CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
J0819

Project Title
Does Magnet Strength Affect the Rotation Speed of Electric Motors?

Abstract

Objectives/Goals
The purpose of this experiment was to determine if rare earth magnets would cause an electric motor to spin faster than conventional magnets.

Methods/Materials
To build the motors I attached unfolded paperclips to the battery leads. Next I bent the opposite ends of paperclips into hooks to hold the armature, which is the part that spins. Armatures are made of enameled copper wire. The wire was wound into a ring the same diameter as the battery. Extra wire on each side of the ring was left to wrap around the armature. These leads on either side of the armature support it, and act as a switch. One of the leads was completely sanded, so that electricity could flow to it. The other lead was only sanded on one side, so it is a switch. The armature was placed on the support hooks and the magnet was placed on the battery beneath the armature. This started the motor spinning.
I attached a small fan to one lead of each armature. The fan rotates as the armature spins, causing the fan to blow. A wind-meter was attached near each fan.

Results
The fan powered by the rare earth magnet spun faster because it blew the wind meter more. This proved my hypothesis.

Conclusions/Discussion
the results proved my hypothesis.

Summary Statement
This expirament was done to compare the neodymium and conventional magnets using them in the same type of motor.

Help Received
My science teacher, Mr. Dzmura helped me make the fans and he revised the abstract. My brother, Omid Kardoust, gave me the idea of suspending a piece of paper on the end of the string so that it catches more wind.