Wind power. Frequently Asked Questions

1. What is the noise level of **wind power plants**?

Wind power plants cause two types of noise:

- mechanical noise resulting from the operation of mechanical and electrical components (virtually absent for modern **wind plants**, but significant in older **wind plants**);
- aerodynamic noise caused by the interaction of wind flow with the blades of the installation (amplified as the blades pass through the wind turbine tower);

To date, only the calculation methods are used in determining the noise level of **wind turbines**. The direct noise measurement method does not provide information on the volume of the windmill, as there are no effective methods of separating **the windmill** noise from the wind noise.

In the immediate vicinity of **the wind generator** near the axis of the **wind wheel**, the volume level of a sufficiently large **wind turbine** may exceed 100 dB.

Laws in the UK, Germany, the Netherlands and Denmark limit the noise of a running **wind power plant** to 45 dB during the day and up to 35 dB at night. The minimum distance from the installation to residential buildings is 300 m.

2. Is it true that **windmills** destroy birds?

This opinion is due to a case that happened on the Altamont Pass Wind Resource Area (California), which was built on the bird migration route. In addition, in the 4,800 small **windmills** installed in the United States in the early 1980s, the rotors are low and close together, which can also cause more than 1,000 birds to die annually.

More modern **wind farms** cause fewer birds to die, probably because their generators are located higher and farther apart. According to recent research, birds are more likely to die in collisions with cars and buildings than under the blades of wind turbines.

3. By what parameters \ criteria can you compare **wind turbines** manufactured by different manufacturers?

- Value - power / price;
- Wind Efficiency Ratio (WER);
- The amount of wind power generated at different wind speeds;
- Term of operation;
- Service and warranty.

4. How many batteries are needed (what capacity)?

The capacity and the number of rechargeable batteries depend on the capacity of **the wind power plant** and your needs. In other words, a company's design specialist will help to solve this question.

5. What happens to a **wind generator** in a storm wind?

At a wind speed of more than 20-25 m / s, the wind wheel is stopped by a system of automatic shovel positioning. Thus, the load on **the wind wheels** is reduced. This is the safest option for **wind**

turbine protection. Other options for reducing the speed of rotation associated with counteracting by breaking the generator are potentially dangerous for both **wind turbines** and life.

6. Are there rules for the installation of **wind power plants**?

- Turbulence. The **wind turbine** should be located 10 meters higher than the highest object within a radius of 100 meters (including transmission lines);
- **WPPs** should be located in open areas (rivers, seas, lakes) whenever possible;
- Orography of the terrain. It should be borne in mind that in natural canyons the flow of air has the ability to compress, which increases the speed of air flow.

7. What additional equipment is required to operate the **wind power plants**?

- Inverter - an important element of the system, converts voltage to 220 or 380 volts suitable for electrical appliances;
- Batteries - objects where electricity is stored;
- Control (controller) - a device that allows you to control the **wind power plant**;

8. What are the requirements for the location of the **WPP** accessories?

There are no special requirements for installing the inverter, the controller and the batteries, but the room must be ventilated and the air temperature must always be positive.

9. Does the operation of wind generators affect the operation of TVs and radios?

No

10. Is it safe to live near a working **wind generator**?

Yes, small wind turbines (up to 100 kW) are absolutely safe for life.

11. What is the estimated life of the wind turbine?

Depending on the operating conditions, the service life of the **wind turbine** is 15 to 25 years.

12. How to determine the average annual wind speed at the location where the **windmill** will be installed?

To obtain such data, it is necessary to conduct surveys within a year.

13. What is the cost of installing a **wind power plant**?

The cost of installation depends on many factors and is 10-20% of the total cost.

14. How should the axis of the wind wheel be located: horizontally or vertically? What is the optimal number of blades a wind generator should have?

There are many options for the design of **wind power plants**, but today 95% of all **wind turbines** produced in the world are three-bladed with horizontal axes.

15. Can **wind turbines** be combined with other energy sources?

Wind turbines can be associated with **solar panels**, as well as with diesel, gasoline or gas generators.

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