CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
S1824

Project Title
The Effect of Operating Temperature on the Efficiency of a Solar Cell

Abstract

Objectives/Goals
The objective was to study how the operating temperature of a solar cell effects it's power efficency.

Methods/Materials
3 solar cells, 1 on metal plate, on suspended in air with wooden dowels, one suspended in air with fan underneath, Infrared thermometer, metal plate, plywood, wooden dowels, Ammeter, voltmeter, panel mounted fan. Measured the temperature of each solar cell after sitting in sun for 30 min, amperage and voltage were recorded and wattage was calculated.

Results
The solar cell on metal plate had the highest temperature and lowest power efficiency, the one suspended in air had second highest temperature and second lowest power efficiency, the solar cell suspended in air with fan underneath had the lowest temperature and highest power efficiency.

Conclusions/Discussion
Over ten trials, it was found that as the operating temperature of the cell increases, the power efficiency decreases, representing an inverse relationship between operating temperature and power efficiency.

Summary Statement
The project tested how the power efficiency of solar cells are effected by operating temperature.

Help Received
None, I designed, created, performed, and analyzed the results myself.