

## Robert Bean's Standard House Design Feb. 2007

I can't help you out on the brands other than to say that wall hung water heaters like the Bosch, Paloma, Hydrotherm and Myson Units have been around well over 25 years. In the last 5 years we've seen at least a seven or eight more imported brands come into the country. They all have their pro's and cons.

As far as the use of the traditional freestanding water heaters with radiant, in 1995 we estimated Calgary had at least 750 water heater/radiant systems installed. Gross that up across the continent over 10 plus years and one gets to see how many thousands upon thousands of these systems exists or are being installed.

As per previous and numerous threads on the topic, the use of water heaters continues to be a major debate within the industry.

Here's some links for you to follow up on:

Alberta Building Code requirements for hydronic heating designs  
<http://www.municipalaffairs.gov.ab.ca/ss/building/di/97D1009R1.pdf>

Alberta Building Code requirements for using water heaters as a heat source  
<http://www.municipalaffairs.gov.ab.ca/ss/gas/pg0301.pdf>

3) CSA B214 Code requirements for heated slab insulation and vapor barriers.  
<http://www.healthyheating.com/bb2/viewtopic.php?p=164&highlight=csa+b214#164>

The [www.healthyheating.com](http://www.healthyheating.com) position statement on using water heaters as boilers  
[http://www.healthyheating.com/water\\_htrs\\_as\\_boilers.htm](http://www.healthyheating.com/water_htrs_as_boilers.htm)

I, my colleagues and inlaws all have what contributor Geoff McDonell calls the Total Comfort System.

We feature one of our colleagues homes here at this link:  
[http://www.healthyheating.com/Page%2055/Page\\_55\\_a\\_benchmark.htm](http://www.healthyheating.com/Page%2055/Page_55_a_benchmark.htm)

To answer your question ...if I were you...

If I were building today in a heating only climate I would put most of my housing dollars into the building envelope and get my heating and cooling loads down below 10 Btu/hr/sf. So for 1500 sf that would be less than 15,000 Btu/hr. That way if the world goes to hell in a hand basket you and a few of your dearest friends could keep the place warm just from body heat and a few lights.

Then I would use a radiant based HVAC system using a variable speed HRV w/ coil for ventilation. (as shown in the link above)

My heating plant would be the smallest plain Jane bullet proof vanilla mid efficient cast iron gas boiler. Why? Because the chance of a plain Jane vanilla mid efficient cast iron gas boiler failing are next to zero. One of our site sponsors is Weil McLain. They make the perfect bulletproof boiler.

My plain Jane bullet proof boiler would be connected to a 60 gallon plain Jack SST storage tank with two coils in it. Why? Because they don't make plain Jane bulletproof boiler small enough for the heating load so I'll give Jane one of the coils in the storage tank to play with so it doesn't short cycle. Long slow burn for maximum efficiency.

My domestic water heater would be a plain Jane gas fired water heater except the water from the city would go through the second coil in the storage tank to preheat the water in the heating season. I would also have an external brazed plate reheat like the one shown below. This is the one at my office but I have similar setup at home. That way my boiler does not run in the summer and my water heater does not run in the winter. In the unlikely event that either the water heater or boiler craps out at -40 deg F, with a little bit of valving, I still have a way of heating water for space or domestic use.



If I were to add cooling, (which we wouldn't need in Calgary with such a low load), but if I did, I'd design a ground loop to storage tank heat exchanger. Like a ground source heat pump but without the heat pump. With a 15,000 Btu/hr or less cooling load you can cool the place with 65 deg F water if need be. Would circulate the cool water through the coil in the HRV unit.

The HRV unit would only run when the home was occupied and then only at a sufficient speed to ensure adequate fresh air based on input from CO2 sensors.

So that's what I would do since you asked.

Hope this helps.

RB