International Journal of Academic Multidisciplinary Research (IJAMR)
ISSN: 2643-9670
Vol. 5 Issue 1, January - 2021, Pages: 240-243

Improving The Construction Of An Effective Alternative Source Generator In Low-Speed Power Flows

[1]Sayliyev Farid Oltiboy oglu, [2]Kholliyev Javohir Farkhodovich, [3]Abdullaev Shukhrat Shodmonovich

[1]Assistant of the department of Electrotechnology, Jizzakh Polytechnic Institute, Uzbekistan,
[2]Assistant of the department of Power supply of water and agriculture, Toshkent State Irrigation Institute Bukhara Branch, Uzbekistan,
[3]Assistant of the department of Electrical Power Engineering, Navoi State Mining Institute, Uzbekistan.
E-mail: sayliyev.farid@bk.ru

Abstract: *This article addresses the issues of alternative energy sources and energy efficiency improvement in horizontal wind power plants. In this scientific work, a scientific research solution is carried out on how to increase the productivity of wind power plants without changing the pneumodynamic pressure. The article proposes a new type of horizontal wind generator without the influence of natural wind to the blades of the wind generator.*

Keywords: *Generator, vertical, horizontal, magnetic field, electric current, Electric voltage, selectivity, adaptation, pneumatics, dynamics, statics.*

Introduction

One of the wind generators we have studied so far has been the modification of the construction of pinevma dynamic wind generators, which operate at high pneumatic pressure and rotate at a certain angle. But their shortcomings are as follows

-requirement of high pneumatic pressure;

- generation of electromechanical stresses in wind generators;

-increase in energy consumption and additional costs of the main accessories for the production of electricity in wind generators;

-development of main and auxiliary devices in wind generators;

-body cost value of all wind generators;

- body cost of all wind generators;

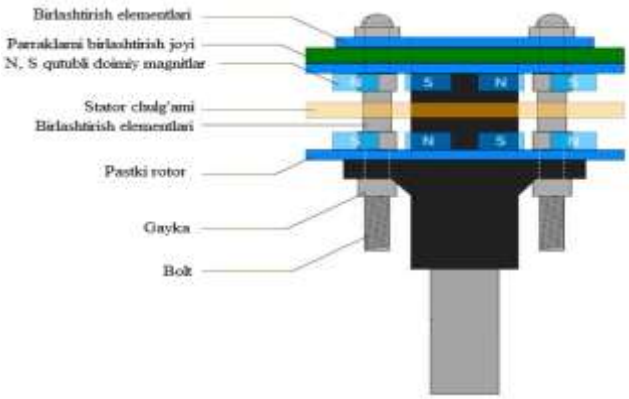
The purpose of this paper is to analyze wind turbines with low-speed combined poles, to improve their design, and to introduce them into production.

With the help of the combined polar wind generators we offer, it is possible to generate electricity efficiently and to generate electricity without wastage and energy saving without air in our low speed generator regardless of the high air flow pressure in the wind generators.

The axial generator mainly consists of two parts. A stator consisting of a rotor and coils connected by permanent magnets.

