

# Wind Energy

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## Introduction to Wind Energy



The wind can be our closest friend or our most feared enemy. It can provide a

cool breeze to help you relax on the beach or fly a kite at the park. It also helps to carry pollen and other seeds to the ground, which in return creates new forms of life. Wind energy is energy that is created by using the wind to generate power. It is a form of kinetic energy that can be transformed into mechanical energy or [electricity](#).

## How is wind energy created?

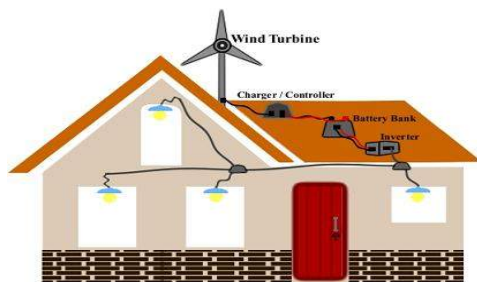
Wind power is created by different types of wind power [generators](#). The two most commonly used wind machines are:



## Windmills

Windmills are the oldest form of technology used to create wind energy. A Windmill captures wind energy and then uses a generator to convert it to electrical energy. The design of a windmill is integral to its efficiency. They were originally created to help pump water for farming and consisted of a tower with a multi-bladed rotary engine. The wind would turn the blades, which would then turn a crankshaft that would pump the water. Windmills can be used not only for pumping water, but also for grinding grain, tobacco and spices.

## Wind Turbines



Wind turbines are more modern wind machines that use large blades to generate electricity. These machines consist of blades that are mounted on a turning shaft. The shaft has a gear transmission box that increases the speed of the blades. The transmission is attached to another shaft that turns a generator to create electricity. Wind turbines can be used for charging batteries, pumping water and powering homes.

## Wind Power

Wind power generators convert wind energy (mechanical energy) to electrical energy. The generator is attached at one end to the wind turbine, which provides the mechanical energy. At the other end, the generator is connected to the electrical grid. The generator needs to have a cooling system to prevent overheating. Energy output from a wind turbine will vary as the wind varies. However, the most rapid variations will be compensated to some extent by the inertia of the wind turbine rotor.

## Advantages of Wind Energy

1. One of the best and most valuable advantages of wind energy is that it is totally pollution free.
2. Wind energy is inexhaustible. As long as winds blow on earth, this energy will always be there for us to harness.
3. As we use more and more of wind energy, less and less fossil fuels will be burnt. This, in effect, will mean less pollution.
4. Wind energy can be harnessed anywhere and everywhere in the world, unlike fossil fuels that are available only in some countries.
5. Harnessing wind energy is very cheap compared to the fossil fuels that have skyrocketing prices.
6. Unlike fossil fuels, wind does not take a tremendously long time to be made. It is always readily available.
7. Since wind is free, the price of wind power is stable, unlike energy generated from fossil fuel powered sources, whose prices may vary considerably.
8. Wind energy serves as the perfect mode of electricity for remote areas that cannot be connected to the main electricity grid.
9. Harnessing wind energy can help create jobs in numerous areas, such as manufacturing, construction, and environmental management services.
10. The land that a windmill is set up can still be used for other purposes, such as cattle grazing.

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## Reference links:

- <http://www.greenstudentu.com/encyclopedia/energy/wind##>
- <http://www.wisegeek.com/what-is-wind-power.htm>
- <http://windeis.anl.gov/guide/basics/index.cfm>

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