

IPRO 325C

Energy Solutions for the World's Rural Poor

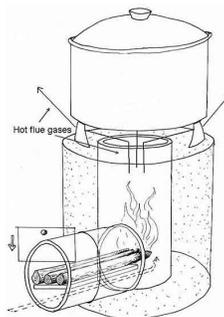
The Problem



The problem being addressed by IPRO 325C is inefficient usage of energy in the developing world. The team trying to provide solutions for people who *don't have access* to facilities such as power plants and gas stoves. For example, there are millions of people worldwide who still use dangerous and unhealthy open fires to cook their food. This contributes to a plethora of problems, including deforestation, health issues like bronchitis and asthma, and ozone layer damage. In short, the team is trying to produce a sustainable Energy solution for the world's rural poor for less than \$ 5.

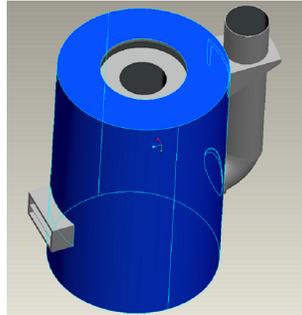
Research

The problem thus led the team to investigate the Rocket Stove. The Rocket Stove is a stove that can be built entirely with indigenous materials (such as leftover cans and barrels), and more importantly, burns wood more quickly and cleanly than an open fire. The stove, first designed by the Approvechio Research Center, in Berkeley, California, is already in use in several parts of the world. Indeed, previous semesters' IPRO 325A teams have experimented extensively with the idea. However, during the course of our research, and upon hearing from people who implemented the Rocket Stove in the field, discovered that the stove still generates significant quantities of smoke. Thus, the team had to find a way to alleviate this problem. A diagram of the rocket stove is shown below:



The Solution

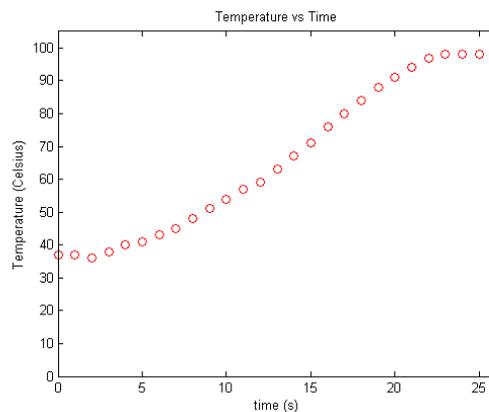
In trying to alleviate this problem, we designed what we call our Barrel-Rocket Stove. This modified version of the Rocket Stove is equipped with a skirt and an exhaust, drawing from the design of the Barrel Stove (also of the Approvechio Research Center). Our design now has an exhaust as well, to divert excess smoke. The strength of this design is further elucidated by the fact that the system is very safe- a child can touch the outer casing of the Barrel-Rocket stove and not get burnt. In terms of safety, this is far superior to the commonly used open fire stoves. A diagram of the Barrel-Rocket Stove is shown below:



Testing, Results, and Obstacles

Thus far, the team has accomplished several things. Most important among these are the construction of a miniature prototype; construction of a Barrel-Rocket Stove; construction of a Barrel Rocket Stove using indigenous materials; and successful testing of the aforementioned products. The testing of the products yielded the following results:

- The tests proved that the rocket stove burns wood highly efficiently
- The tests showed results in the form shown below:



The team has faced the following obstacles thus far:

- Difficulty in obtaining resources
- Time and Resource constraints

Furthermore, the target population might actually reject our product. We at IPRO 325 will not attempt to force our product onto any community. That being said, contacts in the target region indicate that the community(ies) there have shown interest in our products.

Future Work

In the future, we hope to implement our solution in the Sincape and Huarmey regions of Peru, Nicaragua, and Haiti. We strongly believe that our product can make a significant difference in the lives of individuals in the impoverished areas of the world, and thus, will do our best to make good on our promises.

Team Members

The team members, from left to right:
Chaitanya Murti, 3rd year Electrical Engineer
Brian Chung, 3rd year Electrical Engineer
David Khem, 3rd year Computer Engineer
Jerry Jose, 3rd year Mechanical Engineer