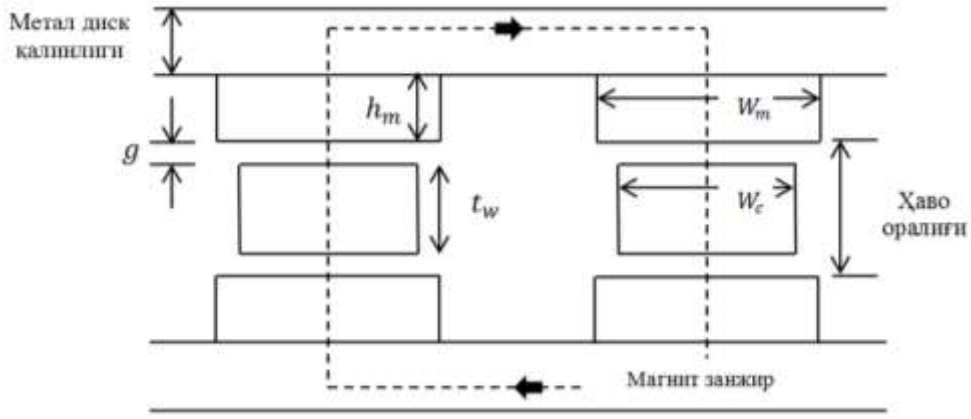
Materials and methods

This generator operates on Faraday's law of electromagnetic induction. The voltage output from the generator depends on the following parameters. Type and size of permanent magnets, length, diameter and number of windings of stator windings, induction of permanent magnets, distance between stator and rotor, material of rotor, placement of magnets in rotor.



Pic.1. Parts of a two-rotor fixed magnetic three-phase (AFMP) generator

The main advantages of this generator are: low voltage output, 60-120 months / m, no use of reducers, compact, inexpensive and everyone can prepare independently, high FIC, energy efficiency.



Pic.2. Location of rotor and stator windings of axial generator

The design of this generator is one of the important parameters of the type, number and induction of damagnets. Because the voltage and power from the generator depends on it.

The magnetic susceptibility of the medium in which a current-carrying conductor is inserted is determined by:

$$\mu_{rrec} = \frac{1}{\mu_0} \cdot \frac{\Delta B}{\Delta H}$$

The magnetic flux density is explained by Kirchhoff's law of air space and magnetic chains:

$$\frac{B_r}{\mu_0 \mu_{rrec}} \cdot 2h_M = \frac{B_g}{\mu_0 \mu_{rrec}} \cdot 2h_M + \frac{B_r}{\mu_0} \cdot 2g + H_{Fe} l_{Fe}$$

$$\frac{B_r}{\mu_0 \mu_{rrec}} \cdot 2h_M = \frac{B_g}{\mu_0 \mu_{rrec}} \cdot 2h_M + \frac{B_r}{\mu_0} \cdot 2gk_{sat}$$

The saturation coefficient of a magnetic chain is determined by the following expression:

$$k_{sat} = 1 + \frac{l_{Fe}}{2\mu_r(g + 0{,}5d)}$$

where: $\mathbf{B_r}$ – is the induction of the permanent magnet $\mathbf{h_M}$ –is the height of the permanent magnet, **ΔH** –is the magnetic field strength of the permanent magnet, **g** –**i**s the distance between the stator and the permanent magnet, an **d** –is the thickness of the stator layer.The EYUK generated in the generator depends on the duct of the permanent magnet and the length of the coil in the magnetic field and the speed of the rotor on the stator shelf:

$$E = lB_g v$$

$$dE = B_g v dr$$

$$v = v_x = 2\pi rn$$

$$dE = B_g(2\pi rn)dr$$

Based on these formulas, we give the following simplified formula for the EYUK generated in the generator:

We calculate the basic parameters of an axial generator with a capacity of 2 kW.

Basically, the generator consists of two parts. The fixed part is the stator and the moving part is the stator.

Result and discussion

The generator rotor is mainly made of steel disk. The main reason for this is the increase in the magnetic field. The outer diameter of the steel disc is 220 mm. The thickness of the steel disk should be basically the same as the thickness of the permanent magnet. Then the magnetic field scattering is preceded. We can make a steel disk 10 mm thick. The voltage output from this generator and the power it supplies depend on the cross-sectional area of the stator winding, the size of the permanent magnets, the number of windings in each phase, and the thickness of the stator winding. In this project, the number of permanent magnets in the generator is 16, and the number of coils in the stator is 12. Each phase of the generator consists of 4 coils.

