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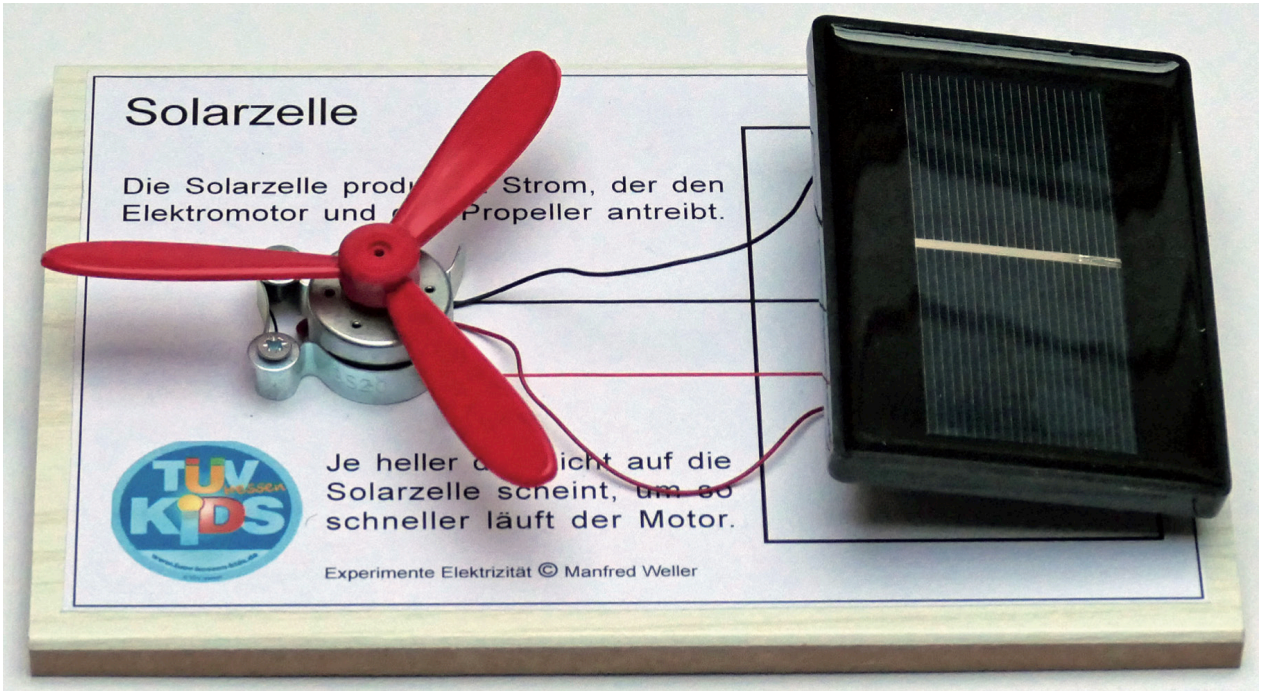
Solar plant TÜV Hessen Kids



tool			
1	hammer	1	nose pliers
1	Philips screwdriver	1	nail
material			
1	Base Plate	2	screws
1	solar cell	2	thumbtacks
1	solar engine	1	Impeller
1	Motor clamp	1	circuit diagram

OPITEC

We are building a solar plant

What does "solar" mean? Translated, this means "concerning the sun".

It has become common practice to call all systems that generate energy from sunlight **"solar plant"**.

In technology, a distinction is made between the terms **"solar thermal energy"** and **"photovoltaics"**.

Solar thermal energy uses the sun's energy to heat water.
Photovoltaics converts the light of the sun into electrical current. If we speak here of **"Solar cell"** talk, then this is in the technical sense **"Photovoltaics"**.

You can build a solar plant yourself and test under which conditions it works best.

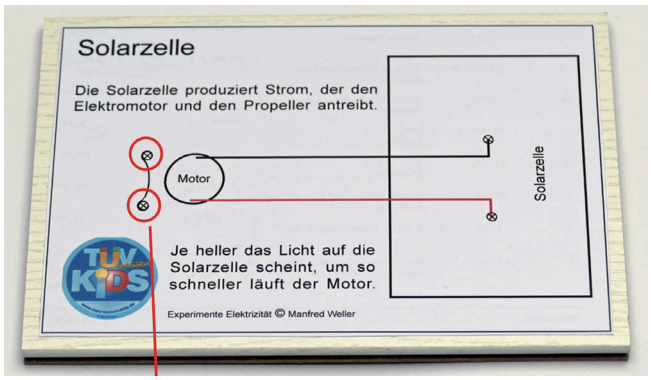
To do this, you need a solar cell, a motor and an impeller. If the sunlight reaches a certain voltage on the solar cell, the motor starts to rotate. To make this clearly visible, an impeller is attached to the motor shaft.

