Stove powered lighting

By Ken Goyer

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For the last year I have been developing a light for homes with no electricity. I discovered that LED bright white lights have become quite inexpensive. While they produce very little light by my light addicted standards they are sufficient to cook, read, change the baby's diapers, walk around outside at night, etc. In the course of thinking about the logistics of this light I learned that in this country we throw away fifteen million cell phones with batteries every year (even more this year). I decided to pursue the idea of a rechargeable cell phone battery powering a light in someone's home. I thought that the child could take the battery to school where there is electricity and recharge the battery while he is in school. Then take the battery home to power the light. THIS IS A GOOD IDEA! Except for the areas where there is absolutely no electricity (Maybe half of the world). So how do we generate even a little bit of power, economically? Photovoltaics holds much promise for the future but still seem to be slightly unattainable.

I knew of thermocouples and the peltier effect and the seebeck effect and decided to try an experiment making a thermopile from copper and iron wire. Twisting and hammering nine junctions, and then heating one side with a propane torch I managed to generate 0.02volts. Not very impressive. From internet research I learned that the state of the art has increased radically in recent times. Now thermocouples are made from semiconductive materials and produce respectable amounts of electricity. I purchased one of these on ebay and researched the purchase of them from China. They are quite inexpensive and quite impressive. The one I am using here is designed to heat or cool, depending on which direction current flows through it. While it functions to generate electricity I am reluctant to crank it up all of the way for fear of melting it down. But there are some thermocouples that are specifically designed to produce power when heated from one side and cooled from the other. I have produced enough power from this one to run a small motor that Tom Reed could use for his stove. Please see the photos below and for the stoves list I will ask Tom Miles if he would be so kind as to post the pictures on the stoves page.

The easiest way to learn of these is to do a Google search for thermocouples. A small amount of searching will yield large results. My biggest problem at the moment is to develop a battery charging circuit and voltage regulating circuit for the LED lights. I would be most grateful if there are any volunteers for this project.

Last year I made five lights run from Motorola cell phone batteries for the five families in Teosinte with no electricity. They were generally well received but only two of them remained in use for the year. One had a defective battery and even though a

person was in charge of replacing and fixing such things it was never brought to his attention. In one case the child was too shy to take the battery to school and have it recharged and in the other case the person didn't know that the battery could be recharged. He used the light until it went dead (several months) and then set it aside until I came to query him about it.

Lack of lighting in the world is a major problem. Try sitting every night in total darkness because you are too poor to buy oil, or a candle and you will appreciate why this problem should be addressed for humanitarian reasons.

This is a three bulb LED light running from a single thermocouple powered by a six brick stove.

Bernardo in Teosinte is making LED lights under my direction.

This is an LED light with five bulbs and a Motorola six-volt cell phone rechargeable battery.

Que Chiva! Way cool!