

Mamontov R., 11 МБ ЕЕ**Koval O.U., language advisor***Tavria State Agrotechnological University***e-mail: romanmamontov8@gmail.com****e-mail: koval.olga7977@gmail.com**

Normal life of a modern civilization is impossible without electric energy. Therefore ensuring high reliability of electrical supplies, its rational use, the maximum reduction of expenses in the course of its production, transfer and distribution are very important. Today, the use of electrical energy has reached large volumes, and the price of electricity rises every year. The question of using alternative energy sources arises.

Scientists are looking for new ways of obtaining electric energy, increasing its power and increasing the efficiency of equipment for converting solar energy into electric. The level of development of the productive forces of society, the ability to produce material goods and create the best material conditions for life are determined by the level of production and consumption of electrical energy.

The increase in the scale of consumption of electric energy, the exacerbation of the problem of environmental protection significantly intensified the search for obtaining electric energy in environmentally friendly ways. The development of thermonuclear energy research is carried out all over the world, directly without the mechanical transformation of internal and chemical energy into electrical energy: magnet hydrodynamic, thermoelectric thermionic generators, fuel elements.

The use of solar technology is very important at the present stage of development of our country. These questions are of particular importance in energy-intensive technologies. The rationale for the economic feasibility using solar panels in the open spaces of our country is important because most of the saving of population of Ukraine go to pay for the used electric power.

Solar panels, as a source of electricity, today it is difficult to call something unusual. For the first time they began to be used for power supply of space stations more than forty years ago, today solar batteries have strongly become usual as a source of environmentally friendly and free energy.

The sun has always sent millions of kilowatts of radiation energy to the Earth and this source will exist during many millions of years. Take and use solar energy. However, solar panels are used in Ukraine quite limited. What is the reason?

A solar cell is a photovoltaic dc generator that uses the effect of converting radiation energy into electrical energy. More precisely, in solar batteries the property of semiconductors on the basis of silicon crystals is used. The light quanta, falling on a semiconductor plate, knock an electron out of the outer orbit of an atom of the given chemical element, which creates a sufficient number of free electrons to produce an electric current.[1]

One or two silicon elements aren't enough in order that tension and power of such source were sufficient for application in the household purposes. Therefore, they are united in the whole panels in parallel or consistently. The area of such panels can be from several square centimeters to several square meters. More solar power generation can be achieved by increasing the number of panels. But the productivity of the solar battery depends not only on the area, but also on the intensity of sunlight and the angle of incidence of the rays. The productivity of the solar battery depends on the area and geographic latitude in which the house is located, depends on a weather and season, from the time of day.

In order for the system of solar panels to work and supply energy to network, it is necessary to install additional electrical devices, namely: inverter, that will convert a direct current into an alternating current; the battery, which will accumulate energy and smooth out the voltage drops due to changes in lighting; the controller of a charge of the accumulator which doesn't allow the accumulator to be recharged or discharged prematurely. All these are called an autonomous power supply system on the basis of solar batteries.

The batteries and controllers are not needed in a system that works on the supply of energy in a general network. Only a main inverter is required. As well as any technical device, a solar battery has the operating and technical characteristics.

With a solar cell area of about two square meters, the power of the module is about 10 W. Tension at the maximum load is about 25 V. Current of short circuit makes about 500 mA. Such a module weighs about 2 kg. The approximate efficiency of the solar battery ranges from 14 to 18%. Such plate serves not less than 25 years.

Despite its low efficiency, a solar cell is the most efficient source of electric among alternative and autonomous energy sources. Due to the high cost of the solar battery, depending on weather conditions, they are positioned not as a main, but as an additional source of energy. It is predefined by two reasons: by the high enough cost of solar batteries, and comparatively small exit of energy from unit of area.

On a clear sunny day, you can get a maximum of 70 W per square meter of solar cell area. It isn't enough for operation of the computer.

Therefore, solar cells are combined in mini-power plants for more power. You can get more than 1 kW of energy from a solar cell of 10 sq. m. This can ensure functioning of a computer, TV, several light bulbs. For a house in which 3-4 people live (required power is 300-400 kW per month) in the daytime and the warm season, there will be enough solar cells with an area of 25 sq.m.

Solar battery will be inefficient in winter. There are many advantages: long service life, independence from technical malfunctions of the power generating organization, there is no need to maintain it all the time, free energy itself.

Unfortunately, there are several convincing and specific shortcomings: high cost and therefore a long payback period, dependence on weather conditions, low efficiency, inability to use for high-power devices.

Due to the fact that hydrocarbon reserves on Earth are limited, this prompts us to look for new ways to solve the problem of energy supply. There are ample opportunities to use solar installations for private farm, especially in rural areas. Expanding the scale of application of solar installations not only provides significant energy savings, but also allows to improve the environmental situation.

References

1. Все о солнечных батареях [Электронный ресурс]. – Режим доступа: <http://stroyrubrika.ru/sro/novye-tehnologii/vse-o-solnechnyh-batareyah.php>
2. Виробництво та використання електричної енергії [Електронний ресурс]. – Режим доступа: http://ua-referat.com/Виробництво_та_використання_електричної_енергії
3. Бондар В.М., Шаповаленко О.Г. Основы электрических измерений / В.М. Бондар, О.Г. Шаповаленко. – К.: Либідь, 2002. – 319с.

УДК 674.81

ALTERNATIVE FUEL FROM AGRICULTURAL WASTES

Najdenov O., 21 AG

Koval O.U., language advisor

Tavria State Agrotechnological University

e-mail: markizeva31@gmail.com

e-mail: koval.olga7977@gmail.com

Agriculture is the largest contributor of any resource sector of the country. It is also a large generator of waste materials. Agricultural waste recycling is a growing business, as more and more farms and companies turn to alternate ways to process waste products instead of sending them to landfill. Production of alternative fuel from agricultural wastes is a new perspective direction for investing. This happens because of rising prices for hydrocarbon fuels and the exhaustion of its world reserves.