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*Cool Energy: Increasing Solar Array Efficiency*

Solar energy is a major driving force for the future of our energy production. Scientists are also searching for ways to increase its efficiency. Through previous research I have found when a panel is cooler, the reaction occurring in its mechanics is more efficient, and therefore creates a higher current of electricity. This result was the basis of the project: How can we cool a solar panel practically, effectively, and efficiently? To answer this question, three different methods were developed to cool a solar panel using water as the coolant. The first method sprays water onto the back of the panel to cool it, which then falls into a tank and is pumped back through the system. The second method drips water out of a spray bar above the panel, the water moves across the panel and gets collected to be recycled. Method three involved a convection and radiator system, where water is cooled underground and then pumped through a radiator apparatus on the back of the panel. A control solar panel was used to compare the change in amperage and temperature of the improved solar panel system. Five one-hour tests were taken for each method, over 5,000 data points were then averaged out to get a result. The results show that we can increase the efficiency of a solar panel by up to 25% for Method 1, 17% for Method 2, and 9% for Method 3. Using these systems we can increase the world's solar energy production by up to 25% without adding a single solar panel.