# Why doesn t the wind turbine rotate when there is wind

What is the difference between upwind and downwind turbines?
Upwind turbines--like the one shown here--face into the wind while downwind turbines face away. Most utility-scale land-based wind turbines are upwind turbines. The wind vane measures wind direction and communicates with the yaw drive to orient the turbine properly with respect to the wind.

How does a wind turbine turn mechanical power into electricity?
This mechanical power can be used for specific tasks (such as grinding grain or pumping water) or a generator can convert this mechanical power into electricity. A wind turbine turns wind energy into electricity using the aerodynamic force from the rotor blades,which work like an airplane wing or helicopter rotor blade.

Does a wind turbine lose energy?
The wind loses some of its kinetic energy(energy of movement) and the turbine gains just as much. As you might expect,the amount of energy that a turbine makes is proportional to the area that its rotor blades sweep out; in other words,the longer the rotor blades,the more energy a turbine will generate.

How does a wind turbine rotor work?
As the blade turns,the rotor attached to it also turns. This movement is transmitted through a series of cogs in a gearbox to turn the rotor of the generator. The gearbox is designed to amplify the rotations of the wind turbine blades before it is conveyed to the generator.

Why does a wind turbine rotate at a low speed?
The wind turbine rotates at a low speed due to the noise and mechanical strengthfactors and at such a low speed there will be no considerable transduction of mechanical rotation to an electric voltage. Thus,a low speed shaft (connected to the blades) translates the low rpm of blades to high rpm using a high speed gear for the electric generator.

Why do wind turbines have a large rotor diameter?
Wake forcesare created because the wind slows down and becomes turbulent as it passes the turbine blades. This is why turbines are widely spaced,usually five to nine rotor diameters in the direction of the prevailing wind and three to five rotor diameters in the perpendicular direction.

Wind turbines work on a very simple principle: the wind turns the blades, which causes the axis to rotate, which is attached to a generator, which produces DC electricity, which is then converted to AC via an inverter that can ...

Why do wind turbines have 3 blades? A combination of structural and economic considerations drives the use of three slender blades on most wind turbines--using one or two blades means more complex structural ...

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The short answer is: No, it is not the wind"s fault, and no, there is no technical reason for all blades to rotate the same way. It looks chaotic if the blades turn different ways when there are several turbines close to each other, ...

1. Why don"t wind turbines spin faster to generate more electricity? Spinning faster does not necessarily mean more electricity generation. The design of wind turbines balances the rotational speed with torque to ...

The blades also "pitch," or angle, in order to extract the maximum amount of power from the wind. Why are there so many windmills that aren"t spinning? Why don"t the turbines spin all of the ...

However, there are limitations due to losses in the system from the mechanical assembly in the nacelle. Figure 1 compares the performance of ... that by using more blades in the wind ...

How does a turbine generate electricity? A turbine, like the ones in a wind farm, is a machine that spins around in a moving fluid (liquid or gas) and catches some of the energy passing by.All sorts of machines use turbines, ...

This is why turbines are widely spaced, usually five to nine rotor diameters in the direction of the prevailing wind and three to five rotor diameters in the perpendicular direction. Wind speed also changes as a result ...

Yaw refers to the rotation of the entire wind turbine in the horizontal axis. Yaw control ensures that the turbine is constantly facing into the wind to maximize the effective rotor area and, as a result, power. Because ...

How Wind Blades Work. Wind turbine blades transform the wind"s kinetic energy into rotational energy, which is then used to produce power. The fundamental mechanics of wind turbines is straightforward: as the wind ...

The design of windmills is such that they rotate to face the wind and have sails or blades that will absorb the impulse of the wind into rotation. They will always do that, and will turn in the ...

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