

Introduction

- Design cooking stoves for Kenyans
 - Focused project → Stick Fed Rocket stove Department of Energy (DOE)
 - Make a safer, better fuel-consuming stove to be utilized indoors
 - Fumes from indoor stoves kill 4 million a year globally [1]
-
- Burn Design Lab CEO, Peter Scott, started to save the forests
 - 7-10 tons of wood makes 1 ton of inefficient charcoal [1]
 - Burn Design Lab has developed stoves for other countries including:
 - Eko-Stove for Guatemala
 - Wood Gasifier for Congo
 - Next generation wood stove working with DOE



Figure 1: Sky view of Vashon island

Project Description

Stick Fed Rocket stove (SFR) that can produce Tier 4 performance in each following category:

- High power (HP) thermal efficiency
- Low power (LP) specific consumption
- HP CO intake
- LP CO intake
- High and low power particulate matter (PM)
- Indoor emissions CO and PM



Figure 2: SFR Rev 9 stove

- DOE is working with other companies to reach tier 4
- Uses LEMS computer sensors to read the CO, CO₂, PM, etc.



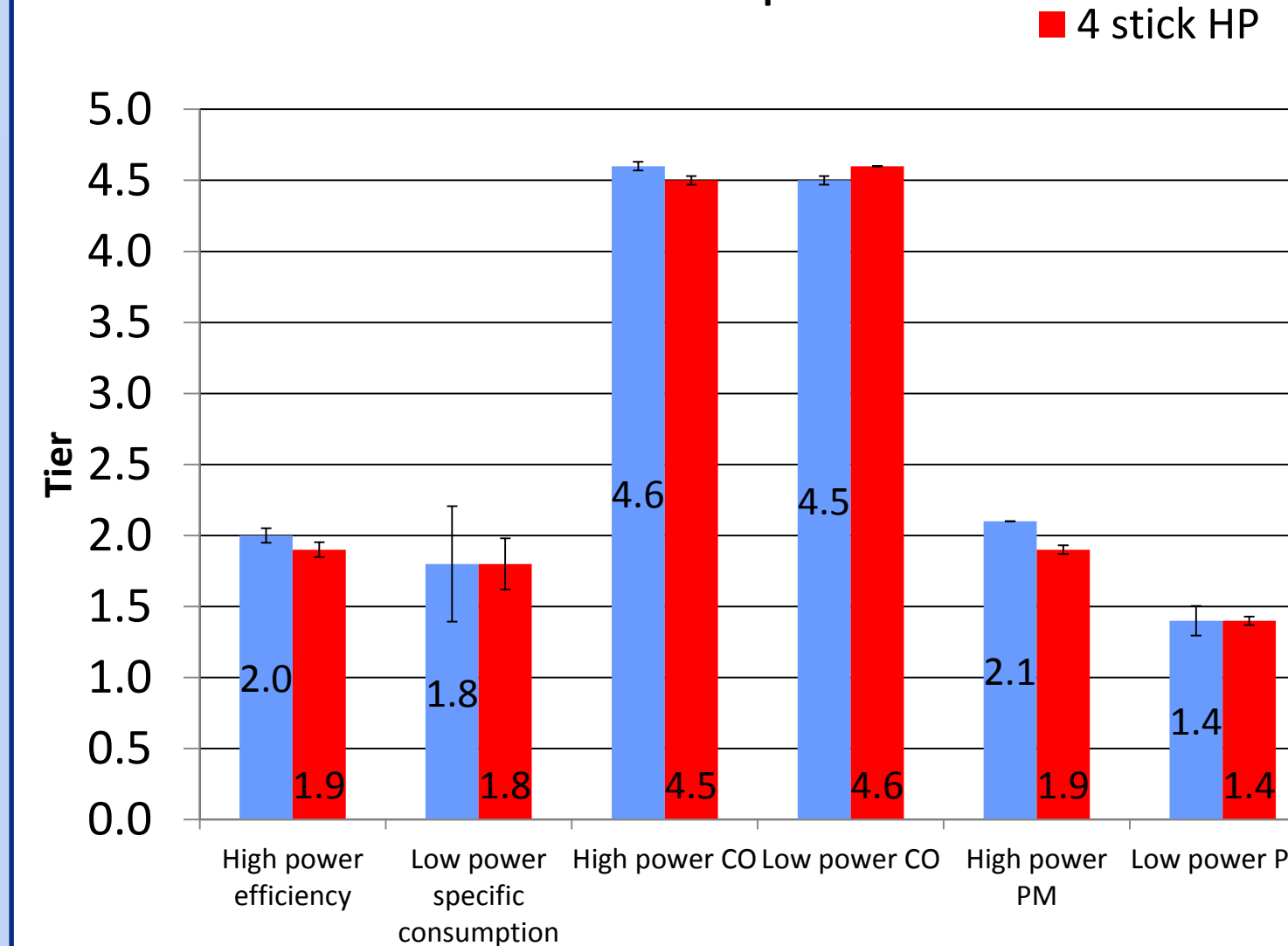
Figure 3: Currently stove being sold in Kenya. (JIKO POA)

Results & Discussion

Millions of deaths occur in Sub-Saharan Africa annually [2]

- 2004 death toll (millions)
 - 0.75 from Malaria
 - 0.25 from Tuberculosis
 - 1.7 from HIV/AIDS
 - 0.57 from open fire cooking
- 2012 death toll (millions)
 - 0.6 from Malaria
 - 0.25 from Tuberculosis
 - 1.2 from HIV/AIDS
 - 0.68 from open fire cooking
- 2030 Projected death toll (millions)
 - 0.23 from Malaria
 - 0.14 from Tuberculosis
 - 0.67 from HIV/AIDS
 - 0.7-0.8 from open fire cooking

5 Sticks vs. 4 Sticks High Power Comparison



Results & Discussion



Figure 4: Burn Interns working in shop



Figure 5: Typical test set up for the SFR Stove

Bibliography

- [1] "BURN Design Lab Designed Here . Built There." Clean Cookstoves for the World. N.p., n.d. Web. 23 Sept. 2014.
- [2] "Energy.gov." Department of Energy. N.p., n.d. Web. 23 Sept. 2014.

Acknowledgements

Thank you to ETHOS and Burn Design Lab for allowing me the opportunity this pass summer to intern and use my skills to help develop cooking stoves for those in need.