Volume 2, Issue 02, February 2024 **ISSN (E):** 2938-3757

USE OF WIND ENERGY

Saydaliyeva Shaxlo Samikovna
Toshkent State Transport University, Assistant

Abstract
Advances in science and technology have made it possible to obtain electricity from wind power. Although the work in this regard was started in the last century, the world is paying more attention to the construction of wind power plants. Wind power is currently being produced in 55 countries. In this regard, the work carried out in European countries is particularly noteworthy. The use of wind energy has already become an important branch of the energy sector. Among the CIS countries, measures are being taken to increase the production of electricity from wind power in the Republic of Belarus.

Introduction

A certain amount of research is being conducted in our country on the use of wind energy among alternative energy sources. Wind power equipment created by some representatives of our talented youth can be a proof of this opinion.

It should be said that even though the production of wind electricity is low-cost, ecologically safe, and has bright prospects, it is absolutely impossible to meet the demand and needs with the energy obtained only in this way. This source of alternative energy allows to produce additional electricity and thermal energy. Because there is not always wind. In addition, the wind speed in many places does not meet the requirements. For this reason, experts suggest using wind power plants in turn with other alternative plants.

You know very well that the wind is strong and weak, pleasant and unpleasant, harmful and destructive. Their names are different according to their characteristics: breeze, shabboda, wind, breeze, saba, wind, hurricane, storm, whirlwind, garmsel, izgirin... Shabboda, breeze, saba are characteristic of poetic speech. , means light, peaceful wind. Sabo is a gentle breeze that blows only in the morning. A hurricane is a very strong wind, which does more harm than good: sometimes it not only breaks trees, but also uproots them, and blows off the roofs of buildings. There are also types of storms that bring great destruction. Garmsel and izghirin are opposite words. One means a hot wind that sometimes lasts for several days with dust and dust during the heat of the day, takes away a person's tinka-madori, and makes the crops wither and freeze. And the second one is the unpleasant type of bitter cold on frosty days, which makes your whole body stiff, and brings cold like a camel through the eye of a needle.

Indeed, the wind is an unbridled force, a huge source of natural energy. This resource is constantly updated from time to time, so it is inexhaustible. Mechanical, electrical, and thermal energy can be generated from it. The operation of windmills built in many countries in ancient times is based on mechanical energy.

Web of Technology: Multidimensional Research Journal
webofjournals.com/index.php/4

Is it possible to use wind power devices in our region? There is. The wind will be strong and continuous in some places of the oasis. Many people know very well what the wind is like in Mubarak, Kasbi, Mirishkor and other districts in summer and sometimes in winter. Recently, when we went to the shrine of father Ishak in Ortabulok, the wind was blowing soft sand and dust. At that time, I felt that these lands are rich not only in fossil fuel reserves, but also in alternative energy sources such as wind. [1]

The mountainous region of our region is not deprived of opportunities for installation of wind power plants. After the mountains are heated in the heat, there are times when strong winds blow for three, five or six days, sometimes even more. For example, there are wind currents blowing from the Zarafshan mountain range in two directions - one from Makrid and the other from Kaynar. These currents, which reach Shahrisabz in the state of a gentle breeze, have the power to blow people away in Chechak, Bashchil, Olaqo'lik, Urus villages of Kitab district. An example is the storm itself. At its peak, it breaks down trees and cuts power lines. The cysts open prematurely. However, it is possible to take advantage of the unprecedented power of the wind. A friend of mine jokingly commented on the days when the strong wind had not stopped for almost a week:

- If a wind power plant is built, one year's worth of electricity can be collected these days! [2]

So, it would not be bad if small wind power plants were installed in the places where the wind blows a lot, even if only as an experiment, to see how effective they are. If such equipment passes the test successfully, it can become a reserve energy source and serve to save electricity produced in the traditional way.

Humans have used wind power to the best of their ability since ancient times. There is no doubt that it will continue to be so. Only now, thanks to the development of science and technology, the range of possibilities has expanded.

Wind energy devices

Both air flow and any moving body have kinetic energy. This kinetic energy is converted into mechanical energy using a windmill or other working body.

Web of Technology: Multidimensional Research Journal
webofjournals.com/index.php/4

Depending on the function of wind turbines, mechanical energy can be converted into electrical, thermal, mechanical, and compressed air energy using executive mechanisms (generators, compressors, electrolyzers, etc.). Different types of wind engines can be used to convert the kinetic energy of air flow into mechanical energy.

For example, "Whisper", "Acro-Cruft" type wind energy devices are used to convert the kinetic energy of air flow into electrical energy.

