GOSPODARKA I INNOWACJE

LABORATORIUM WIEDZY Artur Borcuch

Volume: 23 | 2022

ISSN: 2545-0573

USE OF SOLAR MODULES FOR ENERGY SUPPLY RESIDENTIAL BUILDINGS

Ibrokhimov Jasurbek Maxammadovich

Teacher Fergana Polytechnic Institute Uzbekistan, Fergana

ARTICLEINFO.

Key words:
solar modules, energy, residential buildings, energy sources

Annotation:

According to the forecasts of experts of the International Energy Agency, by 2050 solar energy will become the main source of electrical energy. In the coming years, the countries of Central Asia will be in the focus of attention of the largest international players in the field of solar energy, and more than 600 solar energy facilities are planned to be built in this region, with a total capacity of over 4 GW.

http://www.gospodarkainnowacje.pl/ © 2022 LWAB.

According to the data, Uzbekistan has huge solar energy resources, i.e. The advantage of photovoltaic systems is undeniable in the conditions of Uzbekistan and all of Central Asia, where the average length of daylight hours is about 10 hours, and the number of sunny days per year is more than 300 and determines the country's potential solar energy resources.

Many countries have adopted national and regional programs to develop the use of renewable energy sources. Thus, on December 17, 2008, Europe adopted a package called “20-20-20”. According to this document, by the end of 2020 it was supposed to achieve a 20% share of renewable energy in the total energy balance, reduce greenhouse gas emissions by 20% compared to 2000, and increase the energy efficiency of industry by 20%.

In the last 20 years, photovoltaic solar stations have become quite widespread in world practice. Some European countries have achieved very good results over the past 5-10 years, introducing special tariffs for the purchase of energy generated by a photovoltaic solar station, which has led to an increase in the construction of both large solar stations with a capacity of hundreds of megawatts and relatively low-power solar stations in millions of homes . As a result, solar energy has become a new industry in these countries. In practice, two forms of power supply for objects are used: centralized and autonomous. Moreover, the desire to introduce clean technologies in recent years has contributed to the most active development of autonomous energy supply using renewable energy sources [3].

In addition to this, and sometimes instead of solar panels, a low power hydroelectric station, a wind farm, a generator (diesel, gas or gasoline) can be installed. As a rule, there is a generator at such objects, since there may be no sun and wind, and the energy supply in the batteries is not infinite - in this case, the generator starts up and provides energy to the entire object, simultaneously charging the battery. Such a power plant can be easily transformed into a hybrid one, when an external power grid is connected, if the inverter has these functions. The main difference between an autonomous inverter and

a hybrid one is that it cannot mix energy from solar panels with energy from an external network. At the same time, the hybrid inverter, on the contrary, can work as an autonomous one if the external network is turned off. As a rule, hybrid inverters are commensurate in price with fully autonomous ones, and if they differ, then it is insignificant.

A solar controller is a device that converts the energy received from solar panels into energy digested by an inverter. For example, solar panels are manufactured with a voltage multiple of 12V. And batteries are made in multiples of 12V, it just so happened. Simple systems for 1-2 kW of power operate from 12V. Powerful systems of 2-3 kW already operate on 24V, and powerful systems of 4-5 kW and more operate on 48V. Now I will consider only "home" systems, because I know that there are inverters operating at voltages of several hundred volts, but this is already dangerous for the home.

With an autonomous power supply based on the use of solar radiation energy, photovoltaic solar stations are the most acceptable, which can have a fixed or tracking photo detector. Under these conditions, the option with the duplication of a photovoltaic solar station with a fuel station Fig-1 will have the greatest reliability.

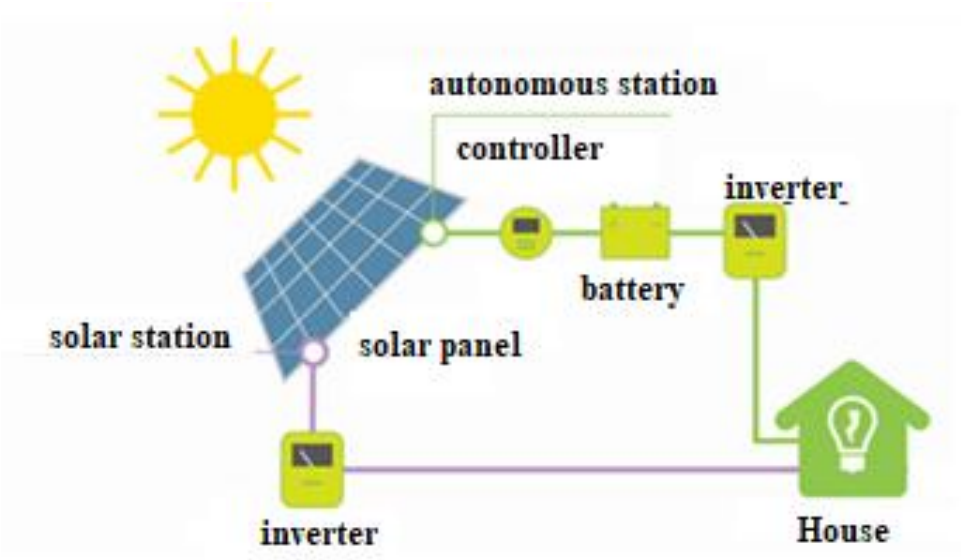

Fig-1. Block diagram of a residential building with autonomous power supply.

