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## Hydronic wall heating: the best kept trade secret

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IF RADIANT HEATING works in floors and ceilings, why not use it walls? It's just another interior surface area that can be used as a radiator. In Europe, radiant wall heating has been used for a number of years, mostly in bathroom applications where the floor space for floor heating is limited and doesn't provide enough radiant surface to handle the heating load.

The tubing for the floor heating circuit can be continued into the wall areas to compensate for floor space lost to tubs, shower stalls and cabinets. In bathrooms, especially, where higher room temperatures are desirable, wall heating can provide the additional temperature boost needed. Tubing can be easily installed in shower room walls, around bathtub walls, or on tub and spa sitting benches to give that warm feeling just at the right spot.

Wall and floor heating in shower stalls, spas, pools and bathrooms not only provide ideal spot heating, but also eliminates mildew problems since residual moisture on the grout dries instantly. Humidity problems in indoor pool and spa applications are dramatically reduced.

Wall heating in saunas can generate temperatures as high as 120°F, so only a small electric sauna heater is needed to boost temperatures higher. Radiant heating in saunas is also a gentler heat, minimizing the broiling effect sometimes felt in saunas.

In recent years, however, radiant wall heating has gained popularity in Europe in areas beyond bathroom applications. In living areas, where floor heating is not sufficient to supply the needed Btuh/sq ft without overheating the floor, or in rooms where floor heating is problematic or unfeasible, wall heating provides the desirable radiant heat effect at dramatically lower material and installation cost.

**Radiant wall heating is cost-effective, almost competing with hydronic baseboard in price.**

In comparison with floor heating, a reduction of 50% of radiant heating surface area is possible when installing wall heating because surface temperatures are less of a concern. A wall surface temperature of 100°F or higher is acceptable. Because gypsum, concrete board and

stucco are temperature stable, there are no problems with expansion, contraction or cracking.

Radiant wall heating is cost-effective, almost competing with hydronic baseboard in price, because material and labor cost is cut in half compared with floor heating. Control strategies can be dramatically simplified.

Wall heating offers almost the same comfortable radiant heating effect as floor heating without the installation problems often associated with floor heat. Problems with wall-to-wall carpeting and limitations of maximum floor temperature to 85°F are eliminated.

Wall heating is a low mass system which eliminates concerns with the flywheel effect. The wall board will heat up in 15 minutes from a cold start.

It provides the comfort of radiant heating at a low installation cost, especially in wood frame construction, making it an ideal candidate for the cost conscious consumer.

I would recommend that you install floor heating in living areas where people spend 90% of their time - kitchens, living rooms and bathrooms. Use wall heating in bedrooms where quick heating response is required and where wall-to-wall carpeting acts as an insulating blanket over a floor radiator.

**The installation techniques are simple.**

In new construction, prefabricated panels are available which consist of plywood strips laminated with aluminum heat transfer sheeting. Screw these panels horizontally to the wall studs or vertically between the studs from the floor to a height of 48" to 56". Cover two or three walls of the room, depending on the heat loss. Put a silicone bead into the panel groove, then snap the tubing into the groove. Furr the studs with 1/2" plywood strips from the panels to the ceiling. Fiberglass insulation must be installed in the radiant wall behind the tubing panels. Screw gypsum or concrete board over the system.

For retrofit applications, use the prefabricated panels over the existing sheetrock as described above. Screw new gypsum board over it and make 1" molding adjustments on doors and windows. Or, remove 48" of sheetrock from the lower half of the wall, install 1/2" panels and

tubing, then cover the entire wall with new gypsum board. Make only 1/2" molding adjustments as necessary.

The use of any tubing other than cross-linked polyethylene with a high-temperature oxygen diffusion barrier for this applications is not recommended. Keep the tubing circuits less than 300 feet using 3/8" i.d. tubing. The installed price to the homeowner is approximately \$4/sq ft for new construction. Btuh outputs of up to 70 Btuh/sq ft are achievable through gypsum board and tile walls. You need a net coverage of about one-half to one-third of the room's floor square footage, depending on the heat loss.

Constant circulation with outdoor reset controls or an injection system are the preferred control methods. You can't miss!

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