CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J0216

Project Title
Feasibility Study of Electricity Generation Using Piezoelectric Strips inside a Bicycle Tire

Abstract

Objectives/Goals
How much electricity can be produced by putting different amounts of PZT on the inside of bicycle wheels?

Methods/Materials
6 PZT strips, Wire Coil, Capacitor, 4 diodes, Bicycle, Multimeter, Breadboard

Procedure
Connect the components on the breadboard as per the circuit diagram.
Glue 6 PZT strips on the inside of the tire.
Connect the wire from each PZT strip to the input of the circuit.
Discharge the capacitor before starting each round of the experiment.
Bike 5 laps around the field. Record the voltage accumulated in the capacitor with a multimeter.
Repeat steps 3 - 5 for 4 and 1 PZT strip respectively.

Results
The piezoelectric strips were able to produce some electrical after the bicycle was ridden for 5 minutes. The amount of electrical charge generated was more when more piezoelectric strips were used.

Electricity Generated (Volts)

PZT Strips	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Total	Average (Volts)
1	0.01	0.012	0.009	0.016	0.02	0.067	0.0134
4	0.03	0.026	0.032	0.017	0.051	0.156	0.031
6	0.081	0.072	0.068	0.07	0.065	0.356	0.0712

Conclusions/Discussion
The amount of electrical charge was lower than what I had expected. Experimenting with more strips, the placements of the strips on the back tire, placing them inside the tire wall may help in better efficiency.

Summary Statement
Project is about using piezoelectric strips attached to the inside of a bicycle tire to generate electricity.

Help Received
My dad helped with the soldering of wires to piezoelectric strips