The Cooling of Solar Panels to Increase Power Output

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Solar panels consist of solar cells that use light energy from the sun to generate electricity. When the solar panel increases in temperature, the power output decreases. The purpose of this experiment was to cool a solar panel to increase its power output. The hypothesis was that a rise in the power output would occur by using a cooling process to decrease the temperature of the solar panels. The hypothesis was tested with a constructed cooling system attached to a solar panel that had both a power and temperature regulating system. The cooling system also tested the temperature coefficient theory. By using thermocouples, the temperature was measured on the panels before, during, and after the experimentation period of “solar noon” which was determined when the most solar energy was made throughout the day. Comparative graphs were used to show the difference in temperature and power between the test and control panels. Due to the cooling system's influence, the test panel showed a decrease in temperature compared to the control panel. The decrease in temperature led to the predicted rise in power illustrated by comparative graphs. The temperature coefficient was used to predict the amount of power increase. The result was a power increase of an estimated 10-12%. The hypothesis was correct since the cooling system definitely cooled the temperature of the panel, giving a rise in power. In conclusion, a power increase of an estimated 10-12% could be beneficiary toward utilities during high energy costs times, producing the idea of on-demand cooling.

Awards Won:

Second Award of $2,000