

Mechanical Engineering

International Projects

ME 491 International Humanitarian Engineering is a design-intensive interdisciplinary course in which teams of students address the challenges of creating new products that enhance the lives of the poor, while respecting their social, cultural and ethical identities.

The following project will be on display during Design Day from 9:00 until noon in the 1200 Hallway of the Engineering building:

Appropriate Technology Collaborative: Aiding Guatemalans with Ultraviolet Absorption

In 2011, over 15% of the world's population didn't have access to potable drinking water. A consequence of this situation is the host of water-borne diseases that afflict men, women, and especially vulnerable children who suffer irreversibly from stunting and under-nutrition, and ultimately never achieve their potential, nor contribute effectively to society. Guatemala is one of planet Earth's worst countries manifesting this situation because 50% of



The Appropriate Technology Design Collaborative

devices to remove sand and other impurities from their water supply, but these basic filters are ineffective against common medical ailments like Typhoid, Leptospira, and Schistosoma.

One enhanced approach to achieving potable water, is to kill the bacteria by subjecting it to ultra violet light in the 254nm spectrum. Ultra violet light destroys the DNA of bacteria and viruses and it has been proven to be effective in sanitizing water. Commercial products used by explorers and hikers typically cost a few hundred dollars, but the device developed by the MSU team will not exceed twenty dollars, because most Guatemalans do not have an income greater than two U.S. dollars a day.

By creating a portable device that can purify water, hundreds if not thousands of lives will be saved each year in this Latin American nation. Indeed many of these lives will be young children, the future of the country.



Team Members (L-R): Scott Oldham, Grant Golasa, Will Asherman, Shenli Pei



Semilla Nueva: Portable Pigeon-pea Thresher

Quetzaltenango, Guatemala, that's dedicated to helping rural farmers discover a path to prosperity, health, and sustainability through sustainable agricultural technologies and farmer-to-farmer education.

One of their numerous projects is the launching of an embryonic pigeonpea industry. This legume is being introduced to the local culture in order to serve as a permaculture crop that will provide an enhanced income stream for the smallholder farmers and it's also an excellent source of nutritious food.



Current harvesting practices are both brutally labor intensive and time-consuming because the pigeonpeas are threshed by beating the crop by hand in order to break open the pods and thereby release the peas for collection. The objectives of this humanitarian project are threefold: to provide impoverished farmers in Guatemala with an innovative, low-cost, human-powered portable thresher that will increase the current pigeonpea production; to develop a device that is not only affordable to smallholder farmers but that is also easily manufactured; and to visit Quetzaltenango in order to undertake field trials with local farmers.

