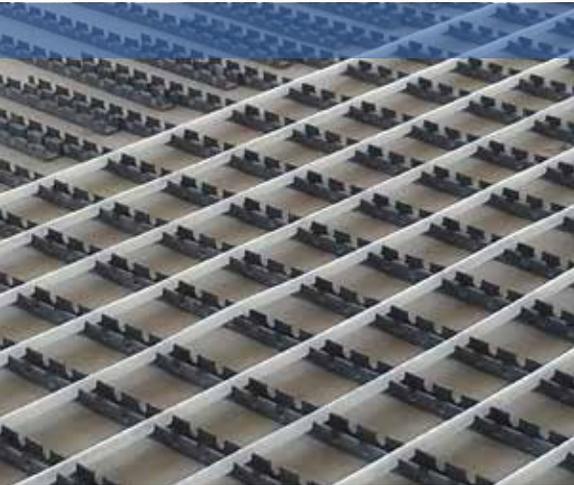




Archetype House: in-floor radiant heating meets needs for sustainable technologies



CASE STUDY



Since its construction in 2008, it has been the home of various research projects focusing on innovative products and technologies that are now influencing current building practices in sustainable housing.

Through education and training, the Archetype House is influencing how communities are built, planned, constructed and lived in to minimize ecological footprints and improve people's quality of life.

Uponor's hydronic in-floor radiant heating system was one of the chosen technologies used in the Archetype House. These systems can provide greater architectural freedom, superior comfort and improved energy efficiency.

In a radiant heating system, warm water circulates through a series of crosslinked polyethylene [PEX] piping loops embedded in the concrete floor. The flow rate and temperature of the water is controlled to regulate the temperature of the thermal mass. The warmed surface radiates heat to the objects and occupants in the space, creating a comfortable environment. This same principle is used in radiant cooling; the difference is in the temperature of the water being circulated.

Located at the Toronto and Region Conservation Authority's [TRCA] Living City Campus at Kortright, the Archetype Sustainable House was designed to demonstrate the best in environmentally-sustainable Wdesign and which would be a model for housing development in the GTA and beyond.

By controlling the slab temperature, a radiant cooling system can effectively manage all or a portion of the structure's sensible load, thereby reducing the total demand placed on a forced-air system.

Radiant systems can reduce overall building energy usage in a number of different ways. For one, because the heat-transfer capacity of water is much higher than that of air, a radiant system that uses a circulator to move water [in lieu of a fan to move air] can achieve the same heat transfer using significantly less energy.

Also, because of the way the human body exchanges heat with its surrounding environment, a radiant system can achieve comparable levels of comfort at lower room temperatures for heating and higher room temperatures for cooling. In fact, studies have shown total energy savings for typical office buildings on the order of 17 to 53 percent.

As building owners and jurisdictions continue to demand high-performance buildings, system designers are looking for sustainable solutions to reduce energy usage, while maintaining function. By taking advantage of a building's thermal mass, an embedded-tube radiant system can be an effective and energy-efficient alternative to a conventional forced-air-only system.

For more on the Archetype House and Uponor's contribution visit:
<http://www.uponorpro.com/marketing-and-sales/case-studies/case-study-search>.