

SOLAR PANELS (THEIR CHARACTERISTICS AND PRINCIPLES OF OPERATION)

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**ANNOTATION:** This article is about solar panels and their principles of operation, as well as the creation of cost-effective innovative projects that work without noise while being used in many areas of human life.

**KEY WORDS:** amorphous silicon solar, solar battery, flexible coating.

A solar panel is a device that converts light energy coming from the [Sun] into electrical energy by connecting solar elements together . Also called [solar battery].

Solar panels generate free energy from the sun by converting sunlight into electricity with no moving parts, zero emissions and maintenance. Solar cells are a collection of individual silicon cells that generate electricity from solar energy. When photons strike the surface of thin silicon wafers, they produce an electric current. A single solar cell produces only about 1/2 volt. However, an approximately 25" by 54" 12 volt panel is wired in series to produce peak outputs of approximately 17 volts.

We always use industry-leading components selected to produce high-quality solar panels, which is the main reason why our panels provide excellent performance, safety and durability even in harsh conditions.

A comprehensive 10/12/25-year warranty ensures that each panel will last for a long time and that you will get the most out of your investment in every PV installation.

Solar panel produces clean energy and it is a common source of energy

The solar panel is highly reliable, completely silent, economical and environmentally friendly

Solar panel requires little maintenance

They can be used to reduce electricity bills

Technology is constantly improving, benefits for personal use and business investment

The price of solar panels is decreasing now

Product Features of Poly Solar Panels

Higher powers

>Positive tolerance: 0 ~ plus 3 percent

>High transmission, low iron tempered glass

>Anodized aluminum frame with pre-drilled holes, easy to install

>IP67 junction box with MC4 matching plug connectors

>Bypass diode protection

>Complete tests: EL test, PID test, salt fog test, etc

>Certified to withstand harsh environments and perform perfectly

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A solar panel consists of solar cells connected in series and parallel. The solar cells are placed inside a housing to protect them from external environmental influences. The structure of solar modules varies depending on the type of solar cells and their application. For example, amorphous silicon solar cells are usually attached to a flexible coating, and when silicon solar cells are used as remote sources, the front is covered with thick glass coatings. We know that among renewable energy, solar energy provides more energy. In the case of small self-consumption facilities, Spain is slowly growing. More and more houses have chosen to install photovoltaic panels because they allow us to save money on electricity and we can take the environmental responsibility that we need time. However, many people do not know how solar panels work. As its name suggests, solar energy produces electricity using solar energy. Among the advantages of solar energy that we have, they do not pollute the environment, but it is unlimited, but there are some disadvantages, such as its continuity. Photovoltaic generation is a property that must have specific materials that generate electricity when exposed to sunlight. To understand how solar cells work, we need to know what makes up a module of a series of photovoltaic cells. They are nothing more than layers of silicon filled with phosphorus and boron. Due to the sun's rays creating an electric charge, it is like putting them in series in a module, and the voltage can be adjusted to a usable DC system. Through the current inverter, the continuous energy generated in the solar panel is converted into variable energy used for the home.



**1-picture:** polycrystalline-solar-panels

**Source:** Solar-panels/polycrystalline-solar-panels

At the same time, he announced that a completely new system will be introduced in Uzbekistan to support residents and entrepreneurs. According to it, compensation of up to 15 million soums will be paid to those who installed solar and wind electrical equipment or an interest-free term payment option will be created for 3 years.

Measures are being taken to widely use renewable energy sources in the population and social sector facilities. The use of alternative energy has been noted to be of national importance, and a completely new system is being introduced to support residents and entrepreneurs who have installed alternative energy equipment. In this regard, residents and entrepreneurs: up to 15 million soums, and up to 2 million soums for water heating devices, depending on their power, are paid for installed solar and wind electric equipment; or it will be possible to pay the cost of the equipment in 3 years without interest. It was decided to introduce this system through a special fund of the Ministry of Energy. In addition, residents and entrepreneurs who want to install alternative energy equipment will not have to go to any office in order to use these opportunities. All documents are processed at the place where the equipment is purchased. For this: fund concludes cooperation agreements with local producers and regional sellers; the costs of the manufacturers providing the equipment to the population and entrepreneurs for installment payment are covered by the fund; 100 billion soums will be allocated to the fund, and another 100 billion soums will be given until the end of the year depending on its use; the fund's electronic portal has been launched, and all processes are being fully digitized You will

<b>2</b>	ISSN 2277-3630 (online), Published by International journal of Social Sciences & Interdisciplinary Research., under Volume: 12 Issue: 05 in May-2023 <a href="https://www.gejournal.net/index.php/IJSSIR">https://www.gejournal.net/index.php/IJSSIR</a>
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often find a 250-280 watt solar panel on the roof of a house. They are usually installed together to form a PV array, providing homes with electricity or hot water. 250-280Watts and higher volt panels make them ideal for use with a home solar system. Currently, in our country, residents are given subsidies for electricity produced by solar panels

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