

## The common heating systems

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During the home inspection, some clients got confused between water heater and water boiler. The former is a heated and insulated storage tank which supplies hot water for living such as shower, kitchen sink. The boiler is the room heat supply (figure 1), which circulates heated water through baseboards or floor buried pipe to deliver heat to different rooms. The boiler heating system is commonly seen in condominium in different eras and installed in detached home after 90s. It is easy to control different zones at home and provides even and mild heat which is more comfortable. But it takes longer to heat up for the floor heating once start heating from a lower temperature.



figure 1

figure 2

figure 3

The forced air furnace (figure 2) has long history in North America. It heated forced air through heat exchanger and delivered hot air to various rooms by fan and duct. For the simple components and principle, its life expectancy can last 30-50 years. It heated room up fast and stopped running once the thermostat felt the temperature up to setting. People may feel the temperature fluctuation due to the intermittent working, also the noise when the fan is running. The hot air registers are normally under the exterior windows and doors. The air return opening is on the lower part of interior wall of hall way or living room. Once the furnace is running, the hot air goes to every room. It is not easy to separate and control this delivery unless shut off the registers in certain rooms to save some energy. The conventional forced air furnace is only 60% efficient on year basis. 40% thereof has been wasted into air neither environmental friendly nor economically smart. Thereafter, 80% efficiency mode developed and now over 90% high efficiency is installed everywhere. The other benefit of furnace is to add AC easily

Electric baseboard is another option and widely used in basement, condos and townhouses, which is controlled by regular wall thermostat or knob on it; furthermore, many bathrooms adopt radiate heat which electric elements are buried under floor. The electric heating is clean, quiet, fast and high efficient, as well as easy to control but the attention has to be paid on the power load and wiring.

In addition, the heat pump technology is recently fast developed and accepted. Many high end condos installed but generally still need affiliated heaters in case. We are expecting the continuously improved techs on this environmental friendly and economically heating system.