OBJECTIVE
A PRELIMINARY TEST TO UNDERSTAND THE WORKABILITY OF THE STOVE
How it works

Steps:

Place a small amount of wood or paper in the stove

Use paper to start the fire

Turn the knob clockwise to start the stove

Once the fuel is burning place the pot on top!
Water boil test

Context:

A measured weight of water in a metal pot was chosen to gauge the usability and functionality of the various components of the stove and also measure the amount of time taken for the water to boil.

Locally available dry wood chopped into smaller pieces for easy top feeding
Test aborted

Problem:

The fan inside the stove did not work initially due to small ceramic debris from the refractory tiles in the heating chamber getting stuck in between the blades.

The ceramic debris along with ceramic dust were taken out with great difficulty.
Areas of Concern

Burning Chamber:

The hexagonal burning chamber lined with refractory ceramic tiles placed on the circular base plate are resting unevenly on the thin vertical rods.

This unevenness tends to tilt the whole chamber which may direct the flame away from the centre to the side of the vessel.

The outer sheet metal body got dented whilst taking out the top id and chamber.
Areas of concern

Fan Chamber:

The minor debris from the brittle tiles chip away and find their way in the fan chamber (beneath the burning chamber) as well as the fan blades.

The only way to access this chamber is through opening the press fitted top chamber albeit with some effort.

The debris strike against the outer circular sheet metal frame and slide down into the fan chamber.
Areas of concern

Circuitry Chamber:

Smaller debris which might pass through the fan blades keep collecting at the bottom chamber along with dust which might interfere with the circuits/battery fixed there.

Layer of dust on the base plate of the stove
Areas of concern

The Components:

Even though the components are easily manufacturable, yet the non-functioning of the fan due to the debris is a major hindrance towards easy usability.

Three major components of the design
**PROS**

**Combustion**
The fuelwood burns with a roaring and crackling flame giving out mostly ash and charcoal remnants.

**Combustion Chamber**
The ceramic lined combustion chamber insulates the outer metal body from the heat preventing scalding.

**Ceramic Lining**
The ceramic lining refracts the majority of the heat generated thus helping maintain constant temperature and acting as an insulator.

**Maintenance**
The stove can be easily dismantled using basic tools into its three major components.

**Fuelwood size**
The design promotes the usage of smaller firewood which helps in better combustion leading to less wastage.

**CONS**

**Combustion**
The entire stove has to be lifted, upturned and shaken sometimes to extract the remnants which is very cumbersome.

**Combustion Chamber**
The entire chamber is prone to tilting directing the flame from the centre of a vessel to the sides.

**Ceramic Lining**
Loose debris from the lining get lodged in between the fan blades drastically reducing the efficiency of the stove.

**Maintenance**
It is a highly cumbersome process to access central fan chamber every time it is blocked by debris.

**Fuelwood size**
The fuelwood has to be constantly fed from top to maintain a constant flame, thus requiring constant attention.
IDEAL CASE SCENARIO

> Preventing the disintegration of the ceramic lining by improving it's quality to withstand external impacts.

> Utilising a fine mesh like structure or a protective covering over the fan which collects the debris and dust thus preventing potential damage to other components.

> Easier way to dispose off the ash and charcoal after combustion, like detachable collector in the combustion chamber.

> An easier method of accessing the fan chamber (in case of maintenance) as compared to the current scenario of accessing it from the top through the combustion chamber.

> The stove is ideal for communities who are willing to opt for smaller fuelwood pieces, as compared to the current practice of using bigger ones.

> It is also ideal for communities who have a requirement for single burner stoves, as many traditional communities prefer twin burners for cooking.