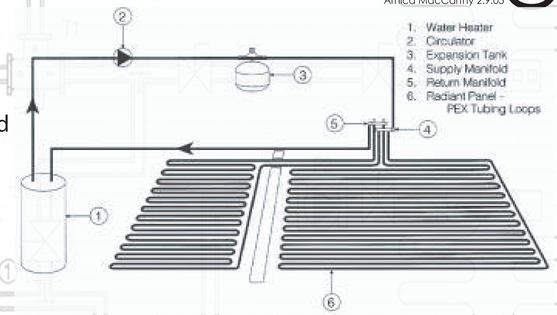
"Like a campfire on a cool night, heated floors deliver warmth to the skin and clothing without overheating and drying out the surrounding air."

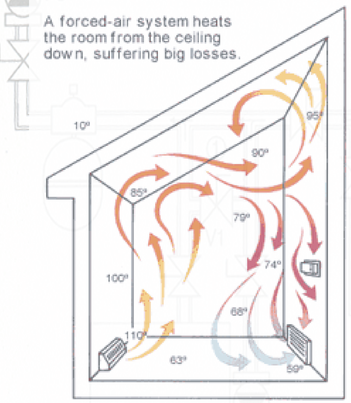
Radiant Floor Heating

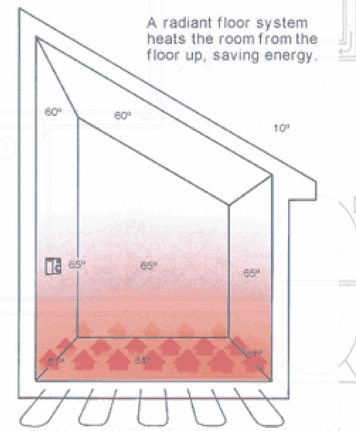
Arnica MacCarthy 2.9.05

HOW IT WORKS: Radiant floor heating takes warm water from a boiler and pumps it through a continuous circuit of tubing. The hot water warms the floor and in turn the room. Cooler water returns to the boiler through the return manifold, where it is reheated and passed back through the system. Heat can be created with hot water or electric cabling.



ALTERNATIVES: Radiant floor heating is very compatible with solar energy where it heats water in a storage tank that can then be circulated through the concrete slab. Backup heat is suggested and can be provided by a wood stove or gas heater.





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HISTORY: The Romans were the first to use floors as a means of heating, by building fires beneath the villas. Koreans borrowed the idea and channeled flue gases beneath the floors before venting it through the chimney. In the 1930's Frank Lloyd Wright piped hot water through the floors of many of his buildings. Now radiant floor heating is found being used in both residential and commercial buildings.

PROS

Comfort: Radiant heating essentially turns the floor into a giant radiator, heating the room evenly from the ground up.

Energy savings: Radiant floor systems use low-temperature water pushing water through the floors. People are thought to be comfortable at a lower temperature in homes that use radiant floor heating.

Quiet operation: It works like magic, there's no noise from fans or water being pushed through radiators and living spaces are comfortably warm.

Flexible room layout: There are no visible heating instruments allowing total freedom in furniture placement and other design issues as it takes up no wall space. It makes it so that all of your square footage is livable space.

Improved indoor air quality: Since radiant floor heating does its circulating in the floor, it eliminates the need for forced air which pushes dust around.

CONS

Economics: High performance green homes are designed to consume very little energy in the form of heat. Installing a radiant floor heating system to deliver so little heat eliminates the potential for offsetting the more expensive building practices.

Heating performance: With insulation under the floor and good solar gain, often times overheating or under-heating will occur.

Heat loss into the ground:When you put radiant heat in a slab-on-grade there is the potential for heat loss into the ground, even with insulation under the slab.

Challenges with cooling: Radiant systems are used for heating. Pushing cold water through the grid requires dehumidifying to eliminate condensation. This technology is new to the US, and not very popular.

SOURCES:

-Radiant Floor Heating by R. Dodge Woodson C 1999

-http://www.backwoodshome.com/articles/hackleman64.html

-Radiant Flooring Guide bnp publication

-Environmental Building News Vol. 11 Num. 1 Jan 2002