



Masonry Heaters

by Norbert Senf
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Unknown in North America until about 20 years ago, masonry heaters have a long tradition in the colder parts of Europe. Notable exceptions are Britain and France, where our North American fireplace traditions came from.

In a masonry heater, a big charge of wood is burned rapidly, usually for 2 hours, and the heat is stored in the large thermal mass, often around 4 tons. Because the wood is burned rapidly, it burns clean and there is no creosote. Emissions are about the same as a pellet stove. Because the heat is stored in a large mass, you get a very steady and cozy radiant heat, with about 100 sq. ft. of vertical radiant panels that run in the 120 deg F – 160 deg F range for a 12 or 24 hour period from one fire.

They were traditionally used as room heaters in Europe, and trying to build one big enough to heat a whole house is a North American idea. Here, we also tend to build them with fire viewing to replace a conventional fireplace in new construction. A masonry heating system often includes an integral bake oven and a heated bench, and sometimes a domestic hot water coil.

It is hard to build one larger than about 20,000 BTU/hr, and gets too expensive. Nevertheless, it makes them a great match for low energy houses, where your average heating load can be 50% that of a conventional house, or less. Even in a less efficient house, they can create a large comfort zone without having to fill the whole house with warm air first. In some situations, they allow you to be comfortable in a zone of a large inefficient house, without needing large supplies of firewood. At a steady output of 20,000 BTU/hr, you would burn around 3,000 pounds of seasoned wood per month. That's a full cord of dense hardwood, or 1.5 – 2 cords of softwood, depending on the species.

Great, so what's the downside? Building a masonry heater is a major project. It has to be able to handle the stress of thousands of intense firing cycles and be able to last. So, you can't cut any corners in building one. The Masonry Heater Association of North America (www.mha-net.org) publishes a Plans Portfolio with plans for 7 different heaters that have been tested. The home page also has information on building code issues, and contact information for manufacturers, designers, and professional heater builders, including Alaska.

The Cold Climate Housing Research Center has a large heater in their main lobby that has been monitored for efficiency. At heart, it is a very simple technology, utilizing basic materials such as clay and sand. A large portion of the final cost is often imported materials, as well as the mason's labor to meet aesthetic, safety and building code requirements.



Ask a Builder articles promote awareness of cold climate home-related issues. If you have a question, contact the Cold Climate Housing Research Center at info@cchrc.org or 907.457.3454.