



COMFORT UNDERFOOT

Convenience, efficiency and health are selling points for in-floor heating

by J.K. Malmgren

The idea of heating the floors to add comfort and even replace other forms of heat is not new. In fact, in Europe, it is the norm in many areas. Here in North America, the advantages of in-floor heat are being discovered more slowly and the bulk of installations are done in specific spaces — the bathroom, the kitchen, or in areas of the building prone to cold or even freezing.

"We see it [in-floor heat] as much the same as air conditioning in cars 15 years ago," says Jason Bourque, program manager, Canadian Hydronics Council (CHC), a council within the Canadian Institute of Plumbing and Heating (CIPH). "Luxury cars had it, but others didn't. But now, it's pretty much standard. A lot of the places that have in-floor heating right now are upscale. But, as people see it, it will become more widespread and the economies of scale will kick in."

The driving force behind in-floor

heat is comfort — the radiant heat is even and ambient and makes for an environment unlike other systems. Most in-floor systems also offer room-by-room heat control, so you use it where and when you need it. That level of comfort and control has driven the market to date and many see it as the greatest prospect for the future, as well.

"A lot of baby boomers are now building their last homes, their dream homes," says Bourque. "They're looking at the added comfort that in-floor heat can bring."

What they are finding is something more than just that comfort. In-floor radiant heat is a healthier alternative than forced air, it reduces the amount of dust and allergens in the air. It eliminates the need for vents and baseboard heaters. Plus, it all but eliminates the noise associated with heating systems.

Consumers and builders alike have more than one choice when it comes to in-floor heat, and more than one option

when it comes to installing a system. The CHC supports a hydronics (hot water) system, which is the most prevalent form of radiant heat of all types being used in Canada, with between five and six per cent of the total heating market. It is not only the most well known, it has some significant advantages for builders and renovators already using gas.

"You're using the same water heater for your hot water and your heat," says Mike Weiss, marketing coordinator for Ipex, one of the industry's leaders in radiant water piping systems with literally millions of feet installed across North America.

Ipex's WarmRite® Floor system builds from its patented XPA® pipe or PEX tubing, combined with a building-block approach to preassembled control panels and a strong program of training and support for its customer builders and contractors — who become WarmRite preferred installers.

"It's not as simple as just following code," says Weiss. "But, if you look at some systems, they have all of their pipe coming into a manifold. With this, there's one unit that all of the pipe runs out of — it's a nice, clean system."

In response to a growing interest at the renovation level, in 2005 Ipex introduced K-Tile, an underlayment system that can convert almost any room to in-floor radiant heat in much the same way a laminate floor is laid.

"Basically, you're snapping the pipe into the tiles," says Weiss.

Because it is perceived as a luxury, in-floor heat is something that people are considering more and more when they look to renovate and, by the same token, developers are beginning to see the potential of offering it as an option.

"This may be the most profitable upgrade that they can sell to their customers, because people perceive it to be very expensive," says Gerry Lemieux, vice president of Britech Corp., a Canadian company that markets the Norwegian-made Nexans floor-warming cables and Millimat

warming mats, both electrical systems. Britech matches these with its own proprietary line of digital thermostats and controls. "Renovation is a very large part of our business, and it used to be the biggest part, but we're seeing developers beginning to understand the advantage."

Part of that understanding comes from an expanding market that is lowering the initial cost. "For a renovator, for a builder, the costs have come way down," says Lemieux. "You can do an 85-square-foot powder room with Nexans cable for about \$240." The cable can go under virtually any flooring surface and is made to last. "It's easy and reliable," says Lemieux. "Our cable is construction-site tough."

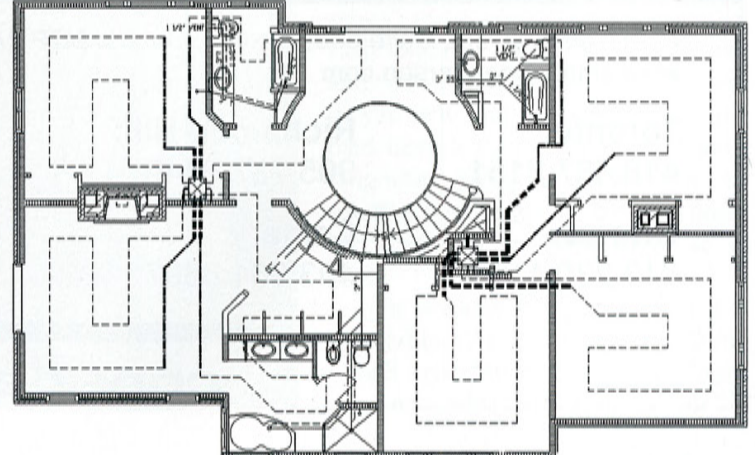
Electrical systems are growing in popularity because they can be used to distribute the heat widely through any subsurface by virtue of the bales they employ, and also because they can heat that subsurface rapidly.

