Power Moves: Harvesting Kinetic Energy to Generate Electricity

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Kinetic energy is a readily available source of energy that can be converted into usable forms, such as electricity. In addition to depleting the supply of many nonrenewable resources to combust them for electricity, the environment gets severely harmed from hazardous gasses released into the air that can affect the natural and agricultural ecosystems. Parts of the nation have already dealt with power struggles, and the U.S. Department of Energy predicts that the nation's current energy generating capacity will grow by twenty percent in the next twenty years. The goal of this engineering project was to design an energy converter for golf cart drivers to convert the motion of driving into electricity to charge a cell phone. To build this converter, six magnets were placed in the center of a tube, and one magnet was placed on each end that was longer than the diameter and repelled the magnets in the center. When the tube moves, the magnetic field around the magnets changes, running a current through the wire that was wound on the outside of the tube. This was connected to a circuit that ran through a rectifier to convert the AC to DC that could charge a power bank and ultimately a cell phone. The amount of windings and spacing of them was the variable manipulated in this experiment. While the first three prototypes did not produce significant amounts of peak volts, the fourth prototype produced an amount that is worthy of consideration. It produced an average of 0.494 peak millivolts, which is a small amount, but it has potential to make a difference. Even changes on small scales can add up to help the environment and save nonrenewable resources. This alternative, clean energy source was able to complete the engineering goal, but it was not highly effective.

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