



MASONRY STOVE BUILDERS



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What's a Masonry Heater?

A masonry heater allows you to heat your home with wood in a unique way.

Its main distinction is the ability to store a large amount of heat.

This means that you can rapidly burn a large charge of wood without overheating your house. The heat is stored in the masonry thermal mass, and then slowly radiates into your house for the next 18 to 24 hours.

If you burn wood fairly rapidly, it is a clean fuel.

If you try to burn it too slowly, the fire will change from flaming to smoldering combustion. Atmospheric pollution increases dramatically.

This is important if you are planning an energy-efficient house.

The average energy demand of your house will be quite low. For most of the time, it may require only 1 to 2 kW of heat. For most conventional woodstoves, this is below their "critical burn rate", or the point where they start to smolder. In other words, woodburning and energy efficient houses don't really suit each other very well, unless you have some way to store heat so that your stove can operate in the "clean" range all of the time.

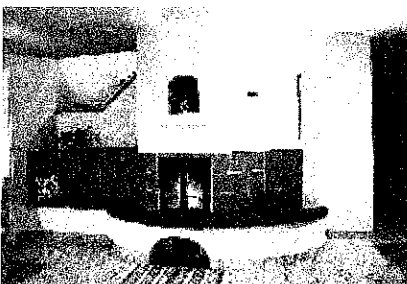
Masonry heaters fill the bill perfectly.

If you need even a very small amount of heat, such as between seasons when you simply want to take off the chill, you simply burn a smaller fuel charge--yet you still burn it quickly. The large surface is never too hot to touch. You have a premium radiant heating system with a comfort level that simply cannot be equaled by convection or forced air systems.

If you would like to see some masonry heaters,
a good place to start is in our [Gallery](#).

Other good places are the [MHA Gallery](#),
and Gallery Row at the the [Masonry Heater Mall](#)

MHA Definition of a Masonry Heater



Want a superb way to heat your house that does not depend on electricity, fossil fuel or a HUGE woodpile out back? Look into masonry heaters—the generic name for tile stoves, kachelofens, heat-storing fireplaces, ceramic stoves, grundofens, Russian or Finnish fireplaces and fireplace-furnaces. Non-polluting, safe and cost effective, they use less fuelwood per heating season than your ordinary stove or fireplace. The surface is never too hot to touch, the warmth they radiate has been likened to sunshine, and they originated in “the old country.”

For many centuries peasants and princes of Europe warmed up hut and palace alike with massive masonry and tile stoves. These ranged from the simplest of white-washed clay stoves to the ornate, tile-clad masterpieces of the wealthy.

Stove masons of the day spent many years learning and perfecting their skills. Theirs was a craft whose secrets were carefully guarded, often handed down from father to son for generations.

The basic designs for most of the masonry heaters in use today were developed during Europe's 300-year-long “Little Ice Age” from 1500 to 1800, when wood was in extremely short supply and fossil fuel not yet widely available.

They are still the heating system of choice for many people in Sweden, Finland, Denmark, Germany and Russia. Introduced into North America in the late 70's, they have gained a strong foothold in both the U.S. and Canada. Masonry heaters rely on

The masonry stoves of Europe gain a strong foothold in North America

A technology as old as the hills brings us the safest, most environmentally friendly heating system in the world. (Go for it!)

wood's capacity to give off tremendous heat quickly and the ability of masonry materials to soak up that heat and release it slowly over a 12-to-24-hour period. One hot fire a day is often all that's needed.

I know one stove mason who built a concrete-block house, insulated the exterior and laid up his masonry heater at its center. He and his wife can leave for two days in the dead of a Quebec winter and return

to a house that is still warm. Masonry heaters require a footer and a suitable chimney. They work best in a house with an open floor plan.

In those early years of their introduction into the U.S. and Canada, workshops held in Maine, New Mexico, Washington and elsewhere acquainted a number of masons with this age-old technology. A small corps of converts formed the

Drawing by Kyle McQueen.

U.S. and Canadian stove masons build these heat-storing woodburners on site, finishing them to suit the customer.

the Masonry Heater Association of North America (MHA). Many of these masons have become fine craftsmen who build masonry heaters on site for their customers. Several have designed modular heater kits with components a skilled mason can set up, finishing with the tile, stone or brick of the customer's choice.

