Build a Faraday Generator Remote Control

Say Goodbye to Replacing Batteries!

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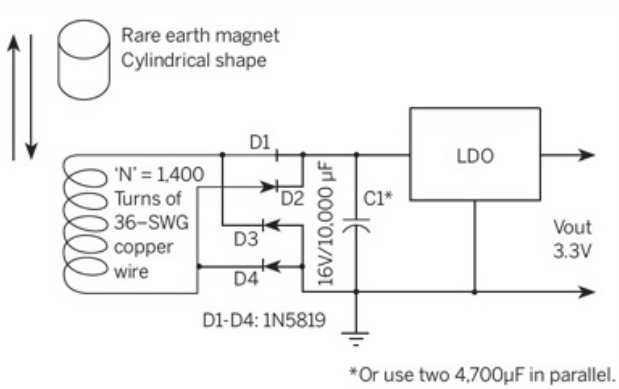
Assembly Time: 1 to 2 hours
Skill Level: Intermediate (soldering required)

The Faraday, or homopolar, generator was first developed in 1831 and operates using a magnetic field, so-called "free energy." This simple project eliminates the need for new batteries, forever! In your remote controller anyway.

The system consists of four main components:

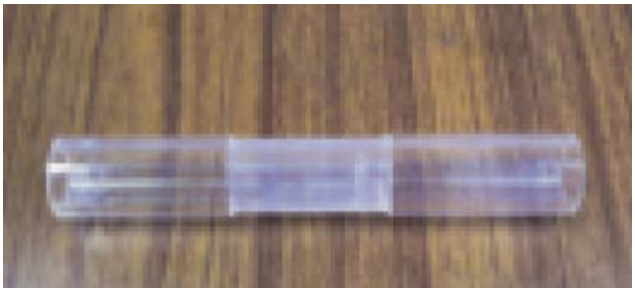
Infrared remote control device
Faraday voltage generator
Charge storage component
Voltage regulator

Shown here is the schematic of the Faraday voltage generator, the charge storage capacitor (capacitor C1 consisting of two 4700µF/16V capacitors in parallel) and the voltage regulator circuit based on a low dropout (LDO) regulator.



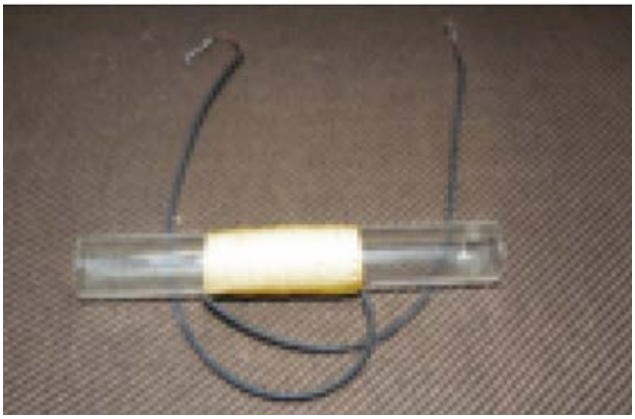
Building Your Generator

Step 1: Prepare the Generator



Groove the tube (optional). I chose a 4" diameter Perspex acrylic tube with 3" internal diameter. The length of the tube is approximately 6". You'll need to machine out a 1.5mm-deep groove into the tube, along about 2" of the tube's length. The groove is where you'll wrap the wire. If you don't have access to a lathe with which to cut a groove, the wire can be wound directly onto the plain acrylic tubing. Just use plenty of masking tape to ensure the wire doesn't unwind.

Step 2: Wind the Wire



Fill the groove with 1,400 turns of 36 SWG enameled copper wire. If you have a coil-winding machine, it will be a lot easier. If not, you can improvise with a power drill and a helper: use the drill to slowly rotate the tube while a friend, wearing work gloves, feeds the wire to you. Leave about 6" of wire free on each end. When you're done, cover the wire coil with masking tape and use 1mm-diameter heat-shrink tubing to cover the two free ends of the wire. If you didn't groove the tube, just wind the copper wire directly onto the plain acrylic tube. Be sure to use plenty of masking tape to ensure that the wire doesn't unwind.

Step 3: Placing the Magnets

Place the magnets inside the Faraday generator tube, stacking all four to make one big magnet. Using a hot glue gun, seal the ends with two pieces

of perfboard, cut and filed in circular shape. To make it more permanent, use a two-part epoxy.

Rebuilding Your Remote Control Device

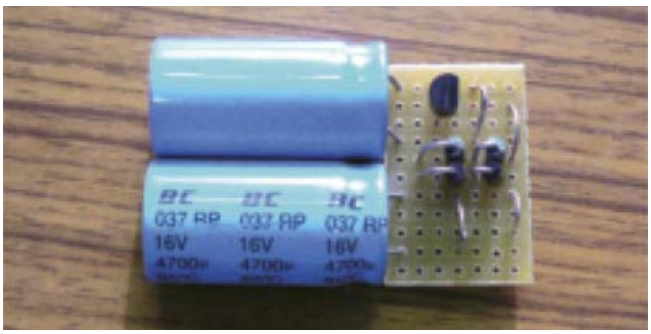
Step 1: Gut the Remote

Remove the batteries from the remote control (forever!) and file down the entire battery compartment to remove all extrusions, as shown. Also file a notch in the side of the battery compartment and the compartment cover, so you can run the wires from the Faraday generator inside.

Note: You'll need to take the guts of the remote out. Just set them aside.

Step 2: Assemble Components

Assemble the components from the circuit diagram (capacitors, diodes and LDO voltage regulator) on a perfboard as shown here. You can test the continuity with a multimeter.



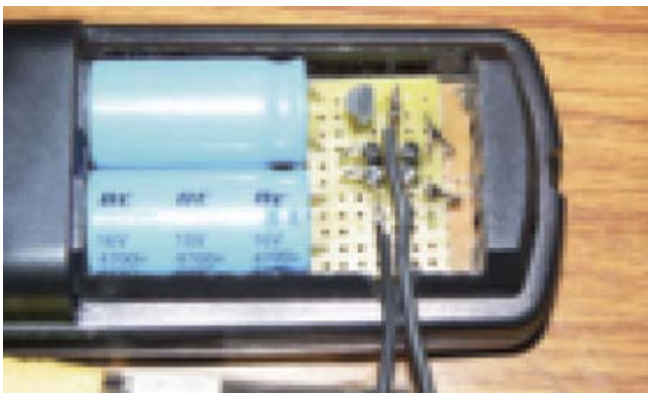
Step 3: Soldering Connections

Solder the output of the voltage regulator circuit onto two hookup wires (extreme right in the photograph) on one end of the perfboard. You'll eventually solder these hookup wires to the battery terminals of the remote control.

Step 4: Connect Generator

Connect the Faraday generator. First solder two hookup wires in the middle of the perfboard to the input of the bridge rectifier (cathodes of diodes D3 and D4, respectively, in the circuit diagram). Then solder the wires from the Faraday generator to these hookup wires.

Tie the Faraday generator temporarily to the TV remote body using cable ties, and shoot more hot glue between the remote and the Faraday tube. If you want to glue them more permanently, use a 2-part epoxy such as Araldite or J-B Weld's J-B Kwik epoxy.



Step 5: Reassemble the Remote

Reassemble the TV remote and fit the circuit board inside the battery compartment as shown.

On the remote control's original circuit board, cut down the battery terminals so that they can be soldered to the voltage regulator circuit board. Solder them to your voltage regulator output wires.

Now you're ready to rock and roll!