

## European Solar and Energy Storage Solutions

**Build something that uses wind  
to generate electricity**



## Overview

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In this experiment, you will test different types of rotors on the turbine. You will have two rotors for each design instead of three, like on a real turbine, since the latter is far more difficult to make. You will, of course, want to create some basic designs, such as flat rotors, both rotors curved in the same direction, each rotor curved.

In order to demonstrate the efficiency of your rotor designs, the turbine needs an axle, which will spin with the rotor assembly and haul a weight up the tower. You already have half of the axle built—the bottom of the.

Find out how a wind turbine can use the power of the wind to generate energy in this science fair engineering project. You'll design various blades to find out which produces the most energy, and put the wind to work for you!

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Wind turbines work on a simple principle: instead of using electricity to make wind—like a fan—wind turbines use wind to make electricity. Wind turns the propeller-like blades of a turbine around a rotor, which spins a generator, which creates electricity.

We can use moving air, or wind, to generate electricity. This is called wind power. In 2021, Canada had the ability to generate 14 300 MW of wind power. Did you know?

About 5% of the world's electricity comes from wind power. Wind Turbines. Wind power is usually generated using a wind turbine.

Wind energy is produced with wind turbines —tall, tubular towers with blades rotating at the top. When the wind turns the blades, the blades turn a generator and create electricity. Wind turbines can have a horizontal or vertical axis. The turbines do not actually produce wind energy, directly.

Wind energy, or wind power, is created using a wind turbine, a device that channels the power of the wind to generate electricity. The wind blows the

blades of the turbine, which are attached to a rotor. The rotor then spins a generator to create electricity.

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### Wind Energy Basics , NREL

The majority of turbines are installed on land. And land-based wind energy is one of the lowest-cost sources of electricity generation, as highlighted by the U.S. Department of Energy.. Researchers at NREL are categorizing wind ...



### Electricity generation

Electricity generation is the process of generating electric power from sources of primary energy. For utilities in the electric power industry, it is the stage prior to its delivery (transmission, distribution, etc.) to end users or its storage, using for ...



### Putting Wind to Work

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### The Science of Wind Energy: How Turbines Convert Air ...

Wind turbines are a remarkable technology that

efficiently converts the kinetic energy of moving air into electricity, providing a sustainable and clean source of power for our modern world. As we continue to advance in renewable energy ...



## Explore a Wind Turbine

Wind turbines harness the wind--a clean, free, and widely available renewable energy source--to generate electric power. The animation below is interactive. You can start and stop the turbine's movement, hover over parts to see their ...

## How Is Electricity Generated? Energy Production Explained

Hydropower plants use the energy of falling water to turn a turbine, while wind power plants use wind energy to turn turbines. Solar power plants use the energy of sunlight to generate ...



## Wind Energy Basics , NREL

Unlike fans, which use electricity to move air, wind turbines use moving air to generate electricity. When the wind blows, its force turns the blades, which runs a generator and creates clean electricity. But some turbine designs can produce ...

## How do steam turbines work?

(A typical power plant steam turbine rotates at 1800-3600 rpm--about 100-200 times faster than the blades spin on a typical wind turbine, which needs to use a gearbox to drive a generator quickly enough to make ...



## How Do Wind Turbines Work? , Department of Energy

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## Building a DIY Wind Turbine: Important Things You ...

Repurposing a Motor or Generator: Consider salvaging a motor from various sources like old appliances, such as washing machines or treadmills. These motors can be repurposed into generators by adapting them to harness ...



## Wind explained Electricity generation from wind

How wind turbines work. Wind turbines use blades to collect the wind's kinetic energy. Wind flows over the blades creating lift (similar to the effect on airplane wings), which causes the blades ...



## Generate Energy or Electricity Science Projects

Investigate ways to generate energy or electricity. Build your own device to generate electricity, You have probably read all about forms of alternative energy like solar and wind power. But ...



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