The main mechanism that converts wind energy into electricity is a wind turbine. It has more details than other turbines. The wind rotates the blades attached to the bushing and they rotate together. Thus, the blades and bushing together form the rotor. There are also contacts that rotate and stop the blades of the turbine. The generator rotates and produces electricity. The generator, controller and other devices are placed in a box behind the wings. The anemometer detects the wind speed and transmits this information to the controller.[3]

When the wind speed reaches 15-23 km/h, the wind turbine starts rotating, when the speed increases to 100 km/h, they stop automatically to protect the mechanism from damage. Some models of wind turbines rotate at a constant speed regardless of wind strength. The speed of some new models turns with the wind. Some newer models change speed with wind speed, making them more efficient.

Wind turbines usually have 2 or 3 blades. Small turbines produce up to 100 kW of electricity. They can be used with photovoltaic panels. The blades of such a "house wind unit" have a size of 2-8 m and are placed at a height of about 40 m, and it can provide electricity to a small enterprise.[4]

From large wind turbines, turbines from 750 kW to 2 MW are common, and they are also placed in wind power plants.

Large-capacity megawatt turbines have large dimensions, and their new models are capable of producing electricity from 2 to 5 MW. They are usually placed in the water close to the shore so that they can be turned by strong sea winds. Such wind turbines are currently used in Great Britain, Germany, Denmark and other countries.

Web of Technology: Multidimensional Research Journal
webofjournals.com/index.php/4

References:

1. Введение в нанотехнологии. - http://nano-edu. ulsu. ru/w/index/php
2. C. Goodall, Ten technologies to fix energy and climate, Profile books, 2012.
3. Пугаченко, Н. И. Пугаченко// Наноматериалы и нанотехнологии: проблемы и перспективы: "Science and Education" Scientific Journal Volume 1 Issue 2 May 2020 319 www.openscience.uz
4. Hessian Ministry of Economy, Transport, Urban and development (2008), Application of nano-technologies in the Energy Sector (http://www.hessen-nanotech.de/mm/NanoEnergy_web.pdf).
5. Conference Paper • Открытый доступ The impact that crushed rubber can have on the quality of bitumen and asphalt concrete Sidikova, T., Barxanadjyan, A., Hakimov, R., Sabirova, D., Mirsaatov, R. IOP Conference Series: Materials Science and Engineeringthis link is disabled, 2020, 883(1), 012198.
6. Джумабаев Д., Валиханов Н. К. РЕНТГЕНОФОТОЭЛЕКТРОННЫЙ СПЕКТРОСКОПИЧЕСКИЙ АНАЛИЗ СЛОИСТЫХ КОМПОЗИЦИЙ НА ОСНОВЕ CU2ZNSNS (SE) 4 //O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI. – 2023. – Т. 2. – №. 16. – С. 189-192.
7. Valikhanov N. K., Sultanxodjayeva G. S., Xusniddinov F. S. EFFICIENCY OF THERMOELECTRIC GENERATORS MODULE METHODS OF INCREASE. – 2023.
8. Дустмуродов Э. Э. и др. ОБРАЗОВАНИЕ ЧАСТИЦ ПРИ РЕЛЯТИВИСТСКОМ СТОЛКНОВЕНИИ ТЯЖЕЛЫХ ЯДЕР НА LHC (С ПОМОЩЬЮ GEANT4) //Science and Education. – 2020. – Т. 1. – №. 9. – С. 59-65.
9. Safaev M. M. et al. RECOVERY CARBON-HYDROCARBON ENERGY FROM SECONDARY RAW MATERIAL RESOURCES //ПЕРСПЕКТИВНОЕ РАЗВИТИЕ НАУКИ, ТЕХНИКИ И ТЕХНОЛОГИЙ. – 2014. – С. 16-18.
10. Safaev, M. M., Rizaev, T. R., Mamedov, Z. G., Kurbanov, D. A., & Valikhanov, N. K. (2014). EFFECT OF CHEMICAL COMPOSITION OF FUEL IS USED IN THE INTERNAL COMBUSTION ENGINE ON CHEMICAL COMPOSITION. In ПЕРСПЕКТИВНОЕ РАЗВИТИЕ НАУКИ, ТЕХНИКИ И ТЕХНОЛОГИЙ (pp. 13-16).
11. Makhamadzahidovich S. M. et al. RECOVERY CARBON-HYDROCARBON ENERGY FROM SECONDARY RAW MATERIAL RESOURCES //ББК Ж. я431 (0) П27 МТО-18 Председатель организационного комитета. – 2014. – С. 16.
12. Kamilov, S. X., Kasimova, G., Yavkacheva, Z., & Valikhonov, N. (2023). "NANOTECHNOLOGIES AND THEIR SIGNIFICANCE IN ENVIRONMENTAL PROTECTION". Евразийский журнал академических исследований, 2(4 Part 2), 147–152. извлечено от https://in-academy.uz/index.php/ejar/article/view/12443.