

Set 1. Physical Sciences: *Electric Motors*

Because of the magnets, the loop of wire changes direction all the time. First it is attracted to the north pole of the magnet. Then it is attracted to the south pole of the magnet. It is this “first one way, then the other” motion that makes the wire rotate.

The rotating, or spinning, is the motion that helps motors do the work they do. We use motors in all kinds of things like electric or gas-powered lawn mowers, cars, blenders, trucks, tractors, airplanes, and little things like electric pencil sharpeners!

Generators

Generators change kinetic energy into electrical energy. They do that by using electromagnets. In a simple generator a coil of wire rotates between the poles of an electromagnet or a permanent magnet. This is like what we saw in an electric motor. In a simple generator, the wire is turned using a hand crank.

The coil breaks through the magnetic field between the poles of the magnet and an electric current is created. If the generator is connected to the lamp, or radio, or whatever people needed the electricity for, that device will work as long as the coil of wire keeps rotating.

Sometimes people use hand cranked generators when they are camping or when the electricity goes off during a storm.

Sometimes electricity is generated on a huge scale to supply a community with their electricity. No one is using a hand crank for that! Electricity is generated in a power station and can be made in a number of different ways.

In many parts of the country, electricity is generated by heating water until it becomes steam. The water can be heated using coal, gas, or nuclear power. The pressure from the steam turns giant turbines. The turbines are like the hand crank we read about before.

