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# OPTIMIZATION OF GEOMETRICAL PARAMETERS OF RING ROTOR CONTACTLESS ARC STATOR INDUCTOR WIND ELECTRIC GENERATORS

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Wind power inductor generator rotor ring, optimal geometric dimensions.

Urgent task in developing wind power installation without transmission (BVEU) is the development of contactless arc stator electric rotor ring of large diameter, which allows to achieve higher linear velocities electromagnetically active elements without energy loss mechanisms in animation. The general idea annular rotor design horizontal axis BVEU known for a long time. But then considered design schemes, for which technical implementation of existing levels of engineering and technology was too complicated. There are also examples of solving some technical problems, such as improving aero mechanical system BVEU or development arc stator magnetoelectric generator. But the general methods of study of optimal geometric parameters of the functional parts of the annular rotor contactless arc stator wind generator that would satisfying main common requirements of aerodynamic and electromechanical systems require further research.

The purpose of research - the study of methods of optimization of geometrical parameters of the functional parts of the annular rotor contactless arc stator inductor wind generator that meet the requirements of major joint aerodynamic and electromechanical systems.

Materials and methods research. Methods of theoretical analysis determined the influence of geometrical parameters of the rotor ring simultaneously on aerodynamic and electromechanical indicators. Known reference values are compared permeability material individual units of the magnetic system.

**Results.**

The design BVEU essentially provides a high speed rotor pole elements without energy loss mechanisms in multistage multiplier. In addition, the ring-open

design of the rotor of an electric arc stator there is technically possible to perform magnetic suspension wind turbine shell around the repulsive force due to the magnetic flux through the air gap between the rotor and stator, which can provide partial or full discharge bearing assembly and the horizontal axis of the radial load caused by force of gravity. Simultaneously ring rotor casing mounted on a common horizontal axis with blades, essentially increases their mechanical strength compared to the traditional one-point console mount, allowing the blade to produce thinner with higher aerodynamic efficiency. Equally important is the ability to use the fundamental technical annular rotor housing directly as without transmission mechanical battery power which significantly reduces the impact of uneven instantaneous wind speed.

**Conclusions**

1. The diameter of the rotor ring defined by calculated in accordance with the specified size blades and power ratio corresponding rapidity.

2. The optimum size of the radial height of the annular rotor is determined by finding the minimum cross-sectional area of its axial profile and at the same time the minimum magnetic conductivity non-magnetic pole separation areas dependent on common argument for the other constant overall performance.

3. Optimal radial-circular magnetic circuit configuration of the system due to a common maximum compliance with the essential requirements of aerodynamic and electromechanical systems.