

SolarTech Power Solutions

Inside the wind power station generator



Overview

How does a wind turbine generator work?

Once the gearbox has worked its magic, the generator inside a wind turbine comes into play. This device converts the kinetic energy of wind into usable electrical power that's carried through to transformers and substations. The high-speed shaft drives the generator, which uses copper windings to turn through a magnetic field.

What is inside a wind turbine?

Before we explore the inside of a wind turbine, we'll need to examine the nacelle, which holds several critical mechanical components. This turbine section sits behind the rounded hub and contains the gearbox, generator, break and shafts.

How does a wind turbine gearbox work?

Basically, the gearbox accelerates the speed of rotation of the high-speed shaft to the levels necessary to generate high-voltage electricity with the generator. The gearbox is a costly (and heavy) part of the wind turbine and engineers are exploring "direct-drive" generators that operate at lower rotational speeds and don't need gearboxes.

How strong is a wind turbine?

So it's usually very strong. Once the gearbox has worked its magic, the generator inside a wind turbine comes into play. This device converts the kinetic energy of wind into usable electrical power that's carried through to transformers and substations.

How does a wind turbine yaw work?

The yaw drive orients the wind turbine, while the yaw motor powers it. Together, they work seamlessly to keep the turbine functioning optimally and capturing the maximum kinetic energy available. You'll typically only find yaw

systems on horizontal-axis wind turbines, because vertical-axis turbines have their blades perpendicular to the wind speed.

What is inside a generator tower?

Inside the tower, we can see cables running from the top to the generator, as well as safety systems. This level also houses a ladder and a service elevator, which transports technicians responsible for maintenance, repairs, and inspections of the installation.

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