

a hot favourite

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Using radiant heat to warm a room from the floor up is gaining in popularity, because many in-floor systems do much more than simply keep your toes warm. Some systems save energy, reduce mold and mildew, turn the basement into added living space, and provide solutions for soil and radon problems. Here's a look at some examples.

the airheated foundation

Architect Frank Lloyd Wright was experimenting with shallow foundations and radiant heat in the 1930s, but it took until the 1990s before Canadians discovered a system that's perfected for our long winters.

John Teixeira, an R-2000 builder from Portland, Ontario, is an enthusiastic supporter and sales agent for a radiant floor foundation system from Legalett Canada Inc. For about the same cost as a traditional home with an unfinished basement, Teixeira says you can install a Legalett system that combines the comfort of radiant heating with protection against poor soil conditions and radon.

"What really appealed to me was the simplicity of the system," says Teixeira. "This is an engineered system, a package deal. When it comes to the site, all the components are there. It's very straightforward, and without a lot of training my crews can do the job."

On a recently completed project, Teixeira's first step was to scrape off the topsoil and place a six-inch layer of clear crushed stone. Mechanical systems (plumbing, electrical) were installed. Next came the finished edge element. The

In-floor heating

systems do more than

keep your toes warm in

the bathroom

insulating form, made of expanded polystyrene (EPS), comes in eight-foot lengths 16" high and 6" wide. They also come with a stucco finish on the outside. The form was set in a mortar bed. "It's important to make sure the building is square and level," says Teixeira. "This is the trickiest part of the job, but getting it square and level is just basic stuff."

With the form in place, two layers of 4" EPS were placed on the stone, with the joints staggered, to act as the floor insulation. This took less than two hours.

Next, a layer of 6" wire mesh was laid on chairs to keep it off the insulation. Next, the system's heat distribution box and the ducts were laid out.

"The system is a closed-loop air medium, and the heat source can be electric or hot water," says Teixeira. "In this case we used hot water tanks. The heat goes from the hot water tank to the distribution box. There's a coil in there and a fan to distribute the heat."

Each system is custom-designed to accommodate the needs of the building, taking into account aspects such as window placement. "Engineering is included in the price of the package," says Teixeira. "When people think of engineering, they usually associate it with a lot of cost, but it's minimal."

Metal air ducts were screwed in place, then a second layer of wire mesh was added on top. Rebar was placed around the exterior. Since this job used a stay-in-place EPS wall system, dowels were used, sticking straight up. For a conventional frame wall, weight-bearing points would be cut out of the edge element to transfer weight to the slab.

At this point in every job, a Legalett representative takes a look at the project to ensure everything has been properly installed. "Then we poured the concrete, and a day later the slab was ready to build on," says Teixeira.

The system can be used for basement floors or shallow foundation situations. The 8" slab floor provides thermal storage, which means that in areas where electric utilities offer time-of-day savings, the system only has to use energy during off-peak hours. A hot water tank can be used for domestic hot water and the heating system, without placing too much demand on the tank.

Because it eliminates mould and mildew, the system helps provide excellent indoor air quality.

"The systems have received very positive feedback from the clients," says Teixeira. "When I take a prospective client to see one, I don't have to say a word. The home-owner sells it for me."



The insulating form (top) is set in a mortar bed. Centre, a layer of 6" wire mesh is placed over the insulation. Then the heat distribution box and ducts are laid out (bottom).