



How to Make an Electric Motor

Adapted from GM's Electrifying Engineering Series

1-2 HOURS | INDOOR ACTIVITY | AGES 7+



SUMMARY

General Motors Engineer Kris Sevel demonstrates what makes electric cars move and how to make your own electric motor using household supplies.

OBJECTIVES

Students will

- Identify how electric cars move
- Describe the advantages of electric cars
- Create a model electric motor



MATERIALS

- safety glasses
- gloves
- One aa batter
- a strong magnet (neodymium is best)
- copper wire 18 gauge (about 7 inches)

ESSENTIAL QUESTIONS

1. How do electric cars move?
2. What is a propulsion system?
3. Where do we find electric motors?

Lesson – How do batteries work?

INTRODUCTION

How do electric cars move?

A propulsion system is a set of parts in a car that make it move. In gas-powered cars, there is a fuel engine. The engine takes fuel and converts it into mechanical energy. Instead of gas, a large battery and an electric motor convert electricity to mechanical energy in an electric car. The motor spins the gears that make the car move.

How do cars contribute to air pollution?

Burning fuel releases gases like CO₂ that contribute to air pollution and climate change. Electric cars don't have tailpipe emissions, so they do not contribute to air pollution in the same way gasoline-powered vehicles do.

Where do we find electric motors? Everywhere, from appliances to toys to cars!

Activity - Build an Electric Motor

PREPARATION

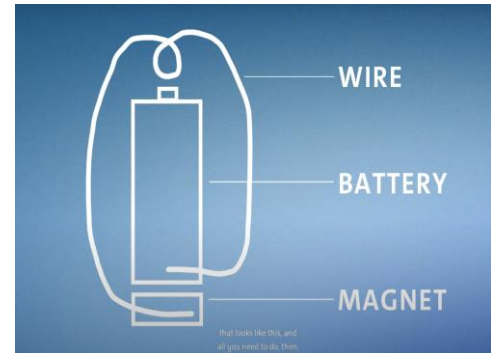
Before beginning, you will need to clear a space in your home that you can work in - a large table or desk.

SAFETY NOTE: You may want to wear protective gloves and eyewear if available.



BUILD A BATTERY

- Place the battery on top of your magnet.
- Bend your copper wire into an M shape with a loop at the top. See diagram for shape.
- Connect the loop to the top of the battery.
- Connect the bottom of the wire--one side to the bottom of the battery and another to the bottom of the magnet.
- Watch it spin!



Magnetic force makes the motor move. Electricity is pulled from the top of the battery to the bottom of the battery using the copper wire. This makes the wire spin. A similar thing happens in car batteries. This powers our probation system.

More Information on electric motors GM's #ElectrifyingEngineering STEM series.
<https://youtu.be/7fpCla00H-g>

