



USE OF RENEWABLE ENERGY SOURCES IN THE CONDITIONS OF UZBEKISTAN

¹**Mustafakulov Asror**
¹Associate professor,
Jizzakh Polytechnic Institute,
Jizzakh,
Uzbekistan

²**Narimanov Bakhodir**
²Jizzakh Polytechnic Institute,
Jizzakh,
Uzbekistan

³**Abdimurodov Urolbek**
³Student of the Specialty Electric Power Engineering,
Termiz branch of Tashkent State Technical University,
Termiz,
Uzbekistan.

ABSTRACT

The analysis of the problems of using renewable energy sources in the conditions of Uzbekistan, the legislation of the Republic of Uzbekistan aimed at resolving these problems is presented. A brief description and analysis of the research work carried out by the world community on the solution of this problem is presented.

KEY WORDS: Energy, solar, wind, generator, photo element, useful work coefficient, betrothing, semiconductor, recombination.

INTRODUCTION

The role of countries in the world community, the growth of the well-being of the population is determined by the amount of energy consumption that corresponds to the head of the person. Currently, the energy consumption per person per person in the world is on average 2-4 kWh* per hour. But to live a comfortable life, this amount is not enough, and it should be equal to 10 kW* hour. The main problem facing the world community is the full satisfaction of axoli's energy consumption in such conditions as oil, gas, coal, peat, as well as the reduction of the number of fuel sources from year to year and the increase in the cost of fuel in the current environment. The only way to solve this problem is to use renewable energy sources as an alternative.

MATERIALS AND METHODS

These problems were addressed by the first president of the Republic of Uzbekistan I.Karimov's Decree No. 4512 "on measures for the development of alternative energy sources" dated March 1, 2013 was reflected. Video conferences held by the Ministry of Higher and secondary special education devoted to the execution of the tasks set out in this

decree have also become very important. In the video conferences, it was shown that the efficiency of renewable energies is high, as well as environmentally friendly pure energy, and the tasks of measures for the development of this sector were outlined.

It is known that currently, 5 types of renewable alternative energy sources are listed [1-3], these are solar energy, wind energy, water energy, heat energy at the bottom of the Earth, biomass energy. The amount of Energy received by solar batteries throughout the world is about 200 MW per year. The increasing demand for energy in our country, as in the whole of the world, has led to an increase in the need for alternative energy sources, in particular solar energy.

The potential of renewable alternative energy sources in our country is 173,4 million t.what?the e. mold is three times more than the annual consumption value of energy [2-4]. 98,8% of this energy is solar energy. Because our country is a Sunshine country, on 280-300 days of the year the sun shines and energy is transmitted to 1100 W per square meter of land [1]. The use of solar energy is carried out by converting light into electrical energy



with the help of photoelements - solar batteries (photos). In this regard, Japan, Germany, the US are leading countries. Solar collars - the generation of heat energy by using solar furnaces-are measured by the surface of solar furnaces (21 million square meters). In this regard, Japan, Israel, the countries of Greece stand in the leading places. Since the preparation of Silicon monocrystalline, which generates electricity from solar energy in its pure form, is very expensive, the useful working coefficient of the solar batteries is very low. Now such elements as arsenic, Gallium, Silicon polycrystalline, cadmium tellurium are created-the useful working coefficient of solar elements, prepared on their basis, has significantly increased. Today, solar photoelectrics and water heating collars are successfully used in the regions of Surkhandarya, Jizzakh, Bukhara, Navoi, Tashkent, Andijan and the Republic of Karakalpakstan. Solar photoelectrics are used in Jizzakh Polytechnic Institute in lighting system of technological park of the Institute (1.5 kWh), water supply system (6.75 kWh), health monitoring center "Zomin", farmer's farm in Narvonsoy village in Forish District, Secondary Schools in Tomdi District of Navoi region. Nurota District Central Hospital Medical Centers, Jizpi computer classes are working on the calculation of wind generators and energy from solar batteries [5-6].

RESULTS AND DISCUSSION

Hot air, heated under the influence of sunlight energy, becomes relatively light, and it rises upwards. Due to the movement of cold air flow, which seeks to replace it, the wind is formed. Making a windmill using such air currents was carried out in Northern Europe as early as the beginning of the VIII century. The first wind power plants were built in Denmark in 1885 year. In 1918, more than 120 wind power plants were used in Denmark. The capacity of each of them is from 10-20 kilowatts. In 1889-1930 years, more than 6 million wind mills were used in the United States. As we go up, the speed of the wind increases. If the wind speed on the Earth is equal to 3 m/s, then at a height of 10 meters the speed of the wind will be more than twice as high. With the help of wind generators installed at a height of 40-80 meters, more than 25-50 kilowatts of electricity can be generated. These days, it is planned to cover 80% of the energy consumed in the countries of the European Union on the account of wind and solar energy. To do this, in the coming years, 3,8 million wind generators, 90 thousand large and 1,7 billion small solar power plants should be built on our planet. In terms of the amount of electricity generated by the use of wind energy, Germany (45 GWt) is leading. China is in the leading position on the production of electricity from water power through small hydroelectric power plants. Over the next

