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Prospects of Using Solar Energy for Home Heating in Uzbekistan

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Annotation: The article is devoted to the study of the work of solar energy for home heating and alternative renewable energy sources. Solar panels for heating, Installation of solar panels, Insolation and solar collectors are described in stages.

Key words: energy, collectors, batteries, installation, heating, insolation.

Why depend on the constant increase in energy prices? It depends on fluctuations and increases in oil and gas prices on the world market due to depletion of their reserves. Because there are alternative renewable energy sources for which no one needs to pay and pay off, which do not pollute the environment — this is wind energy, solar energy, earth heat energy, air heat energy and even the energy potential of the planet. In Uzbekistan, solar panels and collectors are most often used from all types of alternative sources; thermal springs and ground heat exchangers are much less common. For example, the installation of solar panels for home heating will help to reduce energy consumption by 70%, which means spending from the family budget.

We turn about a third of energy sources (coal and gas) into heat: most of this energy used for heating rooms and heating water. Climate change and dependence on fossil energy sources, whose reserves will significantly decrease in the coming decades, force us to act quickly. The widespread use of solar energy for heating residential buildings already today shows how we can cope with this problem. This means not only the use of new standards in construction, but also that it is necessary to drastically reduce energy consumption in the house. Having carried out a thoughtful reconstruction of the house and using a large thermal solar system, you can reduce heat consumption by a quarter or even a third. Only under this condition will there be enough raw materials (such as wood) in the future to cover the remaining energy demand.

Solar panels for heating the house are installed on the roof, increasing its protective function and, undoubtedly, give the house a high-tech and modern look. They can be install as immediately during the construction of a house, it does not matter in principle.

Installation of solar panels for home heating carried out in the same way as solar panels for heating can be used on apartment buildings. It is better to entrust the further installation of the equipment to a specialist in heating and water supply.

In modern solar panels, tempered glass and sealing flanges of a unique design are used for heating the house, so they are absolutely resistant to weather disasters and mechanical damage.

A solar battery for home heating is a significant money saving. From the beginning, it is necessary to find out how much a solar battery costs and whether its installation will be beneficial to you, various factors should be taken into account: the daily need for hot water, the area and angle of the roof, the illumination of the roof by the sun, etc.

In order not to have difficulty calculating individual parameters, you can use average indicators: 1 m2 of light-absorbing surface is needed for 1 person. You can determine the parameters and how much a solar battery costs for heating your home based on the fact that for 10 sq. m. m of underfloor heating need to install 1 m2 of collector surface. [4]

Insolation can also be taken into account by the average indicators for your area. With an average insolation of 1000 kWh per 1 m2 per year, energy can be obtained as from burning 100 liters of gas or other fuels.

For example, the German solar collector Roto Sunroof, is quite popular in Europe. Its area is 2.13 m2. Two collectors are enough to provide hot water for a family of 4 people, which is about 2000 kWh of electricity per year. The installation of three collectors produces, respectively, 3000 kW/h of energy. [1] Calculating how much a solar battery costs, you should proceed from the necessary and sufficient amount of energy to provide your home.

If a traditional heating system installed in the house, which works during low solar activity and a solar battery, then 70% of the energy consumed by the sun blocked by the energy of the sun. When you calculate how much a solar battery will cost you and whether it is worth buying it, consider saving your electricity costs by 70%.

The rise in energy prices in Uzbekistan makes it necessary to show interest in cheap energy sources. The most affordable is solar energy. The energy of solar radiation falling on the Earth is 10,000 times greater than the amount of energy produced by mankind. Problems arise in the technology of energy collection and in connection with the uneven supply of energy to solar installations. Therefore, solar collectors and solar panels are used either in conjunction with energy accumulators or as a means of additional recharge for the main power plant.

Our country is vast and the picture of the distribution of solar energy on its territory is very diverse (Fig. 1.). [3]

Zones of maximum solar radiation intensity (Fig. 1). More than 5 kW/h of solar energy per day is supplied per 1 square meter.

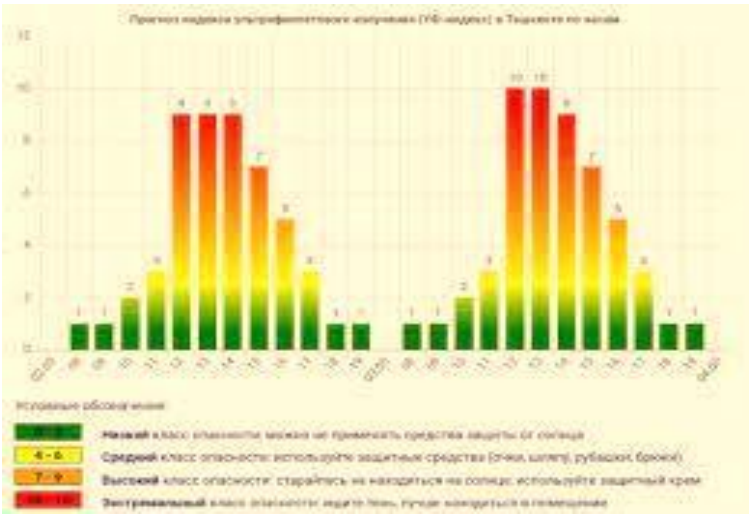
The supply of solar energy from 4 to 4.5 kW / hour per 1 square meter per day.

The average daily intensity of the solar radiation flux in Uzbekistan is 186-214 W/m2 [16.1 ÷ 28.47 MJ/ (m2.day)]. All year round, 1 m2 of the horizontal surface of the earth in Tashkent - 1684 kW/hour, in Nukus-1632 kW/hour, in Termez - 1872 kW/hour energy per square meter per year.

The energy flow has the greatest intensity (Fig. 2) in May, June and July. During this period, in the middle zone of Uzbekistan, there are 5 kW per 1 square meter of surface. an hour a day. The lowest intensity is in December-January, when 1 square meter of the surface accounts for 0.7 kW/hour per day. If you install a solar collector at an angle of 30 degrees to the surface, it is possible to ensure energy consumption in the maximum and minimum modes, respectively, 4.5 and 1.5 kW per hour per 1 square meter per day.

Based on the above data, it is possible to calculate the area of flat solar collectors necessary to provide hot water to a family of 4 people in an individual house. Heating of 300 liters of water from 5 degrees to 55 degrees in June can be provided by collectors with an area of 5.4 square meters, in December 18 square meters. If more efficient vacuum collectors are used, the required collector area is reduced by about half.

In practice, it is desirable to use solar collectors not as the main source of hot water, but as a device for heating water entering the heating system. In this case, fuel consumption sharply reduced. At the same time, an uninterrupted supply of hot water is provided and savings on hot water and heating of the house, if it is a house for permanent residence. In summer cottages, various types of solar collectors are used to obtain hot water. From factory-made collectors to homemade devices made from improvised materials. They different, first of all, in efficiency. Factory is more efficient, but it costs more. It is practically free to make a collector with a heat exchanger from an old refrigerator.



Now the Ministry of Energy is actively developing a regulatory framework for the further development of renewable energy sources and the creation of even more benefits for the population and entrepreneurs. However, citizens use solar panels or panels not only for personal purposes. We are talking about producers "for the needs of legal entities and individuals through the local network and producers supplying renewable energy to the unified energy system".

In simple terms, these are entrepreneurs who produce solar energy for the purpose of earning money. As stated in the Ministry of Energy, the state not only does not force them to make any payments, but also supports them in every possible way

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