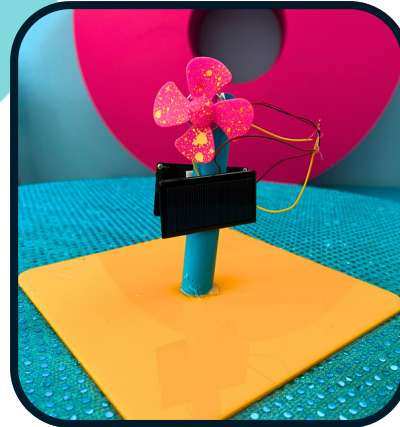


Build a Solar Powered Fan

This document will explain how to build a solar powered fan. A solar powered fan is an excellent innovation which helps us to keep cool, whilst also being sustainable! Here are some examples of fans we have made at the National Marine Aquarium:



The bases and towers of your fans can be made from a wide variety of waste materials you may already have in your homes. Re-using materials is more sustainable as it stops the materials going to landfill or being burned, and saves energy instead of using new materials.

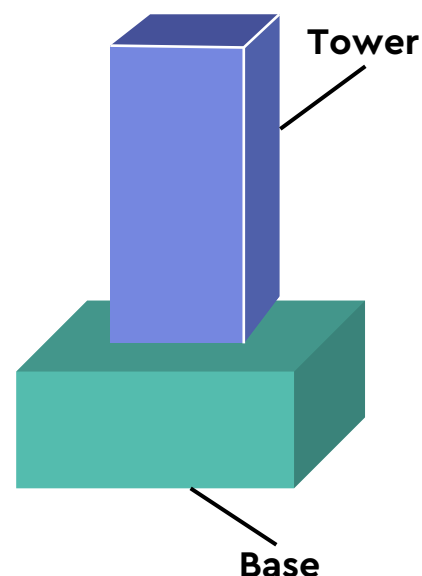
Equipment Needed:

- A flat base made from recycled materials, for example an old CD, video case, lunch box, or piece of sanded wood
- A tall tower made from recycled materials, for example a toilet roll inner tube, piece of piping, or piece of sanded wood
- 2 small solar panels with wires attached
- 1 small motor with wires attached
- 1 fan blade
- Pair of wire strippers which are the correct size to strip the wires on your solar panels and motor
- Glue to attach your base and tower, for example PVA, hot glue gun, wood glue, or super glue
- Blue tack, double sided sticky tape, or double sided sticky fixers
- Equipment to decorate your fan, for example acrylic pens, felt tip pens, stickers, paint, collage paper and glue

How to build your fan

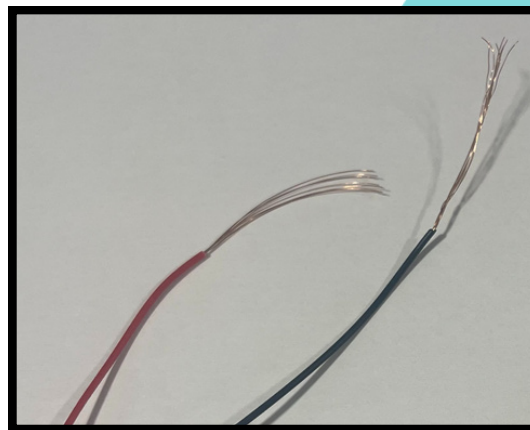
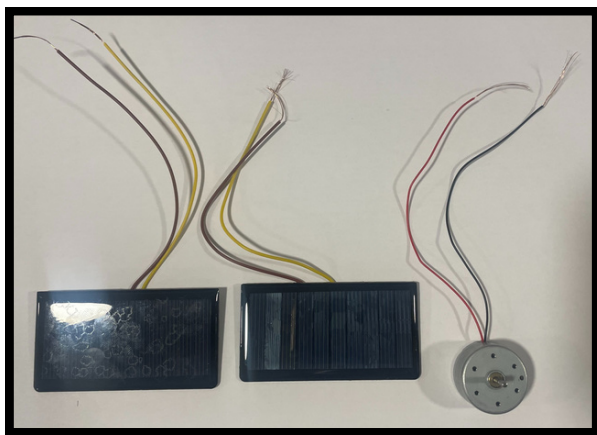
Constructing your base and tower

1. Select the materials for your base and tower. The base needs to be something flat and the tower needs to be something tall.
2. Use glue to attach your tower to your base. Leave this to dry.
3. Decorate your base, tower and fan blade with appropriate materials. You will need to consider what materials your base and tower are made from, for example felt tip pens won't work on plastic, but will work on wood. Leave your designs to dry.



