Project Aeolus: Vertical Axis Wind Turbine V2

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VIEW IN BROWSER

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Summary

The second, larger version of my 3D printable vertical axis wind turbine.

Household > Outdoor & Garden

Tags: design art sculpture energy greenenergy windturbine vawt

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This is the second version of my vertical-axis wind turbine. (V.A.W.T.) I've taken to calling the VAWT Project Aeolus, after the Greek god of wind. The goal of this project is to not only reduce my carbon footprint but also do it in an aesthetically pleasing manner. It is my belief that pure function is not enough to convince people to switch to clean sources of energy. When function is paired with beauty, a spinning bit of plastic can capture both clean energy and the imagination of those who view it.

This VAWT is composed of four easy to 3d-print parts. This modular design offers two advantages. The ability to print individual parts means that it is more accessible to printers with a smaller build volume. Additionally, the turbine can be stacked to any height without compromising its structural integrity. In essence, this turbine is comprised of two types of vertical wind turbines. A helical Darrieus turbine, and a Savonius style wind turbine.

Please feel free to ask as many questions as you can! Even if it sounds like a silly question! I certainly learn an awful lot by reflecting on a process, or explaining why I designed something a particular way.

Print Settings

Printer Brand: Creality

Printer: CR-10

Rafts: No

Resolution: .20 mm

Infill: 10%

Notes: Try and keep everything as light as possible.

Hardware Needed

I've already accounted for tolerance in this model, but you may need to adjust it depending on your printer. The centerpiece is designed for a 12mmx26mmx9mm Thrust Bearing (https://www.amazon.com/gp/product/B002BBH8TW/ref=oh_aui_detailpage_o02_s03?ie=UTF8&psc=1) and the screw holes are designed for 12mm long, countersunk, m3 screws. I used 12mm linear rods (https://www.amazon.com/gp/product/B002BBJ0CA/ref=oh_aui_detailpage_o06_s00?ie=UTF8&psc=1) which are clamped together with 12mm clamping collars (https://www.amazon.com/gp/product/B0020800IC/ref=oh_aui_detailpage_o08_s00?ie=UTF8&psc=1). These clamping collars also hold up the thrust bearings.

Screws: https://www.mcmaster.com/99512a225

Model files

vawt_af_arm_v2.stl

vawt_af_vane_v2.stl

vawt_af_centerpiece_v2.stl

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