Average size of wind turbine

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The world is focused on sustainability to safeguard the environment and achieve efficiency. Consequently, countries need to depend on renewable energy sources and cut down carbon emissions. Wind energy is one of the most feasible energy sources.

Wind energy is clean, reliable, efficient, and accessible in every corner of the world. Still, on the same line of sustainability, companies are looking into resizing their machinery and equipment to be smaller.

However, the wind energy industry is doing the opposite. While traditional wind turbines were smaller, this era of technological advancements is presenting bigger and bigger turbines. These structures are very tall, some reaching over 280 meters (918.6 ft.). In addition, the blades are not a small feat either.

The hub height of a wind turbine is the distance from the ground to the center of the rotor. The average hub height is roughly 90 meters, but this figure has been growing significantly. On the other hand, offshore turbines have longer hub heights than land turbines. Their height ranges from 100 to 150 meters. This is because turbine towers are being built taller to capture more energy.

The wind turbine blades are the elongated objects protruding from the center of the motor. They are anywhere from 50 meters to 120 meters (164 ft. to 393.7 ft.). Wind flows through the blade and decreases air pressure on the other side. Therefore, the blade dimensions play a big role in determining energy production.

The GE Haliade-X is a wind turbine made by General Electric and is the second biggest wind turbine. The turbine was installed in Rotterdam, Netherlands, and produces around 14 MW of power.

As the largest offshore wind turbine, Siemens Games built the SG 14-236 DD. It has a swept area of 43,500 square meters, ranking it among the biggest wind turbines globally. Here are its dimensions.

Vestas is the biggest wind turbine maker in the world, and you can expect it to have some of the tallest wind turbines. This offshore wind turbine is built on a 21,000 square feet swept area, weighs, and can generate 8 megawatts.

The Enercon E-126 wind turbine was constructed by German company Enercon in 2007 and is among the tallest and biggest wind turbines globally. It generates around 7.580 KW at speeds between 5 and 7 rotations per minute.

The Samsung S7.0-171 wind turbine was installed by Samsung Heavy Industries in 2013 to be among the biggest wind turbines ever built. It is built with a permanent magnet generator and a planet flex pin gearbox.

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The average of a wind turbine blade ranges from 1 meter to 120 meters. There is no set standard or limit to the dimensions of wind turbine blades. However, engineers build them to specific designs to avoid bypassing the laws of physics. For example, extremely long blades may start to bend and flex, causing a collision with the towers.

So far, the longest wind turbine blade on record is that of the Vestas-V236, which is 115.5 meters long. The Siemens Gamesa SG 14-222 DD is 108 meters (354.3 ft.) long. GE Halidade-X was the first wind turbine to introduce extra-long turbine blades in 2019, with a 107-meter (351 ft.) long blade.

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