Wiring your electrical components

4. Collect your 2 solar panels and motor.



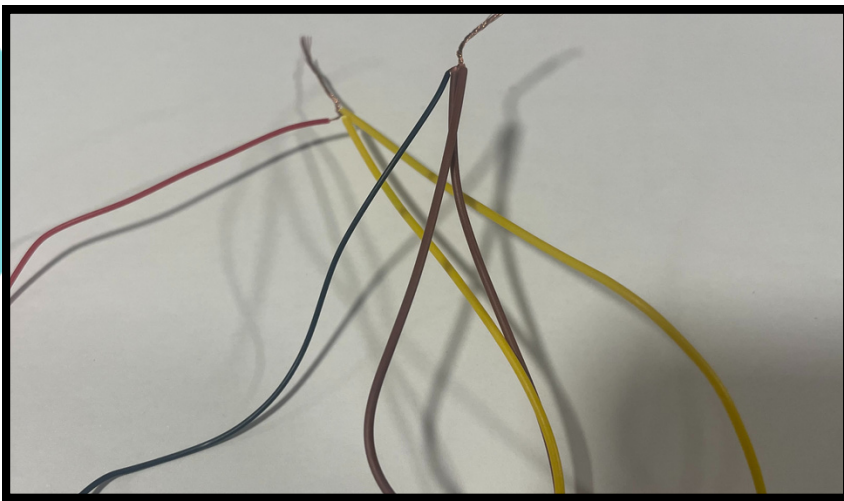
5. You might need an adult to help with this part. Using the wire strippers, strip 2cm of the plastic coating on the outside of your 6 wires so the copper wires inside are exposed.

If you're unsure how to do this, place the wire in the hole of the wire stripper and close the wire strippers around the wire so that 2cm of wire at the exposed end are poking through. Hold the wire in one hand and the wire strippers in another hand. Gently, but firmly, pull the wire through the wire strippers so that 2cm of the plastic coating is removed from the exposed end.

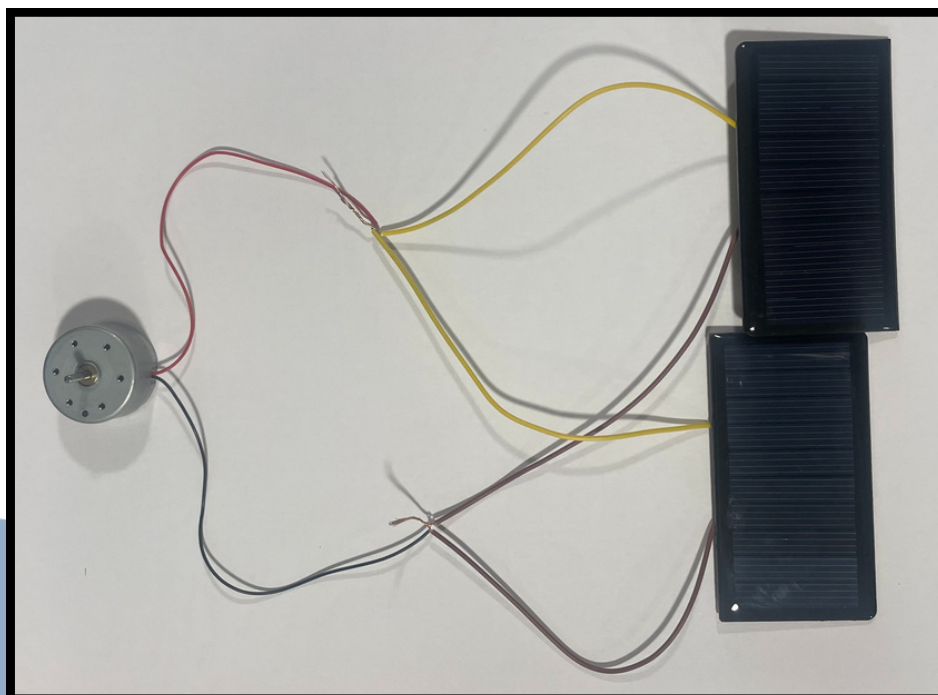
6. Hold the 3 wires from the positive terminals together so that the exposed copper wires are aligned.

