Introduction of Rocket Stove Institutional stoves Into Zambia

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Draft Report

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Material Outputs

1. One 200L Portable Rocket Stove

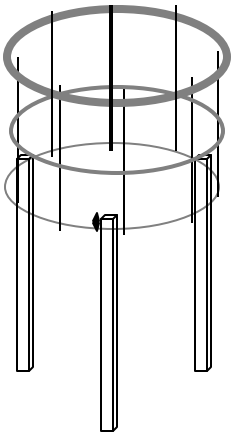
This stove was produced in cooperation between Envirocare and ProBEC. This stove features

- Double walled all mild steel construction
- Lined with high temp (1300C) rock wool insulation. As this is extremely expensive and difficult to source it will be replaced with insulative brick material when it becomes available at NISIR within the next few months.
- A stainless steel pot needs to be produced for demonstration purposes

2. One 200L Brick Rocket Stove

This stove was built at a boarding school in Lusaka as part of a 2-day training for Zambian stove promoters and designers. The stove features:

- Cement block outer body
- Fired brick inner skirt and outer combustion chamber.
- The stove body was completed but it was not lined with insulative bricks, as we were unable to acquire a durable insulator in the short time that I was in Zambia. Attempts to procure vermiculite were unsuccessful. The stove will eventually be lined with sawdust /clay/ grog bricks made in cooperation with NISIR.



The stove also features a metal internal skeleton that supports the pot independent of the brick stove body. The three 40 mm square tubes support the bottom of the pot. The eight pieces of 12 mm round bar centers the pot within the stove body. These bars also maintain the 12-15 mm gap between the pot and the stove body. I would recommend that all brick Rocket Stoves should incorporate this metal skeleton. See plans for more details

3. Test bricks at NISIR

Working with Jameson Mujaye at the National Institute of Scientific Research (NISIR Ceramic Division) we made 5 test bricks, using different mixtures of local high magnesium red clay, mullite grog, and sawdust.
These test bricks will be ready in October 2004.

We should continue to work with NISIR to help them develop insulative bricks. They have the materials, the staff and the infrastructure to produce inexpensive high quality insulative bricks.

At this point we don't have a reasonably priced insulative liner for Zambia. There is no access to vermiculite or pumice so we must produce a sawdust /clay/grog insulative brick. As with other countries in SADC, the commercial production of the Rocket stove relies entirely on developing an inexpensive insulative refractory brick.

Fortunately, we have NISIR, which, through funding from JICA, has developed a modern brick research and development laboratory that can also produce large quantities of bricks. Although the funding from JICA has been discontinued, the infrastructure is still available and mostly unoccupied. NISIR presently produces over a 100 high quality Ziko liners per month at a very low price

4. Recommendations

1. Develop a research project with NISIR to produce an insulative brick. Jameson Mujaye, their chief researcher and stove designer, is due for retirement in the next 4 months. If we started a research project now, we could enlist Mujaye, before he retires, to run a short (2-3 months) brick research project . If we wait until he retires then we will have to rehire him as a consultant. ProBEC should drive this project, as NISIR ceramic will not.

2. A sawdust-powered kiln should also be built at NISIR to produce insulative bricks. This will lower the cost of production, which for now relies on an electric kiln. Once the NISIR insulative brick production is in operation, it could be used to train other producers around the country.

After the stove training, Jouni Ahmajärvi built a brick stove for a DAPP school
We are still waiting for feedback about this stove