



Hydronic Heating – Great for Remodels and Additions Too

Heating systems that use hot water instead of air are called *Hydronic Heating Systems*. While new home construction may be slowing down in Nevada County, there are plenty of families here considering a remodel or addition. A remodel or addition project offers a perfect opportunity to look at alternative heating options, some of which many people have never heard of. For example, did you know you can heat your home, your hot water and, in some cases, both with the *same* heating unit?

Heating systems that send hot water through a radiant floor or baseboard radiators have been gaining popularity in the U.S. for the last 20-30 years. They have a number of benefits when compared to the common forced air (furnace) heating system.

When heating with hot water, one or more small circulator pumps are used to distribute heat through the home instead of the fan used in a forced-air duct system. The energy required for pumping can be just 1/6 to 1/3 horsepower, much less than the 1/2 to 3/4 horsepower a fan consumes.

The inefficiencies associated with the ductwork in a forced-air system include both air leakage and the energy lost through the walls of the ducts and sheet metal boxes (plenums). In contrast, a hot water piping system has a much smaller area for heat loss - and they don't leak. As a result, the energy lost while distributing heat through your home is considerably less than with a forced-air system.

Last week's article covered the extent to which a forced air furnace system's ductwork *adds* to the heating requirements of a home. Radiant systems, on the other hand, *lower* your heating requirements. They are capable of providing comfort at an indoor temperature up to five degrees lower than a forced air system. Because heat loss is proportional to the inside/outside temperature difference, this *lowers* the heating required. Thus, a hydronic system can use 25% to 35% *less* heat than a forced air system.

The superior comfort provided by a radiant floor over other types of heat distribution systems is well known and recognized as well. The temperature throughout the home is more even and consistent. With a forced air system hot air tends to stratify at the highest point in your home. That's great for spiders and people with suction-cup feet that like to spend time hanging from the ceiling! The temperature at the ceiling can be 8-10 degrees higher than the temperature at the floor. With a radiant floor, however, it's exactly the opposite – the floor is warmer than the ceiling – and the temperature difference from floor to ceiling might be only 1-2 degrees.

Installing a radiant floor in new construction is easy. It can be attached to the steel before the slab is poured or, in the case of a wood floor over a crawlspace (or floor cavity of a second floor), stapled up to the underside of the flooring between floor joists and held in place with metal plates (referred to as "staple-up").

In addition to “in-slab” and “staple-up” radiant floor installations, we’ve also done a number of installations *on top of* an existing slab or wood floor. In cases where the floor is just not an option we’ve used baseboard radiators. These aren’t quite as ideal as a radiant floor because they usually require a higher water temperature. A radiant floor can be heated with water between 90 and 130 degrees. With a baseboard radiator we need a water temperature between 140 and 180 degrees. In any case, because hot water pipes are much smaller than ducts it is easier to get heat to a new or existing room than it is with ducts.

Hydronic heating systems are quieter and don’t dry the air like forced air (aka “fried air”) heating systems do. Radiant floors also don’t take up valuable floor and wall space with registers and grilles. In any case, when using hot water for heating your home it’s common to use the *same* heater for heating (domestic) hot water too! We have a tremendous variety of options today for the heater too, from the familiar tank-type gas water heater (small heating need) to super high-efficiency boilers (for large heating needs).

Heating your home and hot water with one system also has the benefit of one heating unit instead of two, reducing the number of gas lines, flue pipes and heaters that need to be serviced or replaced in the future. Such systems are referred to as “combination systems” because they combine heating and hot water in one system.

As if all of this isn’t convincing enough, it’s important to point out that a solar water heating system is an ideal match to a hydronic heating system, now or as an addition in the future. A “solar thermal” system can help heat the water used to heat your home, your domestic hot water, or both!

In addition to Sustainable Energy Group Inc., there are an ever-growing number of radiant heating installation contractors in Nevada County. This makes it easy and practical to consider hydronic heating for your new home, addition or remodeling project. So, consider hydronic heating when the opportunity arises – you’ll be very glad you did!



Ray Darby is President of Sustainable Energy Group Inc., a Grass Valley company offering energy efficiency and solar services for residential and commercial buildings, from comparing the alternatives through installation and servicing of energy systems of all types. You can reach him at 530-273-4422, via email RayDarby@SustainableEnergyGroup.com, or visit their web site at www.SustainableEnergyGroup.com.