For our example, this is the 2 yellow wires from the solar panels and 1 red wire from the motor. Depending on where you sourced your electronics from, the colours may vary. Check the information on your individual items and instructions.

Twist the exposed copper wires from these 3 positive wires together.



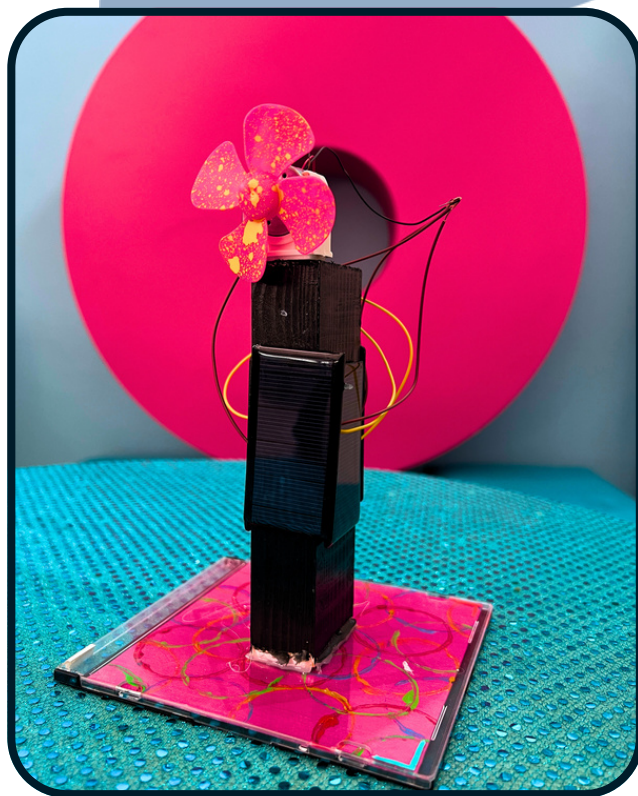
7. Do the same for the 3 wires from the negative terminals. For our example, this is the 2 brown wires from the solar panels and the 1 black wire from the motor.



Assembling your solar powered fan

8. Gently push your fan blade onto the motor about half way. Don't push the fan blade all the way on, as it may get stuck and prevent the motor from turning.

9. Using blue tack, double sided tape or sticky fixer tabs, attach your solar panels and motor to the base and tower. Your fan will work best if both solar panels are angled facing the sun, e.g. on the tower. Make sure the positive wires and negative wires stay separate and aren't touching each other.



Testing your solar powered fan!

10. On a sunny day, if the angle of the sun's rays are hitting the solar panels correctly, your fan should work! Simply put your fan in a sunny spot and feel the cooling breeze.

Trouble-shooting

Is your fan not working? Try these simple fixes to hopefully solve the issue!

- Check that your positive wires and negative wires aren't touching.
- Check that your fan blade isn't pushed on too far and isn't being caught by something that's stopping it from spinning.
- Check that your solar panels are facing the same direction so that they are receiving maximum light exposure.
- If your fan still isn't working, it could be that your motor or solar panels are faulty and might need replacing.

We hope that you enjoy building your solar powered fans. Please feel free to send photos of your designs to learning@oceanconservationtrust.org as we'd love to see what you've made!