

Éclair

Benin



Charcoal stove

Portable metal stove for households, suitable for various pot sizes

Name

Éclair

Fuel

Charcoal

Country of origin / Dissemination area

The *Éclair* stove was developed by GIZ for Foyers Améliorés au Bénin (FABEN). The first pilot phase started in South Benin in April 2012.

According to the feedback of users and producers, the *Éclair* stove will be modified in two different sizes before being launched in Benin in July 2012.

Users

Urban and peri-urban households

Éclair is suitable for households between 2-5 persons. *Éclair grand* is suitable for households between 5-8 persons.

General Description

The stove is based on the gasifier technology, where the un-burnt gases of the charcoal are burned due to a secondary air inlet.

Primary air enters through the door and supplies the charcoal in the combustion chamber from underneath. The secondary air enters at the bottom holes of the outer cylinder. It heats up between the two hot metal walls and exits into the combustion chamber above the top level of the burning charcoal. The un-burnt gases of the charcoal mix with the warmed-up air and combust.

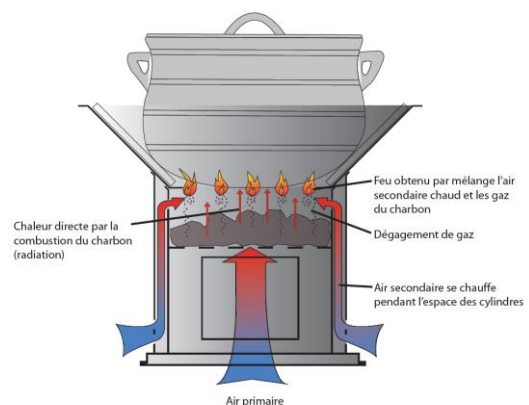
- The combustion chamber holds a volume for 350g charcoal, which is limited by the rim of the skirt.
- The grate is exchangeable.

- The conical skirt with its three pot supports is suitable for various pot sizes and shapes (round and flat bottom)
- Handles
- The base is filled with concrete and sand to make the stove heavier and more stable.

Handling

The combustion chamber is filled with charcoal, which is lit before placing the pot. During the lighting process the door is open to enable a suitable air-draft. Fanning with a traditional manual fan is used to speed up the lighting process and to increase the heat. Once the charcoal is burning well, the door can be closed to save fuel and turn down the heat.

The *Éclair* stove fits all cooking processes required in Benin, such as cooking, boiling and frying. The batch size is sufficient for regular cooking tasks. For cooking processes exceeding one hour the combustion chamber has to be reloaded.



Stove dimensions

Éclair: Height: 25.5 cm, Width: 38 cm

- Diameter of inner cylinder: 17 cm
- Diameter of outer cylinder: 19.9 cm

Two different stove sizes will be launched.

Estimated lifespan

At least two years. More reliable information will be available after first production cycle.

Materials used

Recycled metal sheets (required thickness: 1.0 to 0.8 mm)



Performance (compared to Cloporte stove)

- Fuel reduction: 37%
- Time reduction: 32%
- CO emission reduction: 50%

The results of the RWBT of the *Éclair* stove are compared to the performance of traditional charcoal stoves *Cloporte carré* and *Cloporte rond* (aka 'Malgache').

Production / Supply

The production and distribution of the *Éclair* is organised in a decentralised way. Local tinsmiths are trained to manufacture the stoves and to sell them via their distributing network.

For the production, basic local craftsmen knowledge and the use of regular workshop equipment is required. Standardized templates and some specific tools, which are provided to the producers by FABEN, are recommended to maintain standard sizes, to fulfil the quality standards and to increase the number of produced stoves.

The templates are used to outline the different stove parts on the metal sheet, which are cut out with a scissor along the

indicated lines. The tinsmith prepares all pieces by folding the edges, forming their shape with a hammer or piercing holes, before assembling them. All pieces are interlocked. There is no electricity needed.

Price:

4,80 € (3.200 FCFA) for current *Éclair*

Strengths and weaknesses

Positive

- + Fast cooking
- + Low emissions
- + Appealing design
- + Little exterior heat to the cook

Negative

- Availability of proper metal sheets
- Precise work of the manufacturer is needed to maintain crucial dimensions



Available documents:

- Construction manual for "Éclair"
https://energypedia.info/index.php/File:GIZ_Werner_Stove_Eclair_Manual_Benin_fra.pdf
- Quality check list for local coordinators
https://energypedia.info/index.php/File:GIZ_Stove_Eclair_Quality_Check_List_local_Benin.doc

Source of pictures: Carlotta Werner

Last update: May 2012

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