/Boiler Control


Room Sensor