CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
Richard Xu

Project Number
J0234

Project Title
Thermal Piling Power

Abstract

Objectives/Goals
The objective was to find out whether thermopiles could be made more effective through type change, temperature change, and number change.

Methods/Materials
Thermopiles (Thermocouples Type K and Type E), solder/soldering iron, oven, voltage meter.

Results
The test resulted in larger numbers of thermocouples reducing the voltage output. The E type produced more electricity than that of type K, but declined more as well. Type E produced almost 4 times more electricity than type K, but electricity drop was higher. The Type K thermopile had a fairly straight growth in electricity output, while the type E thermopile had a varying range in tests that involved higher temperatures. This means that probably Type E is not as well suited to hot environments as Type K.

Conclusions/Discussion
The project ended up differently than what was hypothesized. It was hypothesized that the electricity would grow with more thermocouples and temperature, because they would form a chain and pick up more heat. Both types of thermocouples showed signs of decline instead of increase.

Summary Statement
More heat/numbers means less electricity proportionally for all types of thermocouples.

Help Received
Father assisted in building thermopiles, Mother helped in building thermopiles. General Atomics allowed use of hot plate.