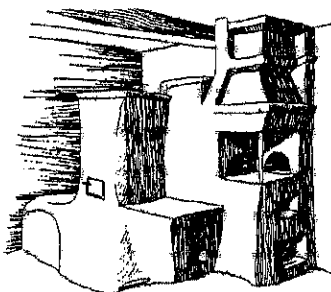
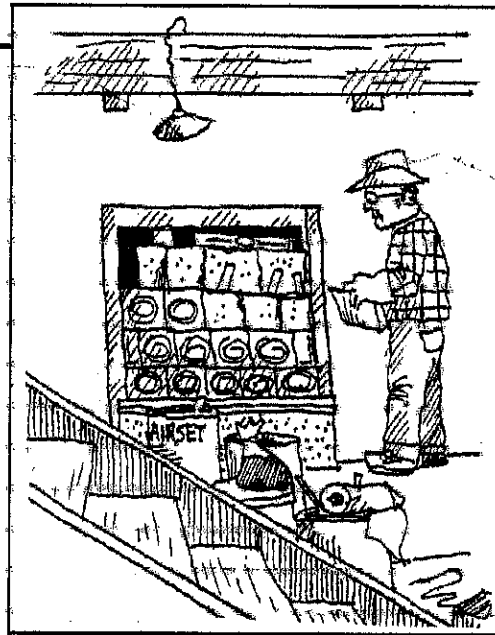
As the demand for masonry heaters grows, core kits may become the norm, as there are too few stove masons. So, just order the kit and hire a local mason to build it with instructions and technical support from the kit manufacturer.

There are also factory-made heaters available for delivery and set-up.

Heater building is an exacting discipline, with much to learn concerning expansion joints, wood-heat technology, venting dynamics, thermal stress, and more. Craftsmen learn from each other, from the “old country” stove masons, and through MHA workshops and seminars.

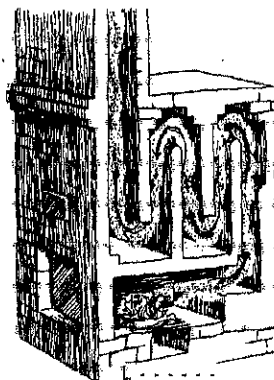
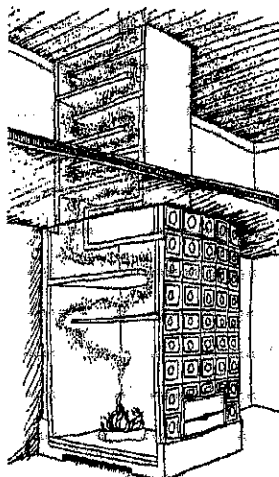
MHA sponsors testing of the basic masonry heater designs to document their exceptionally clean burn. In 1998 they put in place a rigorous heater-mason certification program.

Log onto www.mha-net.org to learn more. Or call (802) 728-5896. Excellent books on the subject are David Lyle's *The Book of Masonry Stoves* and Albie Barden's *Finnish Fireplaces, Heart of the Home*. —Jay Hensley, editor emeritus of SNEWS magazine.

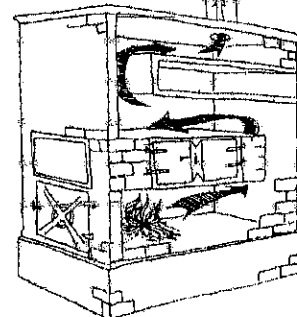


A massive white-washed clay stove used for heating, cooking and baking. (Poland.)

Right: Cutaway of a two-story Austrian-style stove with a tile surface on the first floor, plastered masonry above. (Designed and built in U.S. by Gustav Jung of Vienna.)

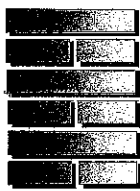


Brick stove of a type pioneered in Maine, based on old East European designs. (Basilio Lepuschenko.)



In the 1870's Mennonite farmers from Russia's Black Sea region settled in Nebraska, where trees were scarce. They heated with their traditional grass-burning stoves made of brick.

Drawings from David Lyle's *The Book of Masonry Stoves*



Operating Instructions for Finnish Fireplace

Important Note: Do not operate your Finnish Fireplace until you have read and understood these instructions

A) In Brief:

- 1) Open chimney damper.
- 2) Open combustion air control.
- 3) Stack wood load with the kindling to the side (see photo).
- 4) Light, close doors.
- 5) When fire is down to a charcoal bed, push coals onto grate .
- 6) When fire is completely out (no coals) close damper and combustion air control.

CAUTION: Do not close the chimney damper until the fire is completely out. When there are still coals, carbon monoxide is being produced. It is odorless and potentially lethal. Make sure that this is understood by anyone who operates the heater.

A CO detector should be installed in any house with a combustion appliance, and we strongly urge you to do so. The most reliable brand is "Nighthawk", available in several models at Home Depot and Walmart. The battery operated model with LCD readout costs about 60.00 CDN.

