The ring-shaped platform is positioned on the support frame in its upper part. The patent of the Russian Federation for invention No.2508470, IPC F03D 3/00, F03D 11/04, published on 27/02/2014.

The common features of the known solution and the claimed solution are as follows:

– a frame;

– a shaft able to rotate freely around the vertical axis, functionally connected to the power generator;

– blades fixed on the ring-shaped platform.

The distinctive feature of the known solution and the claimed solution is as follows:

– the frame can be fixed between three radially positioned structures.

A disadvantage of this technology is high material consumption of the wind power station construction, because, to reach the height of the construction, at which the potential of the wind energy is the most efficient and close to nearly permanent action with very low oscillations, the construction should be nearly 200 meters high. At the same time, the rotation frequency of the ring-shaped platform is to be reduced to exclude the oscillation loads on the overall construction of the wind power station.

Disclosure of Invention

Aspects of the invention are defined in the independent claims. Some optional features of the invention are defined in the dependent claims. Thus, it may be possible to overcome the weaknesses of the known technologies and to create a wind power station with high efficiency and reliability.

The advantage of the claimed solution shall be the efficiency improvement of the wind power station.

This advantage may be achieved, because in the structure of the wind power station with at least one support frame with a shaft fixed on it, which is able to rotate around the vertical axis and is functionally connected with a power generator, with the blading fixed on the shaft, the support frame can be fixed between at least

three radially positioned structures. The surface area of one blade of the blade system can be within the range of

Calculations and mathematical models have demonstrated that the best height of the buildings should be 5 to 800 m, while the first blade system should be fixed at the height of 5–15 m. The blade systems can be positioned on the rotor one over another. In case of such positioning the parameters and the number of the blades shall be calculated separately for different heights of buildings.

The use of the blade system with a vertical axis increases the efficiency of the wind power station and its reliability, because in the case of the wind direction changes, such an arrangement of the blade system with any changes in the direction of the wind will equally well perceive its kinetic energy, while the support frame where this system is fixed (the same as the whole wind power station structure) suffers less intensive loads from the wind stream.

The wind power station can be equipped with a fairing able to redirect the air stream to the blades, thus increasing the wind power station efficiency. The fairing can be fixed on the support frame.

Brief Description of Drawings

The invention is explained below with reference to exemplary embodiments illustrated in the drawing.

Figure 1 represents the top view.

Figure 2 represents the lateral side view.

In Figures 1 and 2 the following legend is applied to the positions: 1 – support frame, 2 – shaft, 3 – blade system, 4 – fairing.

Best Mode for Carrying Out the Invention

The claimed solution may be used as follows.

Three structures shall be erected in any known method; these three structures can be three multi-storey building designed in such a shape, so that the wind streams can flow around them smoothly. The structures can be positioned both at the same distance from each other and at different distances in such a way that between them some space for the wind power station is formed.

Claims

1. A wind power station comprising at least one support frame with a shaft fixed on it, which is able to rotate around a vertical axis and is functionally connected with a power generator and a blade system fixed on the shaft, wherein the support frame is designed so that it can be fixed between at least three radially positioned structures.

2. The wind power station according to claim 1, wherein one blade of the said blade system is 20–1000 m^2.

3. The wind power station according to claim 1, wherein it comprises additional blade systems positioned on the said shaft one over another.

4. A support frame for a wind power station, the support frame being configured for a shaft to be fixed thereon, the shaft being configured:

to rotate around a vertical axis;

to be functionally connected with a power generator; and

for a blade system to be fixed on the shaft;

wherein the support frame is designed so that it can be fixed between at least three radially positioned structures.