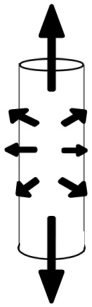
Science!

The efficiency of the rocket stove depends on its draw, which pulls air and fuel into the system at the right ratio. The draw is created by two factors:

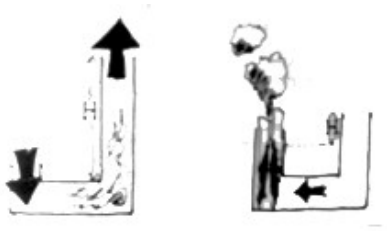
The Rocket Effect



The burning material expands in volume from heat and in becoming CO2. This expansion causes the hot gas to want to travel toward the wider exit tube at the back of the system. the gas is constrained in two directions by the sides of the flue. It wants to expand in all directions but it only has two choices: forward or back. Back is narrower than forward. Thus expansion propels the gas through the flue and out the chimney,

The Stack Effect

The difference in height between the fuel intake and the gas outlet helps propel hot gas through the system because of a lower atmospheric pressure at the higher opening The greater the difference in height (H), the stronger will be the draw.



Some history of an emerging field

Precursors to the rocket stove were the Ancient Roman Hypocaust system of sub-floor home heating, the Argand lamp, the Ben Franklin stove and the VITA stove, designed by Sam Baldwin.

Dr Larry WIniarski first articulated the principals that define the rocket stove between 1980 and 1982 at the Aprovecho institute in Oregon.

In 2006 Ianto Evans published the book Rocket Stoves, promoted the use of the rocket mass heater for home heating.

As of 2012, Portland Oregon became the first municipality to permit a rocket mass heater. At the moment Ernie Wisener is raising funds for EPA testing for safety, air quality and efficiency of rocket stoves.

Today many private contractors around the world install rocket mass heaters.

You can learn more at:

www.Dirtcraft.ca

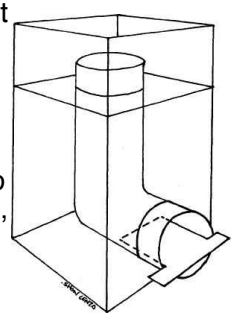
www.ernieanderika.info

www.Richsoil.com

www.weblife.org

www.Permies.com/rocketstove

Rocket Mass Heaters



Rocket stoves are an efficient wood-burning stove invented in the 1980s. A rocket stove achieves efficient combustion of the fuel at a high temperature by ensuring a good air draft into the fire, controlled use of fuel, An insulated burn chamber, complete combustion of volatiles, and efficient use of the resultant heat.

Why Rocket?

* Rocket stoves use less fuel more efficiently. They produce less soot and smoke than conventional wood stoves (smoke is simply unburnt fuel). They leave up to 90% more trees in the ground and save you money.

* We have a shorter feedback loop to see if we can be sustained by our wood production, and we have an interest in capturing sunlight energy and carbon again by growing more wood fuel.

* When we burn wood instead of a fossil fuel we use a more quickly renewable resource: instead of capturing solar energy millions of years ago, the wood that we burn was created in our lifetime.

* Wood fuel is available to us locally and encourages the local economy.

*Rocket stoves can be made very cheaply out of recycled materials and ideal for refugee situations

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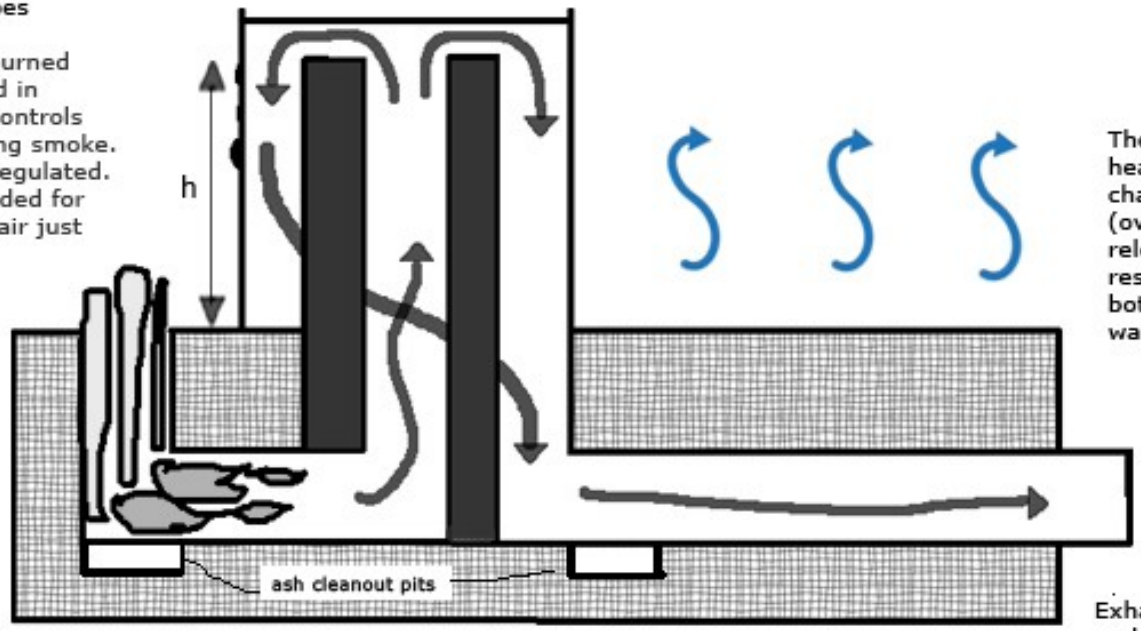
Radiant heat is released into the room

The reburn chamber, an inverted steel barrel, allows for temperatures of 600C to completely burn smoke

Small diameter wood goes in the gravity-fed fuel magazine The wood is burned at the tips and is shoved in towards the fire which controls the rate of burn, reducing smoke. The air/fuel mixture is regulated. A small opening is provided for incoming air. Too much air just cools the fire.



The cob bench holds heat from the exhaust chamber and slowly (over 24-48 hours) releases it to the rest of the house, or bottoms in need of warming

Exhaust is nearly pure CO2 and steam, down to around 40C in temperature

The incoming air is preheated, especially in a downdraft stove, which helps to keep the fire hot for complete combustion.**The strong draw of the RMH causes gas and flames to go sideways, into thr rest of the system**

The insulated Heat-riser encourages the draw and allows for the high temperatures needed for complete compustion of smoke, which is simply unburnt fuel.

'h' represents the difference in height between the fuel intake and the flue, which helps create the draw