CLEAN ENERGY INSTITUTE
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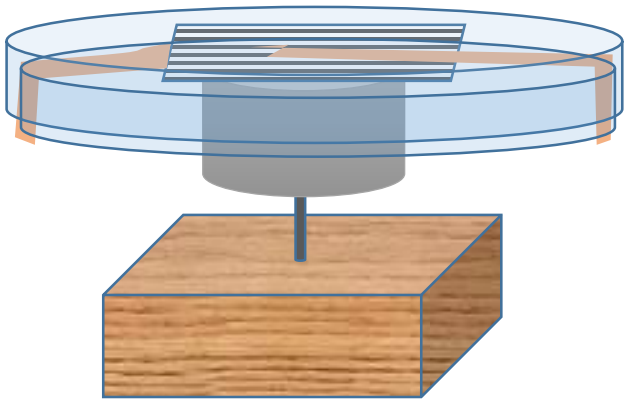
Solar Spinner Plans

Overview



This is fun little device made from a solar cell, motor and petri dish. It can be embellished with decorations or blades to make it a STEAM (science technology engineering ART and math) artifact. Image a yard full of solar spinners that come alive as the sun moves across the sky. This project uses a thin brittle silicon solar cell which is very easy to break if uneven pressure is exerted on it. The sequence of instructions described below minimizes the risk of flexing the cell. Using conductive copper tape is easier, but possibly not as durable as solar tabbing wire.

Materials

solar cells –

40 for $21 52x78mm good size for smaller panel- about .50 each in quantity
http://www.ebay.com/itm/281055364191
smaller 38x 52 – 40 for $13
http://www.ebay.com/itm/390626765664

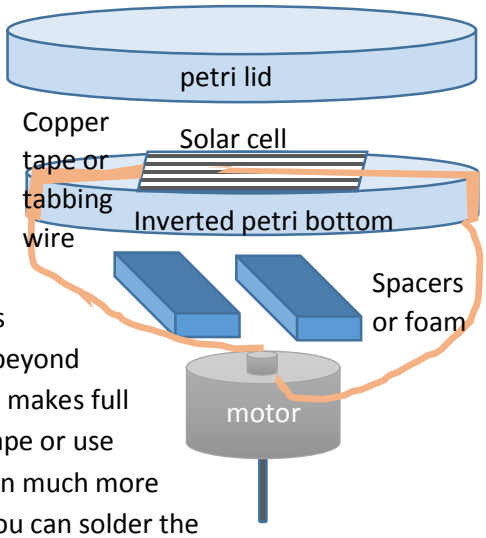
Small electric motor- $1.49
http://www.ebay.com/itm/252066759206

tab wire, pre-tinned 200 fit roll $12.95
http://www.amazon.com/gp/product/B00E28OG8S/ref=oh_aui_detailpage_o03_s00?ie=UTF8&psc=1

conductive foil tape- ¼” $12.89
http://www.amazon.com/Copper-Conductive-Adhesive-Width-Length/dp/B009KB86BU

100 mm Plastic Petri dish
http://www.amazon.com/SEOH-Petri-Dish-100-15Mm/dp/B0015T0LZO/ref=sr_1_2?s=industrial&ie=UTF8&qid=1442526243&sr=1-2

Foam core or foam adhesive tape



Instructions

1) The solar cell should fit completely inside the large petri dish lid without touching at the corners. The 38x52mm cells fit without cutting, the larger 75 x 52mm cells require trimming. The Use flush cutters to snap off about ¼" off each of the corners of the cell if you use a larger cell.
2) Cut a 4" strip of ¼" copper tape and apply it across the two contacts on the back of the solar cell (the silvered side) so that it extends 1"beyond the cell. On a very flat surface carefully rub down the tape so that it makes full contact with the back of the cell. (You can also solder the copper tape or use pre-tinned tabbing wire used with solar cells to make the connection much more permanent and weather resistant.) If your motor is already wired you can solder the leads carefully directly to the solar cell and skip to step 9.
3) Center the cell in on the inverted petri dish (what would normally be the bottom of the dish) and fold the extended tape over once so that that the adhesive faces the other direction. Pinch this down on the side of the dish. This will be used to attach the cell to the petri dish.
4) Cut another piece of foil tape and carefully position this over the central conductor on the top of the cell and run it off over the edge of the petri dish on the opposite side of the other conductor from the bottom. Be careful not to let the top and bottom tapes touch causing a short circuit.
5) Test your solar strip with a voltmeter. One cell should yield .5 volts.
6) Put the lid of the petri dish over the cell and fix it with two small pieces of clear plastic tape.
7) Cut and strip a 4" length of braided copper wire and tease out two single strands.
8) Solder one strand to each of the lugs on the motor.
9) Cut two 1"x ½" piece of foam core or double sticky foam tape. Fix the back of the motor on either side of the raised hub along the axis where the wire stick out.
10) Holding the motor on its side, solder each wire to the exposed copper tape coming from the solar cell.
11) Confirm that the motor shaft is spinning when the solar cell is placed in the sun.
12) Carefully invert the motor and position it in the exact center of the inside of the petri dish and then press it on the tape or use hot dabs of hot glue.
13) Drill a 1/16" hole in a block of wood or the end of stick and press the solar spinner into the whole by the shaft so that the spinner sits level.
14) Place the solar spinner in the sun or under a high intensity incandescent light and watch it spin.
15) You can and reflective ribbons, blades or other decorations to your invention.