UDC 631.1.37

BASIC TECHNICAL AND ECONOMIC INDICATORS OF WIND TURBINES

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Many countries are already developing new and improving existing wind turbines. This has contributed to the development of large wind turbine park. Useful multiplier differ not only power, but also the method of wind flow energy conversion into electricity.

The purpose of research - methodological basis of the basic technical and economic parameters of wind turbines.

The results of research. Analysis of the data, as well as global experience with wind turbines has shown that the most simple in design and efficiency are three-bladed propeller-speed propeller type, characterized by symmetrical inertia, which ensures smooth running wheels.

Analysis produced wind turbine industry in the CIS countries led to the conclusion that the Russian mass-produced wind turbines from 0.3 kW to 50 kW, ie Low power wind turbines.

High power wind turbines are produced mainly in the United States and Western Europe. These wind turbines are used to generate high-quality electricity, due to their design features.

At high power wind turbine wind wheel rotates at a constant speed, which allows you to synchronize the generator to the power grid. This allows you to connect more wind turbines directly to the power lines (PTL) centralized power supply system on the main principle without converter technology, as at constant revolutions of the generator ensures production of high-quality electricity.

If you change the wind speed harmonization rpm propeller and rotor asynchronous generator is performed by the control system of the multiplier,

with up to 4 steps. During a lull in order to maintain a constant speed generator goes into driving mode, eating from the network. This principle of operation is more efficient at constant winds, namely the installation of wind turbines at sea.

However, high-power wind turbines have a number of drawbacks. Despite widespread WPP high power, there is the instability of the output voltage, the generation of higher harmonics (5th and 7th).

Studies have shown that generating the 5th and 7th harmonic current occurs in the cable lines 110-220 kV and 10 kV in the network is negligible. Therefore, the design of low power windfarm there is no problem of occurrence of higher harmonic current in the transmission of electricity.

To reduce the cost of acquisition and maintenance of wind turbines, as well as the development of domestic production is economically feasible use of domestic low power installations. On a wind turbine is very small and low-power synchronous generators are installed, and their wheel rotates at a speed that depends on the current wind speed.

Existing schemes windmills low power converter provides an apparatus for producing high-quality electricity. Depending on the purpose of wind turbines for independent power supply and parallel operation of the power grid, various types of conversion devices, which have a number of disadvantages associated with the management of output power performance of wind turbines, electric power losses during the conversion.

For electricity from several wind turbines in parallel with each other, you must develop your own power line.

Conclusions

For the analysis and comparative assessment of existing wind turbines of different capacities should have their economic performance.