Stepping into the Future

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This experiment was conducted to determine how many hours of walking was needed to charge a percentage of a cell phone’s battery.A piezoelectric actuator was connected to a full wave rectifier circuit to convert the AC electricity to DC electricity. The electrical energy produced was stored in 4 nickel–metal hydride batteries. The results showed that the larger TH-7R piezoelectric actuator on its own was able to produce a maximum of 1.10mA and 60V. The smaller actuator produced a maximum of 0.40 mA and 60 V; producing a maximum of 0.58mA and 40V on average. The large piezoelectric actuator produced a maximum of 0.50mA and 80V; and on average 0.24 mA. Four actuators connected in parallel produced (3 TH-7R and 1 TH-6R) produced a maximum of 3.6 mA but stayed around 2.55 mA. While these actuators were in parallel, they produced a maximum of 100 V. As the amount of time walked increased, so should the amount of electrical energy within the phone's battery. However, after walking from 1hour straight to 2 hours straight to 3 hours straight, the time walked was not enough to reach the goal of 50 % charged. My hypothesis of charging 50% of the cell phone's battery in 3 hours was incorrect. From this experiment, it can be concluded that piezoelectrics as an alternative source of energy is certainly possible but more research is needed to produce enough current to charge a cell phone within a more convenient time.

Awards Won: