



CALIFORNIA STATE SCIENCE FAIR 2002 PROJECT SUMMARY

Name(s) Jason A. Carberry	Project Number 22508
Project Title Hydro-Electrostatic Power Generation	
Objectives/Goals The objective is to determine the feasibility of generating electricity with no moving parts, and its applications in a commercial setting. Abstract Methods/Materials The materials used in this experiment were: one (1) Water Drop Generator, two (2) liters tap water, and one (1) stopwatch. The experimental procedures are as follows: Adjust the spark gap to 1-millimeter (mm) separation. Fill the top reservoir three quarters full with tap water. Measure the number of arcs over the course of two minutes. Record the total number of flashes. Calculate the number of flashes per minute. Repeat the previous steps for a spark gap separation of 2, 3, 4 and 5 millimeters and with each of the following loads: spark gap, 2 NE2 neon light bulbs. Results The charging times of each set of separation lengths were very close regardless of the load applied to them. There was a separation of only 15 seconds when one NE2 bulb was used in comparison to two. This shows that the extra NE2 bulb did not add a large impedance to the Overall Load Impedance (OLI) of the load. In the case of the 1mm separation series, the impedance of the air was not an overwhelming factor in the OLI. This is shown by the 100% difference between the 1 NE2 and the two NE2 test series in the 1mm separation series. The difference between the average value of 20.4 for the one NE2-1mm separation, and the average value of 40, shows that the NE2 bulb is adding significant impedance to the OLI. Conclusions/Discussion I have found that it is possible to generate electricity without moving parts. I have also found that the device has potential for use in small-scale power generation, if the device is scaled up and enhanced. I have found that at the upper limits of the charge capacity, the amount of NE2 bulbs that are placed in series, play a smaller role in the discharge time, while the gap size in the spark gap plays a more significant role. This was especially true during the two mm test, where the second NE2 bulb added only 14% to the overall charge time.	
Summary Statement The project is testing the feasibility of using a generator with no moving parts as a power supply.	
Help Received My father supervised me when I was using the power tools and table saw to cut the acrylic sheets. I would like to thank Mr. Jett for his advice and support that was needed to complete this project on time.	