Autonomous Solar Power Plant - this type of power plant allows you to live completely independent of external power grids. It can include more than 4 standard elements: solar panels, solar controller, battery, inverter.

In addition to this, and sometimes instead of solar panels, a low power hydroelectric station, a wind farm, a generator (diesel, gas or gasoline) can be installed. As a rule, there is a generator at such objects, since there may be no sun and wind, and the energy supply in the batteries is not infinite - in this case, the generator starts up and provides energy to the entire object, simultaneously charging the battery. Such a power plant can be easily transformed into a hybrid one, when an external power grid is connected, if the inverter has these functions. The main difference between an autonomous inverter and a hybrid one is that it cannot mix energy from solar panels with energy from an external network. At the same time, the hybrid inverter, on the contrary, can work as an autonomous one if the external network is turned off. As a rule, hybrid inverters are commensurate in price with fully autonomous ones, and if they differ, then it is insignificant.

The results showed that the energy produced by a photovoltaic solar station is highly dependent on climatic conditions, i.e. The energy output during the day is respectively 1.785 kWh in cloudy weather, 1.390 kWh in dusty weather, 2.277 kWh in variable cloudy weather, 1.368 kWh in full battery charge,

and 1.368 kWh in sunny weather. winter time - 2.331 kWh, in sunny weather in summer - 2.940 kWh.

References:

1. Пенджиев А.М., Мамедсахатов Б.Д. Основные условия и факторы развития фотоэнергетики в Туркменистане// International! Scientific Journal for Alternative Energy and Ecology. 2007. No7(51), p 62-66.
2. A.Jumayev, K. Saryyev. У. Yakubov. Fotoelektrik giin bekedinin energetiki hasiyetnamalaryna ulanylys sertlerinia tasiri.// Turkmenistanda ylym we tehnika, 2015, No5.
3. Abdurasulovich N. M. O ‘ZBEKISTONDA TERMOELEKTRIK GENERATORLARDAN FOYDALANISH ISTIQBOLLARI //SO ‘NGI ILMIY TADQIQOTLAR NAZARIYASI. – 2022. – Т. 1. – №. 1. – С. 269-273.
4. Зокиров С. И. У., Норбутаев М. А. СОЛНЕЧНЫЙ ТРЕКЕР ДЛЯ ФОТОТЕРМОГЕНЕРАТОРА СЕЛЕКТИВНОГО ИЗЛУЧЕНИЯ //Universum: технические науки. – 2021. – №. 4-5 (85). – С. 9-13.
5. Kasimaxunova A. M., Norbutaev M., Baratova M. Thermoelectric generator for rural conditions //Scientific progress. – 2021. – Т. 2. – №. 6. – С. 302-308.
6. Abduqaxxorovich O. S. et al. Development and research of heterostructures with an internal thin layer based on p-type silicon //European science review. – 2018. – №. 9-10-1. – С. 183-185.
7. Kasimakhunova A. M., Zokirov S. I., Norbutaev M. A. Development and Study of a New Model of Photothermogenerator of a Selective Radiation with a Removable Slit //Development. – 2019. – Т. 6. – №. 4.
8. Kasimakhunova A. M. et al. Photo Thermal Generator of Selective Radiation Structural and Energetic Features //Journal of Applied Mathematics and Physics. – 2019. – Т. 7. – №. 06. – С. 1263.
9. Кучкарова Д. Т. ЭНЕРГОСБЕРЕГАЮЩИЕ СИСТЕМЫ УПРАВЛЕНИЯ МАШИН И АГРЕГАТОВ ШЕЛКОМОТАНИЯ //ББК 1 Р76. – 2021. – С. 92.
10. Кучкарова Д. Т. Анализ энергосберегающих режимов перекачивающих машин и агрегатов на промышленных предприятиях //Проблемы современной науки и образования. – 2020. – №. 1 (146).
11. Nabievna K. B. The study of quantitatively in linguistics //ACADEMICIA: An International Multidisciplinary Research Journal. – 2021. – Т. 11. – №. 3. – С. 1848-1854.
12. Nabievna K. B. MANIFESTATION OF QUANTITATIVELY AT THE LEXICAL LEVEL. – 2022.
13. Nabiyev M. Moisture Accumulation and Durability of Panel Walls in Aggressive Environment //Eurasian Journal of Engineering and Technology. – 2022. – Т. 5. – С. 40-44.
14. Muminjon N., Dilshodjonugli N. S. Improvement of transformer protection elements //ACADEMICIA: An International Multidisciplinary Research Journal. – 2020. – Т. 10. – №. 6. – С. 394-398.
15. Сулаймонов Х. М. и др. Фотоэлектрические свойства полупроводниковых поликристаллических пленочных структур CdTe: Sn при статических механических деформациях //Известия Ошского технологического университета. – 2019. – №. 3. – С. 180-186.
16. Сулаймонов Х. М. ВЛИЯНИЕ ЦИКЛИЧЕСКИХ ДЕФОРМАЦИЙ НА ЭЛЕКТРОПРОВОДНОСТЬ КОМПОЗИТНЫХ ПЛЕНОК(BixSb1– x) 2Te3 В

