Inkawasi UK Stove

Peru

Type

Built-in household rocket stove for two sunken pots with single combustion chamber and chimney

Names

“Inkawasi UK” stove (UK means ‘number one’ in Quechua language)

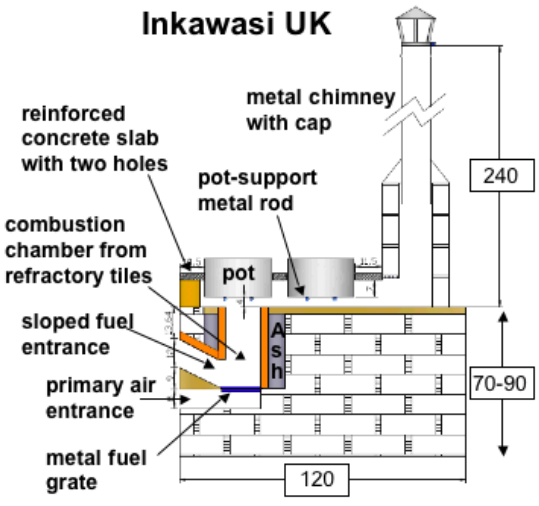
Fuel

Fuelwood, animal dung (llama, cow), agricultural residues

Country of origin / Dissemination area

Peru

Developed in 2001 by Ing. Jose Humberto Bernilla and Klas Heising, GIZ, in the village of Ayamachay near Inkawasi.
The dissemination started in Southern Peru. Since 2007, 7,000 ‘Inkawasi UK’ stoves have been installed; another 10,000 stoves are expected for 2011. The dissemination is part of the national campaign ‘Medio Millón de Cocinas Mejoradas por un Peru sin humo’ with the target to build 500,000 stoves for “A Peru without smoke” by 2011. By December 2010, over 100,000 Inkawasi-type stoves had been built country-wide.



Users

Rural, peri-urban households, countrywide

General description

Fixed, built-in high-mass stove:

- Single rocket combustion chamber out of seven custom made refractory tiles, surrounded by ash for insulation
- Fixed metal grate for fuel support
- Two separate inlets for air and fuel on the front, fuel-entrance above with a downward slope for easy fuelling of small-size fuels (dung, agricultural residues)
- Prefabricated ferro-cement slab with pot-holes for two sunken pots
- Tall chimney - half adobe, half metal

The stove-design is based on the ‘rocket principles’ with a grate for primary air under the fuel and a tall insulated combustion chamber. The chimney creates horizontal airflow around the sunken pots and guides the flue gases out of the kitchen. The pot-holes are customised for specific pots, commonly with a diameter of 28.5 cm. Each pot rests firmly on two horizontal transversal metal rods. Depending on the size of the predominant fuel (often alpaca dung) different grates are used.

Stove dimensions

Dimensions for an average stove:

- Length: 120 cm
- Width: 60 cm
- Height 70-90 cm
- Chimney height: ~ 2, 4 m

Estimated lifespan

More than five years. The grate needs replacement after one year.

Materials used

Combustion chamber: Seven pieces of custom-

made refractory clay tiles surrounded by ash as an insulator

Stove base: Mud, adobe, fired bricks or stones, whatever is locally available

Stove body: Adobe or fired brick, with mud or cement mortar

Concrete Slabs*:* 3 cm thick, reinforced with electro-welded wire-mesh ½" squares.

Pot rests: 12 mm reinforcement bar

Chimney: Adobe or brick base (16x16 cm square) and a metal tube from galvanised sheet (diameter: 12 cm) with protecting cap, which can be detached for cleaning

Performance

High potential to reduce indoor air pollution through chimney, if properly maintained: CO by 94%, PM by 98%. It boils 5 litres of water in 15 minutes.
With a well-maintained and correctly used stove, people can save up to 62 % of firewood compared to an open fire.

Production / Supply

The stove is produced by local installers who are trained and supervised by local, senior colleagues. The combustion chambers are produced locally by artisans.

Price (2011)

Total material costs (combustion chamber, concrete slab, grate, rods, chimney) are around 30.00 – 45.00 €. The installer's fee lies around 10.00 €, depending on the location. The prices do not include mud bricks and ash provided by the beneficiary.

Strengths and weaknesses

Positive

+ Efficient stove with great potential to reduce indoor air pollution if the chimney is maintained properly
+ Prefabricated parts allow high quality and fast installation
+ Enhances local production and income generation
+ Extremely safe
+ High users' satisfaction
+ Allows people to cook upright
+ Very thoroughly tested and with a proven positive health impact

Negative

- Relatively expensive
- Prefabricated parts are dependent on local infrastructure and on construction skills
- Replacement of the fixed metal grate is complicated

Available documents

- Cocina certificada Nr 5: Inkawasi UK http://www.cocinasmejoradasperu.org.pe/avances.html (go to "laboratorio de evaluación y certificación" > catálogo de las cocinas" at the bottom of the page)
- How to use and maintain my improved stove (Como uso y mantengo mi Cocina Mejorada) http://www.cocinasmejoradasperu.org.pe/infografia/cocinamejorada.pdf
- Manual de Capacitación e Instalación de Cocinas Mejoradas

- Posters: How to build my improved stove (Como construyo mi Cocina Mejorada)

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On behalf of Federal Ministry for Economic Cooperation and Development