

designing  
*with* cooks



# Design Process

Step 1: market need

Step 2: lab design & test

Step 3: field test

Step 4: modify

Step 5: manufacture

# tools for field work

## Focus Group

A **focus group** is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging. Questions are asked in an interactive group setting where participants are free to talk with other group members.

## Controlled Cook Test (CCT)

The **controlled cooking test (CCT)** is designed to assess the performance of the improved stove relative to the common or traditional stoves that the improved model is meant to replace. Stoves are compared as they perform a standard cooking task that is closer to the actual cooking that local people do every day.

## Kitchen Performance Test (KPT)

There are two main goals of the **KPT**: (1) to compare the performance of improved stove(s) to the common or traditional stoves or to other improved stoves as they are used in the kitchens of real families and (2) to identify qualitative aspects of stove performance through a simple survey.

## In-home Trial

An **in-home trail** allows you to see how your stove performs in a real kitchen over several weeks. This permits many different cooking tasks to be done and variations in cooking food and quantities that occur throughout the week and month. Follow up surveys are conducted periodically throughout the trail.

# Question Types

## Appearance

- look & feel
- color
- size
- weight
- handles
- feet
- materials
- quality perception

## Performance

- cooking speed
- fuel savings
- ease of lighting
- smoke reduction
- ability to cook traditional foods
- stability
- user friendliness

Price! (payment schemes)

# zoom jet



# Step 1: Market Need



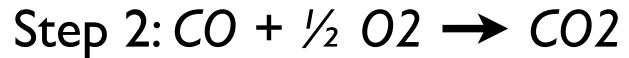
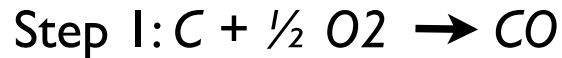


# Step 2: Lab

1.



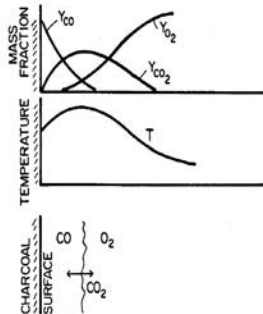
2. Larger Intake Air Door  
= More Oxygen



3.

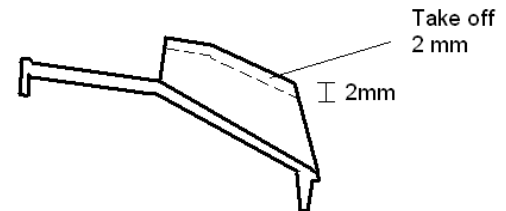
Optimized  
Secondary  
Air Flow

FIGURE 2: Charcoal Combustion



4.

Optimized Pot  
Channel Gap



working  
prototype





# Lab Results

## Efficiency



## 5-Liter Water Boiling Test

### Charcoal Jiko

### Zoom Jet w/skirt

Conducted by Aprovecho Research Center

CO Emissions	102g	56g
Energy to Cook	19.1MJ	8.9MJ
Fuel to Cook	613g	280g
Time to Boil	18.9min	25min

(fuel savings from pilots conducted in the field in Kenya ranged from 50-70% depending on the cook and use of fuel savings pot skirt and boil times were faster than KCJ)

# Step 3: The Field

January 2012 - December 2012

8 partners

6 countries

230 participants

22 focus groups

14 controlled cook tests

2 in home trials (2 months each)



# Results

## Appearance

Attractive, modern, strong-looking, expensive-looking, and very presentable to have in the home.

## Design

Air vent door and the stove's body stayed relatively cool, thus avoiding the danger of burns, were highly popular

## Size & Weight

1. Stove's large size was positive as it connotes higher quality and durability.
2. Stove's weight as a positive feature, indicating it will cook food well and can cook for long.
3. Strong and sturdy enough for all cooking tasks and can easily accommodate large, heavy pots.

## Quality

Extremely high quality, polished, and looked like it was made from expensive materials.

## Performance

1. Cooked well and very quickly.
- 2 Outperformed other improved charcoal stoves in terms of cooking speed.
3. Used little charcoal and is ideal for long cooking tasks, such as beans.
4. User friendly and stable to cook on, even when vigorously stirring the ugali.

## Fuel Savings

Lowest fuel savings reported: 50%  
Greatest fuel savings reported: 79%  
Average fuel savings reported: 58%

# Improvements

- Handles are too weak for the weight of the stove and are seen as low quality.
- Handles make it difficult to shake the stove.
- No ash tray makes it difficult to remove ash while cooking.
- Bottom of the stove will chip over time when placed on cement.

## Step 4: Modify





final  
product



# Step 5: Manufacturing



# results



thousands sold at KES 4,000+ in 4 months



asante!

