

Technical Notes

Windmill

Associated Equipment

The following djb microtech equipment can be used with the Windmill:

- Solar Motor L1-1020.00
- Smiley Green Man L1-1030.00
- 10F Super Capacitor

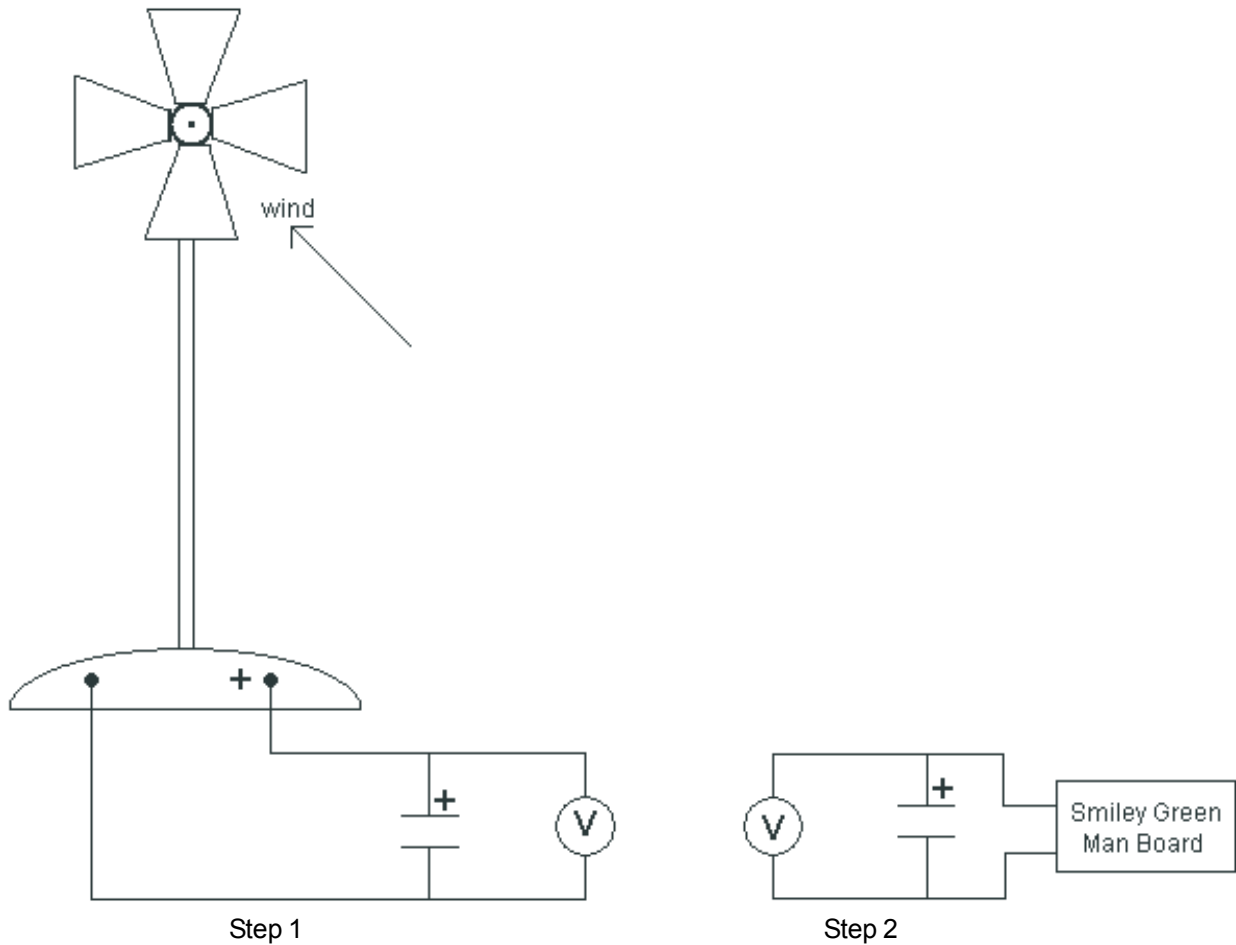
The Windmill is an output device and it produces a voltage in the range 1.5V-4.5V.



Things to try with your Windmill

- Connect the Smiley Green Man to your windmill taking care to connect the positive output from the Windmill to the positive terminal on the Smiley Green Man Board. Using a hair drier as a wind source investigate how the brightness of the LEDs varies as the hair drier moves closer to the Windmill - you may have to support the Windmill if the wind is too strong.
- Replace the Smiley Green Man with the Solar Motor and repeat the above.
- Connect the output of the Windmill to a voltmeter and repeat the above.
- Turn the base of the windmill in steps of 10 degrees and investigate how the output voltage varies.

Storing Energy using our 10F Super Capacitor



Step 1

Using the hair drier, charge the super capacitor until the voltage is in the range 1.9V - 2.1V. This may take up to 10 minutes. When the voltage is at a suitable value disconnect the lead to the super capacitor with the wind still blowing.

Step 2

Now connect the two leads from the capacitor to the Smiley Green Man board and the LEDs will stay on for **5 minutes**.

A challenge

A major UK DIY chain sells roof mounted windmills which have a maximum output of 1kW when the wind speed is 16m/s or greater. Hunterston B nuclear power station has a maximum power output of 1288MW. If Hunterston B was to be replaced with roof mounted windmills, how many homes would be required? Give two reasons why your answer is too low.

This Technical Note is available as a coloured pdf in the Teachers section of our website.