

Malawi Institutional Brick Rocket Stove



Type

Institutional Metal Rocket Stove for one pot without chimney

Brick stove, not portable

Names

Malawi Institutional Brick Rocket Stove

Fuel

Fuelwood

Country of origin / dissemination area

Malawi, launched October 2004

By November 2008, 200 stoves had been disseminated within Malawi

Users

Company canteens, prisons, and other institutional settings

General description

Cooking stoves for all institutional purposes and users. Stoves can be built for pot volumes ranging from 50 litres to 300 litres. Most frequently built within canteens are the 100 litre and the 200 litre stove. Any other stove sizes within the given range can be produced .

Dimensions of combustion chamber

Rectangular combustion chamber (opening X by X, height 2.5 X, depth X+pot radius; X depending on pot dimensions).

The size of the stove, combustion chamber size, and all other dimensions, are designed according to the dimensions of the pot. The stove skirt/pot hole is built to accommodate the outer pot diameter.

Stove dimensions and characteristics

Average stove size for a 100 litre pot:

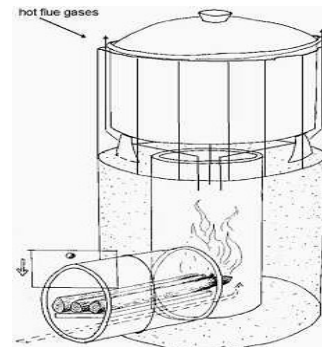
- Width x length: 100 x 100 cm,
- Height: 80 cm

Pot 'rests' on a flange lip around the top of the pot. Pot rests are made from metal; they are attached to a metal flange that encloses the pot hole around the upper opening on the stove.

Lifespan: Average is more than 3 years.

Price: In Malawi, the average price for a 100 litre stove is around 180 US\$ (2008).

Fuel consumption: Typically, a 100-litre stove uses 85 g wood to prepare 1 kg *Nsima* (staple cornmeal porridge).



Materials used

Stove body

Bricks, cement, sand for stove body and skirt. Round and flat bar for support frame and pot rests.

Combustion chamber

Insulative bricks: white clay with small insulative air holes, high density, high temperature bricks (called furnace/ boiler bricks or firebricks).

Efficiency

Compared to the three-stone fire, savings of between 60 % and 95% of firewood have been achieved with the Malawi Institutional Brick Rocket Stove.

Production / Supply

To date (2008), the stoves are mainly produced by builders employed by the various institutions requiring them. Within the prisons, the stoves have been built by staff from the Malawi Institutional Metal Rocket Stove producers.

The stoves are produced where they will be used. The construction time for an experienced team of two builders for a stove is 1.5 – 2 days.

To build the combustion chamber, special bricks are necessary. A metal framework for the stove needs to be pre-fabricated. All these materials must be in place before the builders can start their work.

Quality control tools, for ensuring accurate stove dimensions, are used in the production of the stove. The certification of these quality control tools is done by the Department of Energy in cooperation with GTZ-ProBEC.

The combustion chamber for the Institutional Rocket Stove is built with special high temperature bricks. There is only one producer making this type of brick within Malawi.



HERA – Household
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Strengths and weaknesses

Positive

- + Efficient, clean stove
- + Fast cooking
- + Enormous wood savings
- + Virtually smoke free cooking, without a chimney
- + Safe cooking, no more risk of burns
- + Fixed stove, no danger of theft
- + Lifespan 3-5 years

Negative

- Production speed of producers cannot always cope with demand
- Producer has to go to the site where the stove needs to be built. Transport of material and people needs to be coordinated for the process to be cost efficient
- User training for appropriate stove use and stove acceptance is needed

Available documents:

- Costs and benefits of efficient institutional cook stoves in Malawi
<http://www.gtz.de/en/themen/umwelt-infrastruktur/energie/20674.htm>
- User guidelines

Source of pictures:

Programme for Biomass Energy
Conservation, GTZ Malawi

Aprovecho Research Centre (drawing)

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