

The Rocket Mass Heater or Heating Rocket Stove

super-efficient wood heater, using earthen masonry

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[Rocket Mass Heater Permitting](#)

[Fire Science](#)



Rocket stoves are a type of fuel-efficient device, named in the 70's, but dating back millenia in concept. A super-hot chimney above the fire draws the flames sideways and up, blending hot fuel and air into a quick, hot, clean-burning fire that takes little wood, leaves little residue, and has lots of uses.

Variations on the same concepts include Fox-stoves or Badger-stoves, cooking Rocket Stoves,

SPECIAL NOTES:

Calen is working on a great how-to video based on our [Bonny 8"](#) project.

[Kickstarter-RMH](#)
[www.VillageVideo.org](#)

Nick is doing some Rocket stoves in Ecuador. He could use some help if you're interested.

<http://www.indiegogo.com/nickdemus>

Dakota firepits, traditional furnaces, kilns, modern incinerators, smokestacks, bell-stoves, and millions of humble tea-stoves and household hearths developed by resourceful people all around the world.

The Rocket Mass Heater takes this useful, clean-burning heat, adds a self-feeding wood box, and channels the exhaust through a masonry block to store touchable warmth for hours or days. (Masonry heat storage is also seen in Roman hypocausts, Chinese 'kang' stoves, European masonry heaters, and ancient masonry dwellings and hearths).

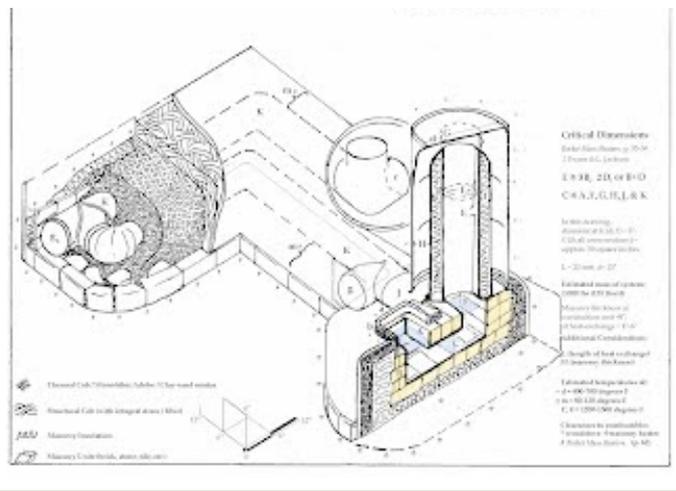
Paul Wheaton's podcasts and YouTube videos are a great way

to hear ongoing

discussions. Link to all

ROCKET MASS HEATER

discussion. [LINK TO all from the wood burning stoves page.](#)



The heart of our personal research is the Rocket Mass Heater.

Rocket Mass Heaters are a specialized adaptation of incredibly powerful [Fire Science](#) concepts that are worth knowing in their own right.

- [Heat people and things, not space.](#) Masonry or water holds hundreds of times more heat than air, stores it longer, and releases it at safer temperatures for household comfort. Mass can be heated by sun, by geothermal, water or steam, fire or flue gas.
- [Smoke is wasted fuel.](#) It's also poisonous. Good mixing, high-temperature combustion, and the right balance of draft and drag create a clean-burning, efficient stove. Efficient stoves use less wood, as well as promoting healthy air for everyone in the neighborhood.
- [Fire needs attention.](#) Staying warm all night is a major safety concern with solid-fuel devices. Smoldering 'banked' fires put out smoke, creosote, and carbon monoxide, and increase the risk of conflagration. Mechanically controlled fires (as in pellet stoves) become unreliable if storms knock out the electrical power. Masonry heaters solve this problem by storing heat from a quick, hot, supervised fire, providing hours or days of comfort without further attention.
- [Waste into Resource:](#) Rocket Mass Heaters are designed around common, affordable materials that can be down-cycled from the waste stream, or obtained in almost any location at 'dirt cheap' prices. Once built, they are a solid-state technology that will last for decades (and with one or two replacement parts, centuries) with minimal maintenance.
- [Passive Comfort is Awesome:](#) The fire roars merrily in its insulated chamber, fuel feeds itself slowly downward, and the masonry soaks up the heat and transfers it gently toward your feet, butt, or other appreciative surfaces. Radiant heat from the metal surfaces provides instant gratification, while stored heat warms the house gently like a spring thaw. No moving parts, minimal wood-prep and cleaning, and very low risk of creosote or chimney problems.

We encourage you to continue researching, or take a workshop. These effects are only achieved with certain key techniques and proportions.

The best (free) introduction is at Paul Wheaton's [rocket stove](#) article on Richsoil.com (all about rocket mass heaters, with several videos and some animation).