The brighter the sun shines, the more electrons are released from the solar cell. This increases the voltage and the motor rotates faster.

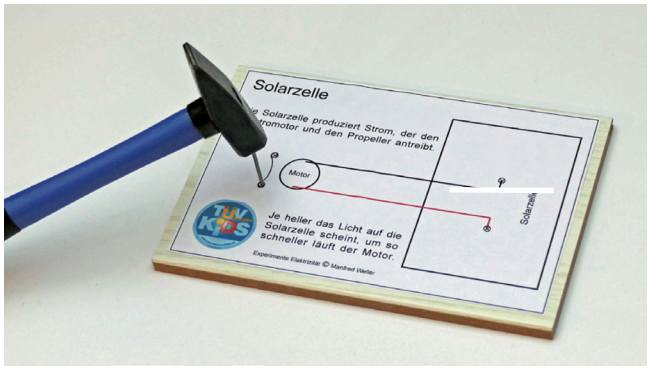
You can experiment to see how you have to hold the solar cell in the sunlight so that the motor rotates as quickly as possible.

If the sun isn't shining, you can test your solar cell with a bright lamp. Of course, that's not the point of using renewable energy, but it's a good test.

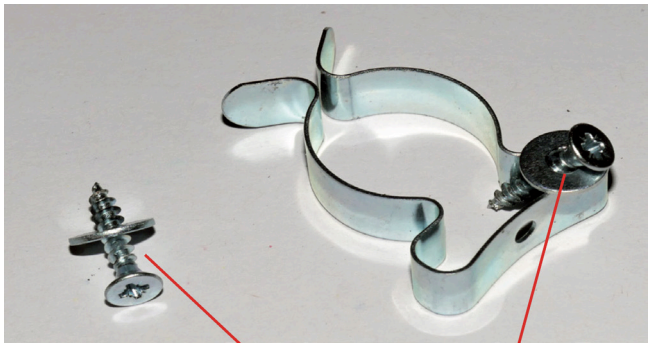
Prepare the necessary tools and materials.



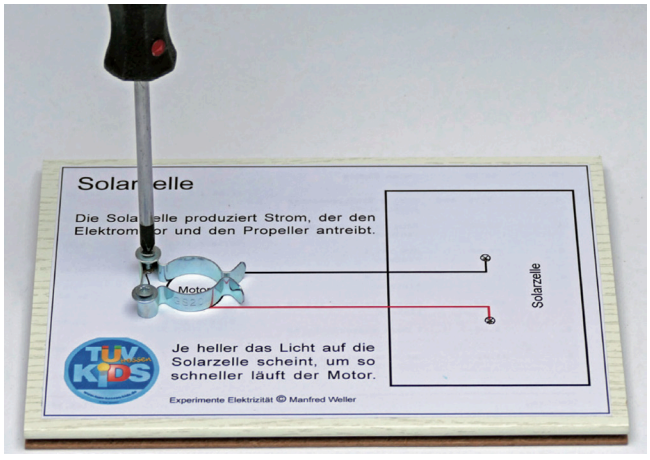
Glue the circuit diagram onto the board and use a nail to make two holes.



The holes should only be 3 to 4mm deep. This will make it easier to screw in the screws.



Put each screw through a washer.

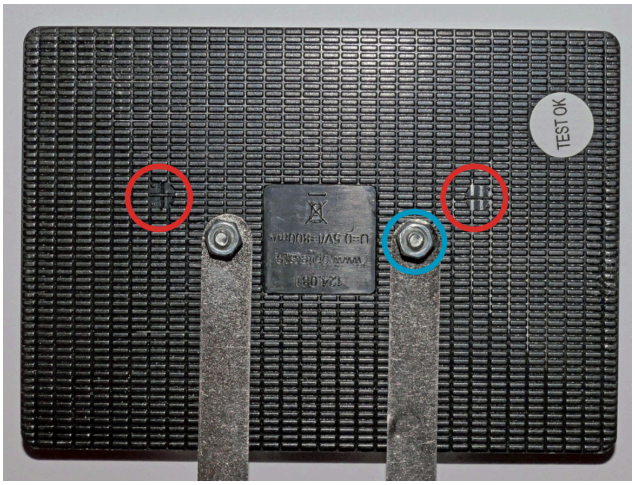


Place the bracket on the spot indicated in the circuit diagram. Insert the screws into the corners of the bracket.