ЗАВИСИМОСТИ ОТ ЧАСТОТЫ ПЕРЕМЕННОГО ТОКА //Знание. – 2016. – №. 2-3. – С. 24-26.

17. Сулаймонов Х. М. ОПТИЧЕСКИЕ СВОЙСТВА ПОЛИКРИСТАЛЛИЧЕСКИХ ПЛЕНОК PbSe В ИК ОБЛАСТИ СПЕКТРА //Oriental renaissance: Innovative, educational, natural and social sciences. – 2021. – Т. 1. – №. 11. – С. 828-836.
18. Sulaymonov K. M. et al. EDGE ABSORPTION SPECTRA OF HEAVILY DOPED POLYCRYSTALLINE PBTE: PB AND PBTE: TE FILMS //Scientific-technical journal. – 2020. – Т. 24. – №. 2. – С. 22-26.
19. Usmonova D. S., Orunbaeva U. S. Conceptual problems of simultaneous interpretation //Проблемы современной науки и образования. – 2020. – №. 2. – С. 36-38.
20. Холматова Д. А. ЛИТЕРАТУРНОЕ НАСЛЕДИЕ БАБУРА В ЭТНОГРАФИЧЕСКОМ КОНТЕКСТЕ //ИНТЕЛЛЕКТУАЛЬНОЕ НАСЛЕДИЕ ЗАХИРИДДИНА МУХАММАДА. – 2020. – С. 584.
21. Холматова Д. А. Теоретические аспекты изучения этнографии как научной дисциплины //Бюллетень науки и практики. – 2020. – Т. 6. – №. 8. – С. 312-316.
22. Dilorom K. PECULIARITIES OF KINSHIP TERMINOLOGY IN TURKIC LANGUAGES //Universum: филология и искусствоведение. – 2021. – №. 9 (87). – С. 21-23.
23. Холматова Д. А. ЯЗЫКОВАЯ КАРТИНА РОССИИ И УЗБЕКИСТАНА, ВЗАИМОДЕЙСТВИЕ ДВУХ КУЛЬТУР //Редакционная коллегия. – 2022. – С. 249.
24. Рахматова О. К., Косимова Д. Р. Актуальные проблемы преподавания русского языка в технических вузах //Проблемы современной науки и образования. – 2019. – №. 12-2 (145). – С. 127-129.
25. Холматова Д. А., Рахматова О. К., Косимова Д. Р. Этнографическая терминология и ее лингвистический анализ (на материалах русского и узбекского языков) //Вестник науки и образования. – 2019. – №. 19-3 (73). – С. 40-42.
26. Абдуллаева М. Х., Башарова Г. Г., Рахматова О. К. Преимущества индивидуального подхода в образовательном процессе //Проблемы современной науки и образования. – 2019. – №. 12-1 (145). – С. 88-90.
27. Satvoldievna U. D., Sharabidinovna O. U. Conceptual problems of simultaneous interpretation //Проблемы современной науки и образования. – 2020. – №. 2 (147).
28. Стребков Д.С., Пенджиев А.М., Мамедсахатов Б.Д. Развитие солнечной энергетики в Туркменистане. М.: ГНУ ВИЭСХ, 2012, 496 с.
29. Ibrokhimov, J. M. (2021). Features of methods of optimising calculation of parameters the combined solar power installations. Academicia: An International Multidisciplinary Research Journal, 11(5), 1043-1047.
30. Ibrokhimov, J. M. (2020). Application of the solar combined systems consisting of the field of flat and parabolocylindrical collecting channels for hot water supply of the industrial factories. Academicia: An international multidisciplinary research journal, 10(12), 1293-1296.