"The principle of radiant heat is based on a constant quest for balance," says Stephanie Quinn, marketing manager for FLEXTHERM, a manufacturer of in-floor heating cable that is installed on a base surface of concrete, plywood or can be integrated into concrete foundations. "Heat moves from warm surfaces to cold surfaces in an effort to achieve equilibrium, therefore reducing temperature differences. The effect of our systems on the living space is that the room feels warmer even though the air is cool and comfortable."

Quinn says the systems, by their nature, are also more energy efficient. Radiant systems, which use air as a medium to distribute heat, tend to overheat in an effort to warm the room to the desired temperature.

"Hot air pools at the highest point of the room, while the floor remains cool; it is difficult to maintain a unified heat throughout the room," she says. "Overheating in this way results in extra energy expenditures. With FLEXTHERM systems, air is not being heated, so there is no pooling of hot air in the ceiling."

Left: installation of Nuheat's electrical mat-floor warming system. Right: a residential two-floor home featuring nine water coils and 13 separate heating zones from Legalett Canada.



The floor itself is being warmed, allowing the experience of a greater sense of warmth, while maintaining a cooler ambient air temperature. The higher the ceiling, the more noticeable the energy savings.

Those energy savings are increased when the system is properly managed. Nuheat, a manufacturer of an electrical radiant floor-warming system, has developed a thermostat system, Harmony, that offers a combination of energy efficiency and aesthetics. The seven-day programmable, flush-mounted thermostat is designed to add to the interior design rather than detract from it. Homeowners can change faceplates to have the thermostat match the decor. Plus, the company says it already has an energy advantage.

"Nuheat uses 12 watts per square foot," says Beth Boyle, public relations coordinator for Nuheat. "The system uses about the same electricity as the lightbulbs in the room, debunking the

myth that it costs a lot to run."

Ouellet Canada Inc., which makes electrical-heating systems of all types, is making its ThermaT[®] system easy to buy and install. It makes the strip-and-roll system in sizes ranging from 7.5 square feet to 120 square feet, and has a consumer-friendly site that includes a complete estimation and installation package, with tips and videos, as well as a two-day project estimate turnaround and online master-electrician support through the project.

Ouellet's system cuts installation time by up to 75 per cent and makes it easy to calculate surface area. The integrated components make a single material to handle, one that is suitable for all configurations.

Maybe the most intriguing way of heating a floor is with air. Legalett, an international company with a growing presence in North America, combines the advantages of

radiant heat with a building-foundation system to deliver what it calls the only ICF (insulated concrete form) foundation and heating system. The efficiencies of the system are immediate and ongoing for the builder and eventual resident.

"We're selling a frost-protected shallow foundation with its own heating system built in," says Legalett national sales and marketing manager, Ken Williams. "When we're doing additions, or any other on-grade structure, we usually don't need to excavate."

That makes for a system that is suitable for a range of less-than-perfect soil conditions, and also extremely fast and easy to install on site. Legalett has seen its products used in numerous renovations and additions, as well as much larger projects, such as Fiddler Lake Resort, the 80-unit luxury log-home development north of Montreal. ICF forms are produced offsite, then shipped and installed, a process that is time and cost effective.

"If you take the cost of a regular foundation, including excavation and site preparation, we're less money," says Williams. "We provided a foundation for a three-storey commercial building in Brighton, Ontario. We saved them six weeks and \$50,000 and they got a heating system that they hadn't counted on."

The level of comfort is not unlike other in-floor radiant systems, but the mix of air and concrete changes the dynamic slightly. "It's a more gentle heat buildup than a traditional water or electrical system," says Williams. "And there's greater heat-sink capacity."

In-floor heat is, by all accounts, more comfortable, healthier and, in most instances, cheaper to operate in terms of cost and energy usage. As its popularity grows, the initial price seems likely to continue to fall, making the luxury of today the norm of tomorrow.

"After experiencing the comfort in our house, I wouldn't be without it again," says Lemieux. ■



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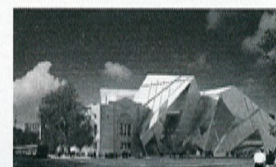
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