B) In Detail:

Stacking Wood:

- Scrape ashes from previous fire into the grate.
- Maximum wood load is 50 lbs.
- Stack layers of wood, log cabin style, towards one side of the firebox (see illustration, next page), to leave room for kindling on the side. Firewood pieces shown could be somewhat larger.
- Crumple 4 full sized sheets of newspaper into balls and lay them next to the wood pile
- Pile about 2 lbs of dry kindling on top

Optional: After 60-90 minutes, the fire is changing from long flames (volatiles) to a charcoal fire, which requires less air. You may cut back the chimney damper by about 1/2 (the fire will burn noticeably slower).

Towards the end, when there are coals, they will burn up faster if you push them onto the grate at the back.



Fuel Load with Kindling stacked to side

C) Firewood Notes:

You may use any type of cordwood, provided it is dry. If you use scrap wood, such as hardwood pallets, be careful - the wood can be over dry and burn too hot and damage the heater. If using small, very dry wood, stack it tighter and mix in some wetter wood to slow things down.

For hardwood, ideal wood size is about 6" diameter. An 8" log should be halved.

For softwood, ideal size is about 7". These sizes are not critical.

It is advantageous for the wood to be fairly even in size. If you have one big piece in there, it will be the last to burn and you will have to wait much longer for the fire to be out.

The wood should have about 20% moisture. This means that it has been split and stacked inside for 6 months, or split and stacked outside, with a cover, for 8 - 10 months. If it has been stacked outside but not covered (even for years) it is NOT dry. Two pieces of dry wood will make a characteristic ringing sound when struck together.

D) Glass Maintenance

Keep wood towards the back, and avoid piling it too close to the glass. In normal use, the glass will burn clean, but will leave a hazy residue. This should be wiped clean with a damp sponge before every burn.

E) Curing a New Heater

When your heater has just been built, it contains large amount of water. A lot of the water that went into the mortar is still in there.

Before you can use the heater, it must be completely dried out. Otherwise, steam could form inside the masonry materials and damage the heater.

As soon as the heater is finished, start lighting several small fires in it. This can be done several times a day, but fires must be at least six hours apart. Start by burning about 5 lbs of wood. Gradually increase the size of the load, about 3 lbs. each time. When the load is up to 20 lbs., maintain a 12 hr interval between fires.

If the glass becomes black and does not wipe off easily, it is best to wait until the fire is hot enough to burn off the glass. In normal use, the deposits will burn off the glass, leaving a slight hazy film that is easy to wipe off with a damp sponge. In normal operation with a full load, the firebox should burn clean inside.

Smoking: When the heater is uncured, and during attempts to light a cold heater in warm weather, you may experience a chimney draft reversal that will cause smoke spillage. The easiest way to prevent this is to have propane plumber's torch handy. If smoking starts, remove a cleanout door and aim the torch into the chimney or a base channel to get the draft going.

To check for chimney draft on a cold heater, open one of the cleanouts at the base of the heater, and hold a lit match there. The flame should be pulled sideways into the cleanout opening. If there is no draft, prewarm the flue. If there is weak draft, either have a plumber's torch handy in case of smoke spillage, or prewarm the flue. You can also prewarm the flue by aiming a blow dryer into the cleanout opening for about 10 minutes.

IMPORTANT: During the curing period, do NOT close the chimney damper. This allows the moisture to escape up the chimney. The heater won't store much heat. The heatOnce the heater is cured, you can start heating with it.

Play it safe, break it in gradually, and your heater will provide you with many years of trouble free comfort.

- Please store these instructions in a safe place for future reference.

