

Washing machine electricity generator

(Ireland)

Background:

It is well known that an electric motor can be used in reverse to generate electricity by the dynamo effect.

This recycling of an old washing machine water pump motor shows the principle of alternating current (AC) generation.

You will need:

- ✓ Washing machine water pump motor
- ✓ Two LEDs one green, one red
- ✓ Soldering iron and solder

Follow these steps:

1. Solder the LEDs to the connection terminals of the motor as shown.
2. Make sure they are in opposite bias with the anode of one soldered with cathode of the other.
3. Turn the rotor and observe the LEDs one after the other.

So what happened?

An emf (voltage) is induced when turning the magnet on the rotor changes the magnet flux in the copper wires. The induced alternating current generated lights whichever LED is forward bias. As the direction of the current changes the LEDs alternatively flash in turn.

What next?

- Students could analyse the output current by connecting a cathode ray oscilloscope
- Let the students experiment by turning the rotor faster and observing the effect.
- How could the output be converted to a direct current?
- Investigate how other generators work such as windup and Faraday torches.

