Minimum wind speed for turbines

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There are more than 2,300 wind turbines spinning away and creating energy off the coasts of 11 European countries. A large number of those turbines are located in the North and Irish seas. One reason for that is because the winds blowing across those bodies of water are not only strong but also sustained.

It shouldn"t surprise you to find out that, just as the wind constantly changes, wind turbines are built to operate within a wide range of wind specifications, so the answer varies.

Upwind turbines face into the wind, while downwind turbines face away. Some of the new generation of wind turbines can work at lower wind speeds, generally about five miles per hour. However these turbines are generally smaller, don"t generate as much energy, and are not designed to withstand higher wind ranges.

Most of what you would call large-scale wind turbines typically start turning in winds of seven to nine miles per hour. Their top speeds are around 50-55 mph, which is their upper safety limit. Large-scale wind turbines normally have a braking system that kicks in around 55 mph to prevent damage to the blades.

The blades are connected to a shaft that turns at between 30 to 60 rotations per minute. The shaft then connects to a gear box that increases the rotation speed from 1000 to 1800 rotations per minute, which is the speed required by most generators to produce electricity.

Of course, the amount of electricity a wind turbine generates depends on the size of the turbine, also known as the power rating, and how fast the wind is traveling at the turbine"s location. Wind turbines have a power rating usually ranging from 250 watts (enough to charge a battery) to 10 kilowatts (enough to power a house) to six megawatts (enough to power more than 1600 houses).

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