PROSPECTS FOR SOLAR PANELS

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Abstract:
As the demand for non-conventional power sources is currently increasing, this article discusses the prospects of solar panels.

Keywords: solar panels (SP), solar energy (SE), electric losses, optical losses, photoelectric batteries.

Today, the demand for electricity is growing, and the energy from existing heat and power plants is costly. Large amounts of oil and gas are also used to generate energy from heat. The reserves of these deposits are also limited. We need to save resources as much as possible so that future generations can use them as well. Therefore, we need to conduct research on non-conventional power sources and accelerate the ways to increase the efficiency of existing ones. These include ways to convert solar energy into electricity using solar panels.

Photoelectric batteries or solar panels (SP) are complex devices that consist of a solar energy(SE) connected in a specific order and a conductive base on which these elements are placed. These may include split diodes. The SP design should be shock and shock resistant and easy to operate. It is advisable to take full advantage of the potential of SE to create SP training technology. To do this, the SP preparation technology must be able to minimize battery loss. There are two types of power losses in SPs: optical and electrical.

1) **Electric losses.** Electric losses are mainly due to the precise measurement of SE parameters and their accurate sorting according to the parameters. Depending on the parameters, sorting should be carried out close to the optimal points of electrical load.

2) **Optical losses.** Optical losses are due to the fact that not all SE of the incident sunlight reaches it. These losses include losses in the sealing of the SP (inhomogeneity of the hermetic material and defects resulting from the technological process) and in the light-transmitting coating (glass or plastic material) on the front surface.

The main technological processes in the manufacture of solar panels are:

- Sort SE according to relevant parameters,
- switching elements to obtain a given voltage and current,
- Preparation of corps of SP,
- placing the switched elements in the battery and sealing it,
- Measure and sort SPs by parameters.

Switching SPs. The SE are switched in parallel, series or complex to obtain the required voltage and current. In general, the power of the SP should be equal to the sum of the SE powers of the battery. If not here's a new product just for you! The current of the SP is determined by the sum of the currents of the elements connected in parallel in the battery, and the voltage is determined by the sum of the voltages of the elements connected in series.

Silicon is a widely studied semiconductor material. In it, solar cells based on p-n junctions are considered to be simple photovoltaic generators. In 1953, the first solar cells with silicon were invented. There was a great deal of interest in getting energy under the influence of light. During

this time, Chapen dealt with the problem of energy supply for long-distance communication systems.

Fuller used solid phase diffusion to create a silicon p-n junction over a large area. Pearson, for his part, observed the power rectifiers based on Fuller technology, noticed their sensitivity to light, and raised the problem of energy generation under the influence of light. In a study of diodes, Pearson found that lithium-diffusion silicon, based on the p-n junction, had a useful work coefficient (S) of 4% under sunlight. That's five times the size of the known silicon photovoltaic power plant. In turn, the high diffusion capacity of the lithium (Li) atom was found to be unbalanced even at room temperature. The technology of diffusion of boron to silicon was extensively developed by Filler. In 1954, it was announced that a 6% equilibrium solar cell had been created. The first practical application of the solar cell was made in 1955. A 9-volt battery has been tested for a telephone repeater source in George, USA. Six months of continuous battery life was a technical development. The planet AD has given impetus to the development of this industry. For the first time, a photovoltaic solar source was used in space. It was tested in 1958 in the orbit of Avangard-1, which was launched on the 17th of March. The satellite's transmitter was based on a source from the solar cell for eight years, causing radiation damage and failure. Since then, the price of silicon solar cells has skyrocketed. Their FIC increased by 15-18%. In 1997, several satellites were the first to use GaAs-based solar cells. The only serious silicon element is based on the CuxS-CdS structure. It is a thin layer element resistant to high radiation. But these elements did not achieve the desired FIC in space.

As a result of the development of solar energy on Earth, the situation has become more difficult. Comparison of thin-layer solar cells based on GaAs with other solar elements is characterized by the widespread use of silicon single crystal.

Over the next few years, mass production of silicon solar cells began. The main goal is to increase the n-different conductivity, salt walking voltage, and radiation resistance of the front layer, which is formed in the short-wavelength part of the solar spectrum, due to the loss of charge carriers. Diffusion of a phosphorus (P) atom into silicon at a thickness of 5 μm results in the formation of a 0.1 μm dead layer. The concentration of atoms in the solubility range of silicon is sufficient, the lifetime does not exceed 10-10 s. Since 1981, the production of solar cells (p-n transition) has been widely used in the national economy.

In short, solar energy is now a promising field of energy production. In addition, the recent creation of the above solar cells is considered to be more efficient and cheaper than the previous ones. So solar energy is the energy of the future.

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