



Heating with wood can be green

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Firewood is the best of all heating fuels and firewood is the worst of all heating fuels. The reality depends on how the wood is burned and what your expectations are.

I know because I've spent the past 20 years heating with environmentally harvested wood in one form or another while researching developments in the field.

As high fossil fuel prices remain with us, I suspect that homeowners everywhere are looking seriously at the economy of wood heat, many for the first time. This might become a green trend in our country or it might not. The outcome depends on how firewood is harvested, how it's handled and, especially, how it's burned.

When fossil fuel prices first skyrocketed in the 1970s, wood heating gained a reputation for causing serious air pollution. As people began to burn sizable amounts of wood in dirty, smoke-choked stoves, complaints arose, opinions formed and restrictive legislation was passed.

But despite this history, wood heating isn't necessarily bad for air quality. The fact is, wood can be burned cleanly, and when it is, this renewable resource delivers an environmental benefit that no other fuel can match.

To understand how, you need to appreciate that previous concepts of air pollution are too narrow.

If the scientists who link global warming with airborne carbon emissions are correct, then humanity will have to broaden its definition of what constitutes air pollution. And this is where firewood shines.

Yes, firewood releases carbon into the atmosphere when burned, but this carbon needs to be considered differently than the carbon released by natural gas and oil.

Wood carbon will end up in the atmosphere whether it's burned for heat or not. Leave the tree in the forest to die and rot, and almost all of its carbon ends up in the air just as if you burned it.

But every time you burn natural gas or oil, you're releasing carbon into the atmosphere that would otherwise have remained harmlessly encased thousands of metres underground.

However, while firewood has great green potential, it must be burned wisely for the potential to be realized. This is key, and correct combustion means one of three options: an emissions-certified stove, a wood pellet stove or a high-temperature masonry heater.

Of these three options, the masonry heater is the oldest and the least understood in our part

of the world. It's also an option that I have plenty of personal experience with. Almost 20 years ago, I built a masonry heater in my house after learning about the astonishingly clean performance the technology could offer. Masonry heaters are also surprisingly efficient, though they do have an Achilles heel.

Imagine a 1,000C wood fire burning for 90 minutes within a masonry structure that weighs several tonnes.

You get clean, creosote-free combustion because of the extremely high temperatures involved, while heat delivery to the room is gentle, even and slow. The masonry absorbs heat as exhaust gases pass through a long series of passages connected to the chimney.

This absorbed heat is then radiated slowly over the next half day or so. Combustion is so clean, in fact, that no visible smoke comes from the chimney after the first 10 minutes of a burn. In the 17 years I've lived with my system, the chimney has remained clean on its own.

This is the masonry heater proposition in a nutshell.

For something that sounds so simple, masonry heaters are surprisingly difficult to build properly because of the intense heat involved and the thermal stresses this creates. This has the power to deteriorate ordinary fireplace materials in a matter of months, and that's why only specially trained tradespeople build masonry heaters from scratch in Europe. Here in Canada, however, we've brought the concept of masonry heaters into the 21st century in a different way.

The masonry heater I built in 1990 was constructed around a heat resistant refractory core built by Tempcast Enviroheat. (tempcast.com; 800-561-8594) They're still in business today, and have refined the product so it works even better than the unit I put in.

You assemble the precast components of the firebox and exhaust passages, then clad them in brick or stone. The result is a reliable, low-tech and surprisingly green heating option that's also cozy and delightful to live with.

Wood heating is not for everyone. It's work to split, stack and haul firewood. But it can also be like a fitness program that keeps your house warm while not warming up the atmosphere.

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