Wrapping Statorchul's grief PETV-2 type with a cross-sectional area of 0.95 mm2. We use permanent magnets with dimensions 40x15x10 mm and magnetic induction B = 1.25 Tl. Each coil of the generator has 100 coils. This means that there are 400 packages in one phase. The resistance of one meter of 1mm copper is 0.0224 ohm ga teng. The approximate length of one package is 0.15 mm. The resistance of the bit phase of the generator is 0.0224x0.15x400 = 1.35 ohms. We connect the generator rings in a star way. When connected in a star mode, the voltage is 1.7 times. This means that when we connect in the star mode, the total resistance is 2.4 ohms.

Pic.3. Generator stator winding

The ductile magnetic field between the stator and the rotor, which consists of permanent magnets, is defined by the following expression:

$$B_g = \frac{B_r}{1+(g+0{,}5d)\cdot k_{sat}\mu_{rrec}/h_M} = \frac{1{,}25}{1+(0{,}002+0{,}5\cdot 0{,}01)\cdot 1{,}042/0{,}01} = 0{,}85 \text{ tl}$$

Based on these formulas, we calculate the EYUK generated in the generator from the following approximate simplified formula:

$$E = 2fNmnBS = 2 \cdot 2 \cdot 4 \cdot 16 \cdot 100 \cdot 0{,}85 \cdot 0{,}04 \cdot 0{,}015 \cdot 1.73 = 22{,}5\ V$$

Where: f- is the rotational speed of the generator rotor, N- is the number of windings in a single phase, n -is the number of permanent magnets, m- is the number of windings in a single winding, B - is the induction of the permanent magnet, S -is the magnitude of the permanent magnet.

It is defined by the following expression, which is formed in the generator joints:

$$I = \frac{(E-U)}{R} = \frac{(22{,}5-13{,}5)}{2{,}4} = 3{,}75\ A$$

Here: The voltage required to charge the U-battery.

The force produced by rotating the generator rotor at a certain angular velocity is given by:

$$P = IU = 3{,}75 \cdot 13{,}5 = 50{,}6\ W$$

As the velocity of the water flow increases, the voltage output from the generator also increases proportionally, so does the power.

Pic.4. We can use it in the order of the micro-gerest, which increases its full potential

Conclusion

As the world develops, people's lifestyles improve, is changing. This development, of course, requires a lot of energy, much of the manual labor-powered machinery of the past is now powered by electricity. In addition, information and communication technologies, which are entering our lives from year to year, solve many problems in our lives. However, as these technologies increase, so does their energy consumption, and accordingly, the increase in energy demand leads to an increase in energy prices. Rising energy prices are having a major impact, especially on declining natural resources. In this situation, humanity is forced to address the following key issues:

- Search for new renewable energy sources
- Increasing the efficiency of existing energy sources.
- Introduction of energy-saving equipment in industry.
- Exploring energy saving opportunities in energy consumption.

To solve such problems, science puts a number of new problems in front of it. In solving such problems, humanity must always be in search and action. In this article, research has been done to improve some of the properties of a renewable alternative energy source.

References

[1]. Саъдуллаев Т. М., Сайлиев Ф. О. Разработка оптимальных решений бесконтактных коммутирующих устройств для электрических машин переменного тока //Молодой ученый. – 2020. – №. 2. – С. 51-54.

[2]. Xolliyev J. F. et al. REAKTIV QUVVAT KOMPENSATSIYASI UCHUN MIKROKONTROLLERNI BOSHQARISH TIZIMINI ISHLAB CHIQISH USULLARI //Science and Education. – 2020. – Т. 1. – №. 6. – С. 58-64.

[3]. Саъдуллаев Т. М., Курбанов А. А., Сайлиев Ф. О. ПЕРСПЕКТИВНОЕ РАЗВИТИЕ ВЕТРОЭНЕРГЕТИКИ В УЗБЕКИСТАНЕ //ЭКСПЕРИМЕНТАЛЬНАЯ НАУКА: МЕХАНИЗМЫ, ТРАНСФОРМАЦИИ, РЕГУЛИРОВАНИЕ. – 2020. – С. 48-50.