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# CHEAP THE THEORY OF CREATING SOLAR PANELS

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***Abstract:*** *This article covers the theory of how to create cheap and convenient solar panels. In the integration of energy systems based on renewable energy sources into the network, their technical, resource, economic and ecological indicators are shown, taking into account the specific aspects of the considered network.*

***Key words:*** *panel, solar, electronic, semiconductor, power, current, energy*

The energy problem is one of the urgent issues in the world and is on the agenda of scientists working in the field of energy today. In the 21st century, one of the main issues is to create an opportunity for a person to live normally, to provide him with sufficient energy and food, together with the development of technical and technological advances. It is known to everyone that the energy reserves of the earth's fossil resources are decreasing. However, the need for it has increased, and today the number of people on earth has reached seven billion. There are the following types of energy sources used by mankind: oil, coal, gas, atomic, biomass, water, solar, wind, geothermal energy. These energy sources can be divided into two types. Biomasses, water, sun, wind, geothermal energy - *renewable* ; oil, coal, gas, atomic energy - *non-renewable* . The energy obtained from these resources is in the form of electricity, energy used for communal services (heating of buildings, provision of hot water). In 2008, global energy consumption was equal to 15 TW (terawatt, 1012 w), and non-renewable energy resources are becoming increasingly important in ensuring this. But in the next 10-20 years, we can see that the share of renewable resources will also increase. close to days safe that bride energy of types one these are nuclear power plants . International of the agency information according to , at the beginning of 1982 the world 272 nuclear power plants _ to work dropped has been and they are common electricity of energy only 3 percent work released

In the 1990s, nuclear power The number of nuclear power plants is 423 did _ Nuclear power in 2000 stations (NPP) in the world work released common electricity of energy quarter part work release guess done _

The development of green energy around the world based on the expansion

of the use of renewable energy sources, especially wind and solar energy, and in particular, the reduction of the load on the country's energy balance based on the safe and reliable connection of energy systems based on renewable energy sources to the power grid, is of particular importance. Currently, in developed countries, there are different approaches to determine the indicators of photoelectric systems integrated into the power grid and to adapt them to the requirements of the network, to determine acceptable operating modes for the use of photoelectric systems in the distribution network. In this regard, special attention is paid to the development of new approaches to the systematic study of problems arising in energy systems due to the instability of the production power of steam and wind power plants.

In the world, studies aimed at developing methods of managing the output indicators of energy systems based on renewable energy sources are being conducted. In this direction, in the integration of energy systems based on renewable energy sources into the network, taking into account the specific aspects of the network under consideration, as well as the climate indicators of a specific region, researches on the assessment of their technical, resource, economic and ecological indicators as a whole are considered a priority. In this regard, comprehensive research of these systems and their operating modes for the purpose of safe and reliable connection of photoelectric systems to the electric network is considered one of the urgent tasks that require new approaches in solving the problems of increasing the efficiency of using solar energy on an industrial scale in the republic.

In general, the development of strategies and goals for the development of renewable energy in the future, as well as the development of appropriate mechanisms of incentives, for the large-scale development of a new branch of the economy in Uzbekistan, first of all, solar energy, which makes up about 99% of the total potential of renewable energy sources , moreover, it can create a convenient basis for ensuring the protection of the nature of our country. The maximum density of solar radiation falling on the earth is approximately 1 $kW/m^2$ in the wavelength range of 0.3-2.5 μm . This radiation is considered short-wave and includes the visible spectrum. For residential areas, depending on the location, time of day and weather, the flux of solar energy falling on the ground varies from 3 to 10 $MJ/m^2$ during the day. Solar radiation is characterized by the energy of photons at the scattering maximum (about 2 eV), which is determined when the temperature of the sun's surface is 60,000 K.

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