DESIGN (CONT'D):

One half of the top of the stove is covered with a sheet of steel. It was found through testing of the stove that steel is less reliable than brick because of drastic change in alloy properties when heated up (though it is more effective). The prototype has an exhaust in the rear where smoke leaves. The prototype was tested by simple comparisons of boiling a known amount of water and timing how long it takes to reach the boiling point.

CONCLUSION:

After much testing, the results we have give us hope that our goal of improving the lives of the rural poor can be met. We are preparing illustrated instruction materials to help with construction and maintenance. We are also hoping to do a follow-up in Sincape, Peru and its surrounding villages for two weeks in January of 2009 .

It does not require a heart of Mother Teresa or a wallet of Bill Gates. All it takes is a small step to induce change and we hope that together we can make a big difference in the lives of the rural poor.

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IPRO It takes a team
INTERPROFESSIONAL PROJECTS PROGRAM

IPRO 325A

Developing Affordable and Sustainable Energy Solutions for the World's Rural Poor

TEAM MEMBERS:

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- Dr. Kenneth Schug

Illinois Institute of Technology
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PROBLEM:

Many of the world's rural poor do not have access to commercial stoves. One of the most common method is the open fire. This method of cooking has two major disadvantages: it is unsafe for children and creates large volumes of smoke. Smoke inhalation can have very detrimental health effects.

OBJECTIVE:

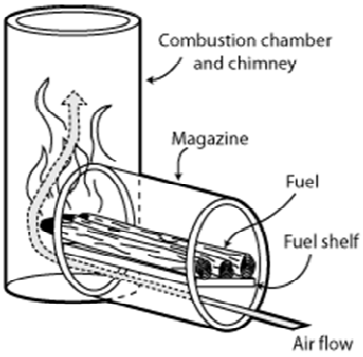
To develop and to provide a low-cost solution addressing the problem of cooking stove efficiency, safety and durability for the world's rural poor

METHODOLOGY:

Our predecessors had designed and built a barrel-rocket stove as seen in the picture above. The stove met all criteria of the aforementioned goal; however, the parts needed to build it were not available when the team tried to conduct a field test in Sincape, Peru. Thus we decided to focus on redesigning the stove using materials that are known to be locally available and affordable to the people of this village.

DESIGN:

Our design is a duel rocket-type stove. It consists of two combustion chambers with an outside layer to keep the stove insulated and maximize efficiency. The outside would be made from adobe bricks, while the combustion chambers would be made from ceramic brick.



Adobe brick is very affordable to the people of Sincape and they also have experience building with it. For our prototype we were not able to find adobe bricks to use, however, ceramic brick has very similar thermal properties to adobe. Thus, we used brick to build our working prototype as illustrated below.