CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0910

Project Title
Speed of DC Motors

Abstract

Objectives/Goals
The objective of my experiment is to determine if the speed of a five pole dc motor will change if the voltage is changed. I hypothesize that as I increase the voltage the speed of the motor will also increase.

Methods/Materials
I used 1 wooden dowel rod, 1 wooden board, 4 corner braces, enameled copper wire, 5 lag screws, 2 round slotted wood screws, 2 neodymium iron boron permanent magnets, 5 small pieces of brass shim stock, solid copper wire, a bicycle speedometer, 2 zip ties, a 1 inch ceramic magnet, double sided tape, a small piece of steel that weighs about the same as the ceramic magnet, small rubber tubing, a digital multi meter, and a dc power supply. Using these materials I built a five pole DC motor. Using the power supply I ran the motor at 10, 15, and 20 volts. With the bicycle speedometer I measured the speed of the motor at each voltage. I also recorded the current from the digital display of the power supply.

Results
My hypothesis was correct and the speed of the motor increased with the voltage. I also found that the current increases with the speed and voltage as well.

Conclusions/Discussion
I conclude that the speed of the motor increased with the voltage because increasing voltage increases the strength of an electromagnet which increases the attraction and repulsion between the poles and the field magnets thus causing the motor to spin faster.

Summary Statement
My project was to determine the speed of a DC motor depending on the voltage supplied to the motor.

Help Received
Father helped drill holes and solder wires