The most complete and well-written resource is the book *Rocket Mass Heaters*, by Ianto Evans and Leslie Jackson: www.rocketstoves.com

Owner reports: [Rocketeer Reports](#)

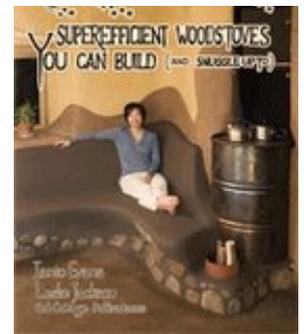
[Rocket Mass Heater Permitting](#)

Picture albums from some Rocket Mass Heater projects:





Fox Circle and Dana Annex 2009:



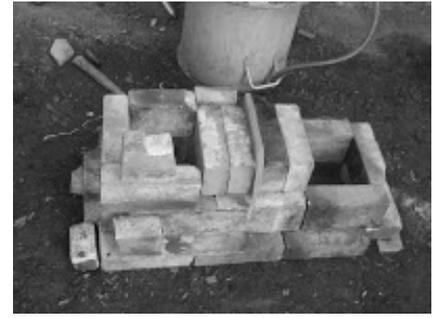
<http://picasaweb.google.com/eritter>

Test beds, earthen oven, Dana Annex 2008: <http://picasaweb.google.com/eawisner>

Video:

Trackers Rocket Stove Intro: (2 min of Ernie)

<http://www.youtube.com/watch?v=kNv-WX8-Ymc>



Rocket Stove Article by Paul Wheaton, with pictures, animation & videos:

<http://www.richsoil.com/rocket-stove-mass-heater.jsp>

(Other video is available too - like this interesting all-masonry bell stove variation:

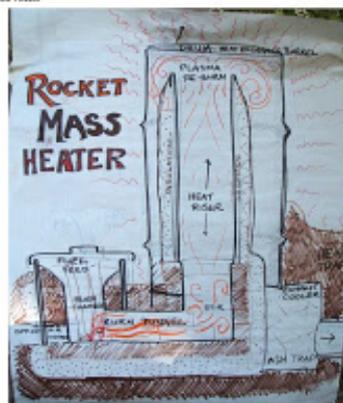
<http://www.youtube.com/watch?v=-jzKKIHhTUo>

Compare the search results from "Rocket Mass Heaters" and "Rocket Stoves, Cooking;" you'll quickly pick up on the differences in design and intended use.)

Rocket Stoves.. [Experimenters corner](#). Answers questioned!

(An edge-exploring discussion forum set up by researcher Kirk Mobert.)

Drawn by Erica Riccio



About Rocket Stoves:

Ianto Evans, Leslie Jackson, Ernie Wisner, Kirk Mobert, Paul Wheaton, and other friends are among the researchers developing efficient, clean-burning, affordable stoves for a variety of heating and cooking needs. This group developed and published the current editions of Rocket Mass Heater, or Rocket Masonry Stove, designs. The technology combines an innovative

clean-burning combustion chamber, with an earthen masonry thermal mass, resulting in extraordinary heat capture and low waste from an incredibly small amount of wood. The goals of Rocket Stove researchers include

- meet human needs for food, warmth, comfort, and safety

- conserve fuel (over-harvesting of firewood affects droughts, famine, and climate),
- clean air, reduce smoke-related health and environmental problems
- turn wastes into resources, e.g. find new uses for junk & scrap
- encourage resourceful thinking and hands-on problem solving
- offer affordable, clean alternatives to conventional technologies

"Rocket Stoves" of various designs have also been developed by many other communities. The common denominators are a vertical "heat riser" that draws the flame path itself upward, often with some 90-degree turns for mixing; a passion for channeling that heat in more efficient ways (for example through cooking directly over the chimney, or using thermal mass to store long-term heat), and creative use of basic materials such as scrap metal, adobe, and other local resources.

Rocket stoves use the "hot stack" or chimney effect to draw pyrolytic gases through a hot zone for complete combustion. Some are simple emergency or open-fire cookstoves, others more complex designs for specific purposes like home heating, metalworking, or water heating. Among simple cookstoves, I personally like the mud-brick "The Good Stove" from India, but Aprovecho also sells a metal-encased version. You can get a similar effect by using a coffee can to start your campfire: trap the heat in a vertical column, and your fire starts easier and burns better. Rocket Mass Heaters are not quick-boiling cookstove, but they are great for simmering French sauces or keeping hot water on hand for washing up. These are experimental stoves. They are not for the fire-fearful or dirt-shy, but for those interested in taking part in a new era of natural building design. The basic design has been researched over about 20 years, and is described in the 2006 book Rocket Mass Heaters by Ianto Evans and Leslie Jackson.

Many people want to add features or change things, and of course, this changes performance as well. We recommend practicing with the basic design in an outdoor setting or workshop before attempting any changes. If you change it before you build it, it is difficult to troubleshoot any new problems. The real world offers better lessons than any book or armchair discussion.

More links and articles:

Rocket Mass Heaters (as featured in Home Power magazine): www.Rocketstoves.com

Blog post about a rocket-heated shower system in Australia:
http://milkwood.net/2009/07/12/the_rocket_powered_shower/

Simple rocket cookstoves (as featured on NPR): www.rocketstove.org

Permaculture / Wood Stove Forum (open to all readers, members may post):
<http://www.permies.com/forums/...f55/stoves> (Wood stove Forum)

Rocket Mass Heater researchers (join free, members may view and post):
<http://donkey32.proboards.com/index.cgi?>

Return to main page: <http://www.ernieandERICA.info>