



# Radiant Heat gives luxury home a **Warm Touch**

The owners of a beautiful luxury home located in Clifton, Virginia, learned through their travels to Europe about the benefits of radiant floor heating. When they returned they wished to find a hydronic system ideal for their 18,000-square-foot residence. Conventional forced-air systems or other heating methods produce uneven heat and send the highest temperatures upward, toward the ceiling. Hydronic radiant heating, popular in Europe and Asia, is gaining momentum in the United States. It radiates heat from the floor for even, gentle warming of a building. This means more indoor comfort and potential to decrease monthly fuel bills.

The Clifton house was divided into 23 individual zones including a private theatre, recreational rooms, a number of bedrooms and other living areas. Surrounded by serene, delightfully landscaped gardens and fishponds,

the home's lush setting was also perfect for a snow and ice melt system and pool heating. Looking for the ultimate in indoor and outdoor comfort, they hired Dan Foley of Foley Mechanical in Alexandria, Virginia, to do the job. Foley turned to Danfoss for its expertise in radiant heating and zone panel systems. "The Danfoss ZCP system was extremely cost-effective," says Foley. "We saved several weeks on the job by installing the pre-engineered and pre-fabricated panels."

## **FROM THE FLOOR UP**

There are typically three components to a radiant heating system: a heat source, a distribution piping system, and controls. The heat source in hydronic radiant floor heating systems is usually a boiler or a hot water heater. A circulator pump near the water supply manifold moves the water from the mixing valve to the supply manifold and into the distribu-



Photographs: © Copyright 2003, Bill Burton

tion piping system (tubing) inside the floors. A properly designed radiant floor system will not exceed 29°C (85°F). To select how warm or cool a room or entire home will be, controls set the system to a particular temperature. A manifold system with a thermostat typically located in an accessible wall cavity controls a series of simple valves that are used to regulate the flow of water through each zone.

Floor heating is much cleaner and healthier than the alternative. It reduces the spread of dust, pollen, and other airborne pollutants. Anyone with allergies can appreciate this benefit. Since floor heating is built-in, it doesn't affect the appearance of a room and allows complete design freedom. Furniture can be placed anywhere without concern over how it affects the performance of the heating system. Floor heating is virtually silent, helps keep floors clean



## Did You Know?

More than 90 percent of homes in Europe use hydronic heat.

In the United States, about 8 percent heat homes with hydronic systems.



and dry and can increase property values. Other benefits include easy and unlimited zonability, and easy maintenance.

It also offers long-range environmental benefits. Fuel converted to electricity at a central plant is about 40% efficient, between the plant and a remote home. On-site energy source, such as the boiler, is 87% efficient.

Zoning a variety of rooms for different temperatures has the potential to reduce energy consumption. The system and controls installation process however, could be time and labor intensive. To reduce the installation time Danfoss offers pre-fabricated, pre-engineered and pre-wired Zone Control Panels.

To many homeowners and contractors, today's traditional hydronic systems are a maze of controls and piping. Jobs that involve on-site engineering and fabrication result in extended

installation time and unexpected costs. Control wiring and testing repeatedly require the services of additional trades. The prefabricated panels avoid these problems.

In the Clifton application, Brian Wheeldon and Todd Skuce of Danfoss Heating Division rose to the challenge with technical and engineering support. They laid out the entire boiler room indicating zones for each ZCP panel. Foley says the application knowledge is as important as the products and that the time reduction with the ZCP is significant. The heating system not only provided indoor comfort but also the dream snowmelt system and pool heating the homeowners desired.

The warm coziness of radiant heat, snow-free driveways and a warm pool created a perfect environment for the homeowners. There are no more hot or cold spots and no drafts.