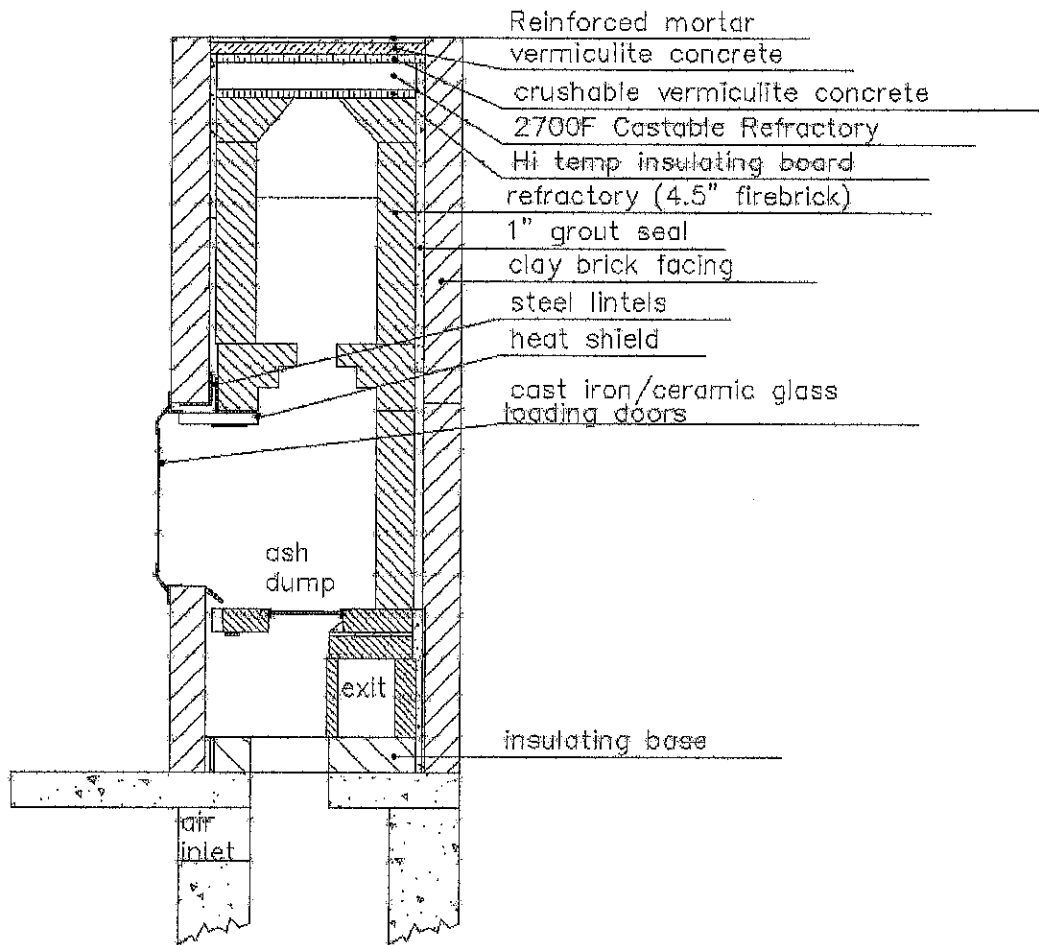


Figure 3. Side section showing materials and construction (heater without bakeoven).

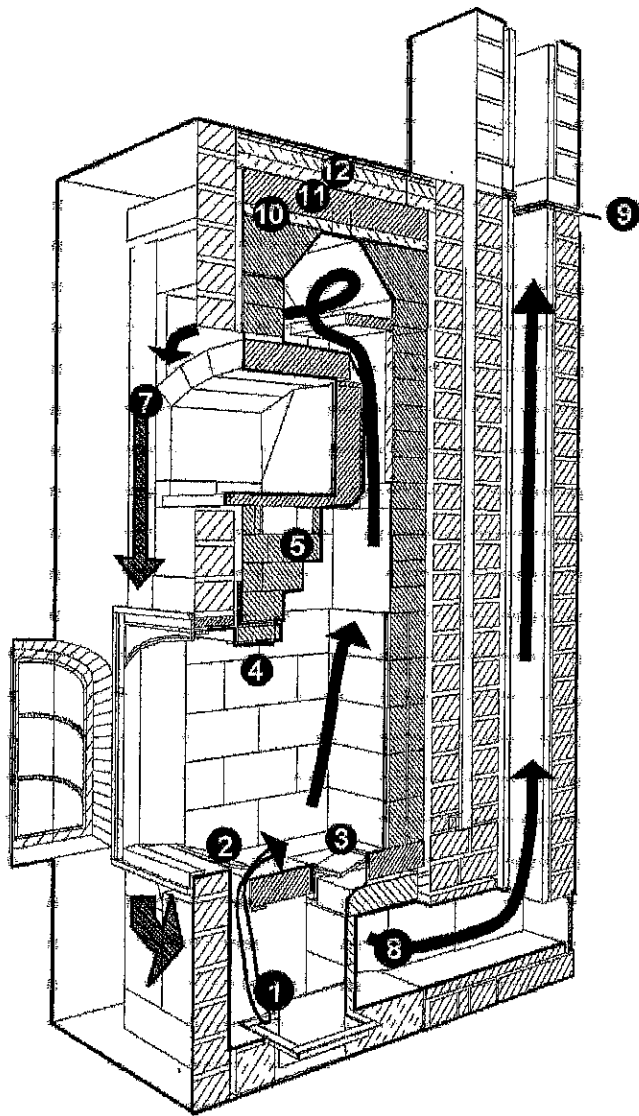


Figure 2 Schematic showing gas flow.