Building an Ecosystem With Small Wind Turbines

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Background

In response to the growing demand in energy, small wind turbines can help individuals generate their own renewable energy.

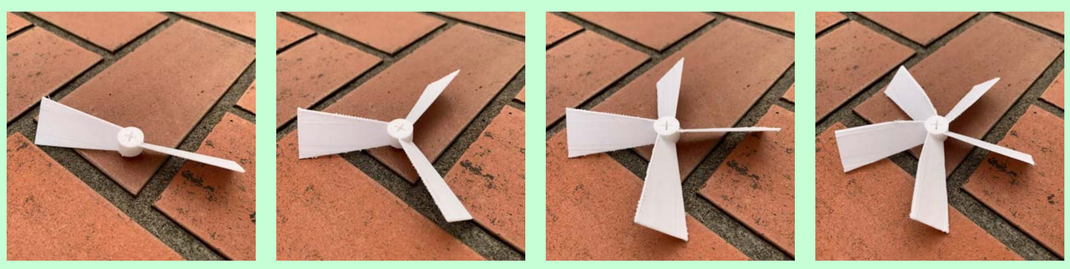
Objective

Develop 3D data of efficient wind turbine blades. Share the data online so that anyone can use the data and build efficient wind turbine blades.

Method

An example of how efficient wind turbine blades are developed, tested, updated on the platform, and published.

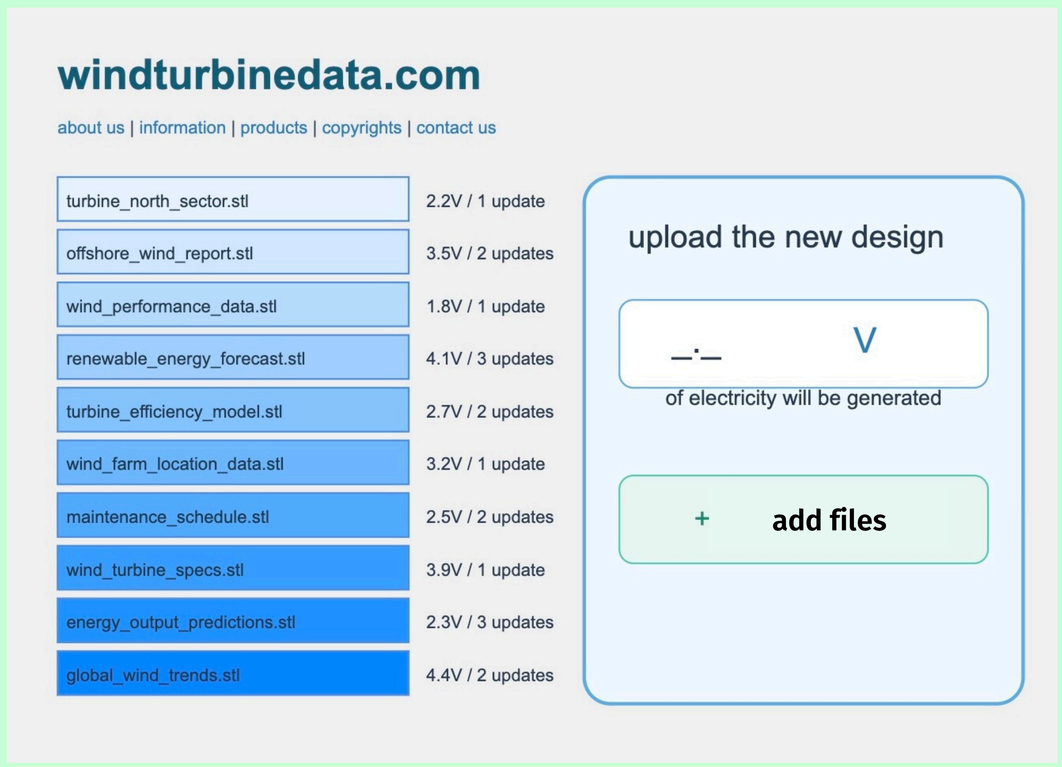
1. Design blades with different numbers of blades (2, 3, 4, and 5).



2. Test efficiency at three wind speeds.

3. Choose the most efficient blade.

4. Share the 3D data online.



Results

	Low (V)	Mid (V)	High (V)
2 blades	not countable	1.4	2.1
3 blades	0.3	2.0	2.5
4 blades	1.2	2.5	2.8
5 blades	1.2	2.7	3.4

Analysis

With the most efficient blade generating 3.4V and a current of 100mA (0.1A), each wind turbine will generate:

3.4V × 0.1A × 24h = 8.16 Wh

If 2 billion households use this turbine, the total energy produced is:

8.16Wh × 2 billion = 16.32 billion Wh

This is equivalent to the energy produced from approximately 1.6 nuclear power plants.

As the blades are continuously being improved for better efficiency, the energy generation will increase with time.

Conclusion

The challenge is to improve the blade shape and materials to achieve even more efficient power generation.
I hope this project will be the first step toward the spread of sustainable energy.