The washers sit on top of the bracket and hold it in place. That's why you have to screw the screws all the way into the corner.

Only screw the screws in until you feel resistance. If you screw them in any further, you will make the hole in the board larger and the screws will no longer hold.

Click the motor into the clamp. There is a red and a black cable connected to the motor.

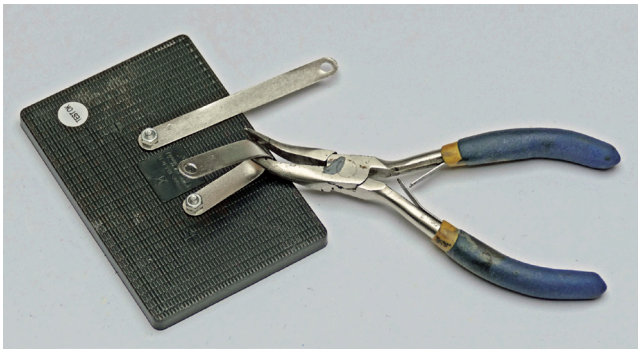


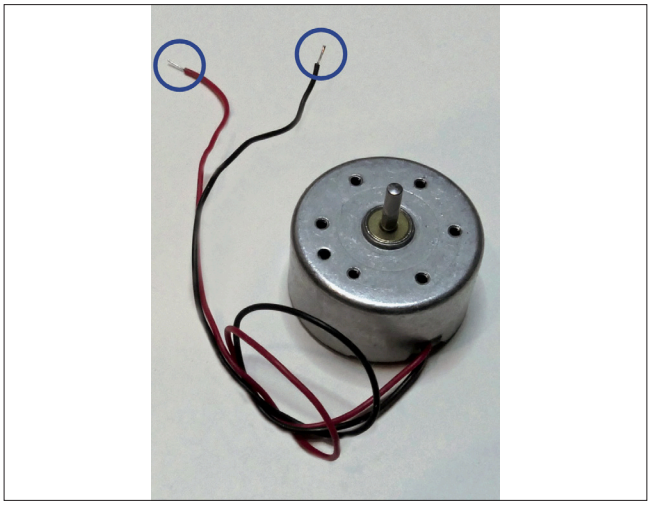
If you look closely at the back of the solar cell, you will find a + and a – sign next to the screws on the bracket.

You should only tighten the nuts of the retaining strips with your fingers. If you tighten them too much with the pliers, you will rip the screws out of the solar cell.

Use the needle-nose pliers to bend the tabs exactly in half to form an angle. Make sure that you bend both tabs in the same place, otherwise the solar cell will be crooked later.

Place the solar cell on the board so that + is on the side where the red cable of the motor is connected.