decade, it is planned to build 40000 units in China, and 400 units in India. In the countries of Austria, Finland, Sweden, attention was paid to both small HPS. Now, attention is being paid to the use of the energy of running water, which is an alternative source of energy, with the help of microbes. The production of electricity using the mechanical energy of springs and Channel waters in the mountain regions, which are located far from the power transmission networks, is carried out by micro-hydroelectric power stations. For such a source of electricity, it is not necessary to build a dam, that is, the mechanical-potential energy of running water is sufficient. Several different variants of Gidroturbines for such microbes are called A. Proposed by Ustyujin. Such microbes are installed in the shadow flowing from the village of Uvobsoy in the Jizzakh district, in the channels flowing through the territory of the Jizzakh Polytechnic Institute (photo). Such micro NPS with small capacity can satisfy the needs of one or more farms that live in rural conditions to electricity. Alternative energy sources, that is, the use of wind (figure) and solar energy (figure), serve economic growth, environmental purity. Since the need to alternative energy sources is very large in regions far from power transmission networks, it is necessary to use micro hydroelectric power stations, wind and solar energy, to make this energy sector more prosperous. The effectiveness of these works is inextricably linked to the scientific potential of electroenergetic specialists. This means that in higher educational institutions, the establishment of testing grounds, scientific laboratories equipped with special devices for enrichment of material technical base of electroenergetic specialists, research methods for dressing wind and solar energy, biogas energy will be successful to maximum [7-8].

Within the framework of the decree of the first president of the Republic of Uzbekistan "on measures for further development of alternative energy sources" dated 01.03.2013 PP-4512 and "on the establishment of the International Institute of solar energy" dated 01.03.2013 PP-1929, the Institute of solar energy was established on the basis of the scientific Production Association "Physics - DAK" Uzbekenergo " is one of the founders of this institute. In order to use solar energy by " Uzbekenergo " JAC, geliokurilmas have been established in a number of regions of the Republic: " Charuvvat houses", " orphanages " and rural doctor's offices. In addition, in the Samarkand region, the Asian Development Bank plans to build a solar tower with a capacity of 100 MW with the involvement of credit resources. In addition, the first stage of the joint venture for the production of photoelectric solar panels with a capacity of 50 MW will be organized in the " Navoi " Free Economic Zone. In the future, the production capacity of this enterprise will be increased to 100 MW. In this regard, work is being carried out on the



introduction of renewable energy sources into the energy balance of the CJSC "Uzbekenergo". The use of renewable energy sources on a large industrial scale allows to reduce the consumption of natural gas in the production of electricity and heat energy in the Republic and, consequently, to significantly reduce the volume of emissions of harmful substances into the environment.

As a result of scientific research on the way to increase the working efficiency of photoelements, today it is possible to obtain at least 200 W of electricity from the surface of 1m² of solar cells. For this reason, the application of solar elements in the fields of energy supply of the space apparatus, in the field of nation-economy, technology, agriculture and other spheres is becoming more and more widespread. It is also worth noting that, despite the theoretical justification that the conversion of solar energy from photovoltaic to electricity can lead to a useful working coefficient of 93%, the result obtained in practice today does not exceed 18-26%. Therefore, the design and production of highly efficient, small-sized semiconductor solar elements (QE) is a topical issue both from a scientific and practical point of view, and the state pays great attention to its correct solution on the scale of the Republic. In order to fulfill these instructions, together with the interested departments of "Uzbekenergo" JSC conducted scientific research and studied the potential of renewable energy sources of the Republic of Uzbekistan. In this regard, the law of the Republic of Uzbekistan "on the use of renewable energy resources" adopted on May 19, 2019 has gained a great importance. It includes rules on the use of renewable energy sources, the possibility of their sale to consumers by entrepreneurs who develop it.

And Japanese experts have found that the useful working coefficient (FIK) of the solar battery is 26,3 percent. The maximum theoretical limit for the silicon solar battery plug is 29 percent. However, no one has yet achieved this indicator. In practice, the FIG was close to 20 percent, while the record figure was 25.6 percent. Japanese scientists managed to achieve this figure by 26,3 percent. They used high-quality thin-film heterooping (two different semiconductor contacts) to minimize the area of energy values that the crystal materials could not have in the prohibited zones-the electron in the ideal Crystal. In addition, scientists have found that the top of the battery is covered with a reflective coating to reduce the emission of photons in the amorphous silicon. Experts plan to further improve the solar battery. They identified several reasons why 29 percent of profitable business is not possible to achieve a coefficient. Among these reasons are both optical losses and losses due to external recombination.

CONCLUSION

The current analysis of the use of renewable energy sources shows that the research and organizational work carried out on these sources is not at the required level. In particular, it is necessary to increase the efficiency of research work carried out in order to increase the useful working coefficient of solar photoelectric devices created on the basis of Silicon. It is necessary to pay attention to scientific research, such as changing the width of the prohibited zone in crystals, covering the surface of amorphous silicon with reflective films, as well as the use of heteroos.

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