

Air and water do mix.

By Richard Trethewey

Don't you feel sorry for poor homeowners? They have no idea what they are buying when it comes to heating or cooling. And the mechanical system is the least sexy thing in their minds. In the last 50 years, mechanical choices have been determined by the builders based on who was the lowest bid subcontractor and on the need for cooling. The wide eyed happy homeowners move in to their dream home never thinking about anything mechanical. It is not until they are freezing on a winter day or run out of hot water while filling their tub that they realize they took this decision lightly or shouldn't have allowed the builder to go strictly with low bid. A survey in the real estate business has grim statistics. An amazing 7 out of 10 Americans are totally unhappy with their heating or cooling system. Their complaint is universally of discomfort.... too noisy, too dusty, too drafty, wild temperature differences and just too dry. Traditional ducted systems with furnaces are the principal offender and they enjoy an almost 90% market share.

Traditionally , if the homeowner called a ductwork guy they would get the dry ducted solution with furnaces everywhere. If they call the plumbing contractor, they get the wet solution where, with a straight face, the contractor says that baseboard looks fabulous and that air conditioning is unnecessary. The facts are that people need air conditioning and baseboard gives the second most comfortable heat . The key player is the contractor who can combine wet and dry. Let's call him a "comfort contractor"

One of the most common questions I get is "How should I heat or cool my house?". It has a complex answer depending on a variety of factors including geographic region. In New England and any cold climate, I recommend a hydronic system. Of course, the word hydronic doesn't mean anything to anybody outside of the heating industry. People think it is some kind of brake fluid, or the means to steer a boat or raise an elevator. Hydronic is a term, made up by the boiler industry that means "using water as the transfer medium to heat a space".

The best heating delivery for comfort is unquestionably radiant underfloor heating. No air movement and quiet comfort everywhere. But it is more expensive than other methods and what do you do about cooling?

Baseboard raps the room with comfort and is generally very quiet (when properly installed). It gives a beautiful heat. More and more though, homeowners complain of the look of baseboard, the dated nature of its appearance and the difficulty with furniture placement. And again, what about cooling?

In Europe and more and more in this country, flat panel radiators are a quiet, comfortable and architecturally pleasing solution if you can hide the pipes. (Americans do not want to see the pipes) There also needs a separate system for cooling

One relatively new solution is on the horizon. In life, the place where air and water meet is generally called the horizon. In the heating industry it is called hydro-air. This buzzword, hydro-air, is a system that uses water as the medium to send heat to various air handlers throughout the building. An air handler is similar to a furnace in that it pushes air through ductwork but it has no direct flame in it. The air handler has two components, a fan to move the air and coil (or coils) to heat or cool the air. The coils are similar to an automobile radiator where air moves across fins that gently heat or cool the air.

There is a single power source, a boiler, that is used for all heating functions in the building. It is an integrated system where once water is heated, it can be used for any air handler, for baseboard, for towel warmers or radiators, or to make domestic hot water for faucets through an indirect water heater. It can be also used for radiant floorheating to heat or floorwarm any cocoon space in the building like a kitchen, family room or master bathroom through a mixing valve. An often overlooked feature is the possibility of heating a pool, spa, hot tub or snow melting through heat exchangers

A hydro-air system can deliver heated or cooled air with humidity control as well as fresh air filtration and ventilation. It doesn't dry out the air like a furnace. So many times the solution by hot air contractors has been a multiple of gas or oil fired furnaces throughout the building. Yet, any house is really looking for a consistent 70 degree thermostat reading. Think about the analogy of the automobile and imagine having a separate engine for every wheel to keep the car going 70 miles per hour. Isn't one engine more fuel efficient?

So what is the best way to heat or cool a home in a cold climate? If I was staying in the house and/or cared about comfort at all, I would use radiant floor heating in the kitchen/family room and any other frequently used first floor areas. To that I would add a separate ducted hydro air system for the first floor for cooling on the first floor and second stage or supplemental heating if needed. This system can be either typically ducted or mini-duct aspiration style system with small flexible supplies. The second floor would be hydro-air with heating and cooling from the same ductwork. The boiler would be well insulated and efficient and would have a control that knew how cold it was outside and changed the boilers temperature accordingly. And for hot water, a super insulated thermos bottle called an indirect hot water would provide plenty of hot water without exacting a high operating cost. These tanks are heated by running heated boiler water through a coil to heat hot water.

These systems are not on some distant horizon. They are going in every day. Just as the old ice dealer should have been in the cold food business and fuel suppliers should be in the heating business for long term survival, today's contractor, be it wet or dry, should be in the comfort business putting the best heat delivery method in the best place. People will pay for better if they know about it in time and understand the advantages. And it costs way more to fix a bad system after the fact.