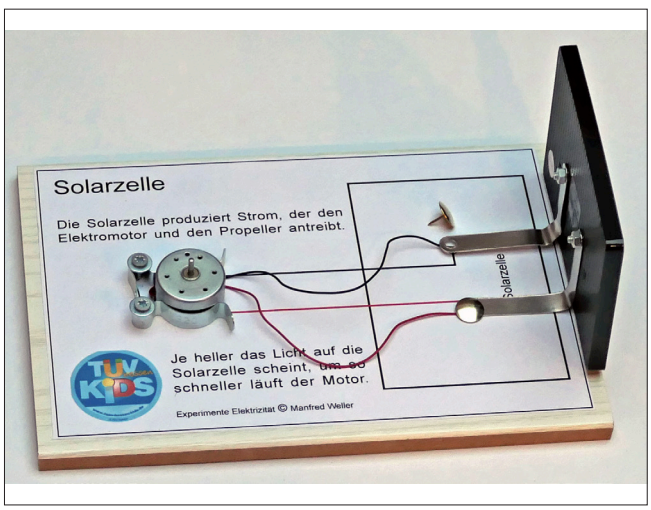


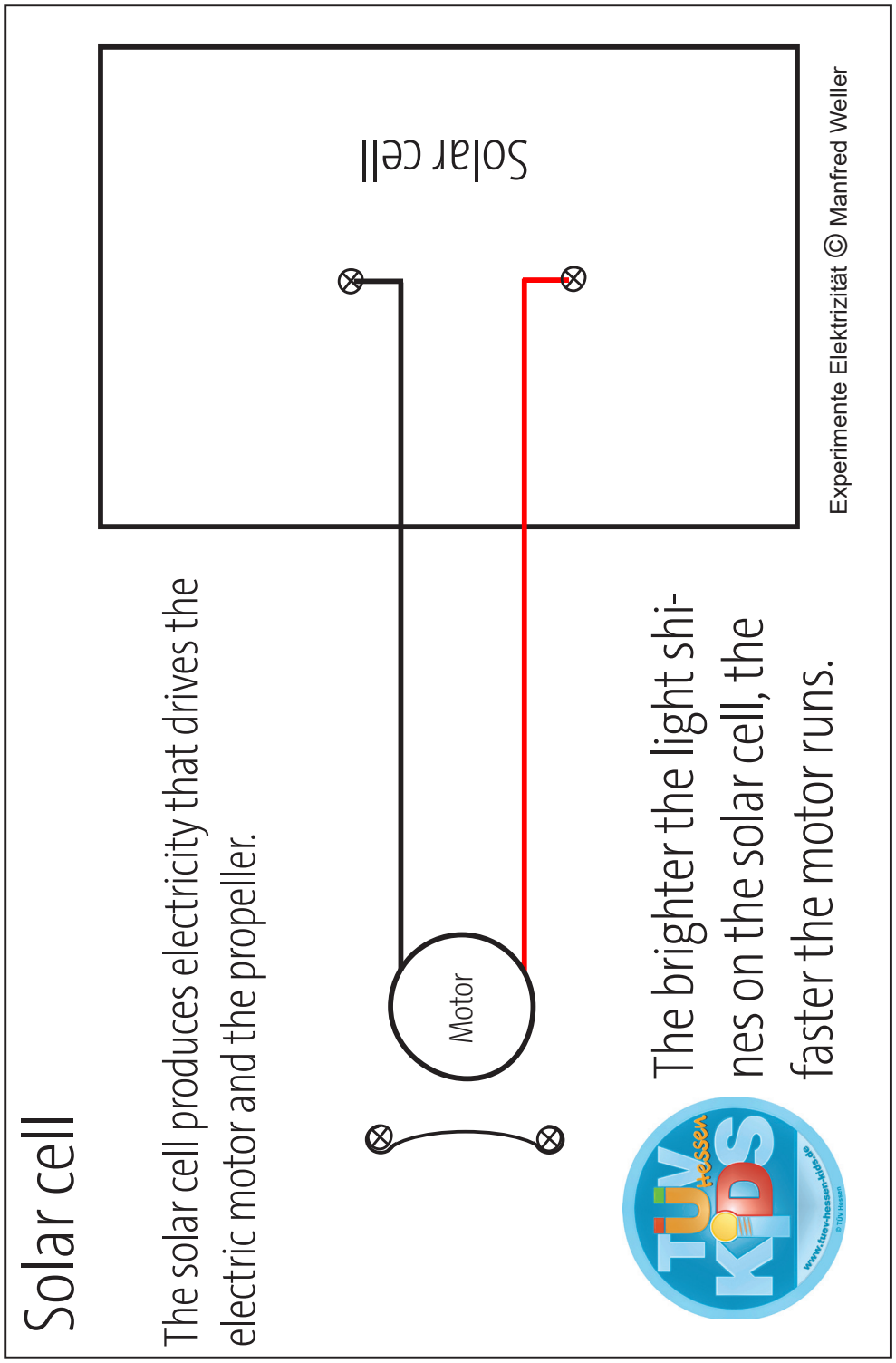


The ends of the motor cables are stripped. You can see the bare metal of the wire where the insulation is missing. This piece of metal must have an electrical connection to the tabs on the solar cell.

Place the cable ends under the tabs and nail each one to the board at the marked spot using a drawing pin.

Now bend the solar cell so that the sun can shine as vertically as possible onto the cell. This will allow you to align the solar cell optimally with the sun later.




Solar cell
The solar cell produces electricity that drives the electric motor and the propeller.
Solar cell
Motor
The brighter the light shines on the solar cell, the faster the motor runs.
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