

PREPARATION OF MODERN SUPPORT STRUCTURES FOR SOLAR PHOTOELECTRIC PLANTS

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Abstract: When designing the structure of the solar panels, the dimensions of the place where they will be installed and the load-bearing capacity of the roof must be tested. Because it is impossible not to take into account the power of the wind as a result of the installation of solar panels in a large array. The steel base that is woven into the panels and the bolts and washers that fasten them should also be made of light and corrosion-resistant materials.

Key words: solar panels, installed area, metal structures, solar modules, cable lines

I. Introduction

Support structure: An important part of solar photovoltaic systems is the support structure for the solar panels. It provides the necessary stability for the entire system and the correct tilt angle for the solar panel. The combination of the solar panel and the supporting structure must be resistant to different wind speeds and other environmental influences.

Construction and installation of solar photovoltaic plants: There are various types of structures that can be made for large photovoltaic systems, from small to industrial scale. Such a structure is made of metal or synthetic material. There are different types of support structures depending on the situation at the time of installation of photovoltaic systems. There are types of support structures for grid-connected systems, flat or at a small angle on the roof, as well as for house facades. Networked systems can also be an element of the building structure[1-5].

II. Research method.

The construction and installation of solar photoelectric plants should be carried out with the help of qualified, experienced specialists and technicians, each of them having expertise in their field:

1. Works on the design of the built-up area, specialization in the field of geodesy.
2. Ground installation of metal structures.
3. Installation and connection of solar modules, inverters and other electrical equipment.
4. Transfer of cable lines, installation of cable-conducting devices, their connection to the transformer substation.

When designing the structure of the solar panels, the dimensions of the place where they will be installed and the load-bearing capacity of the roof must be tested. Because it is impossible not to take into account the power of the wind as a result of the installation of solar panels in a large array[3-5]. The iron base that is woven into the panels and the bolts and washers that fasten them should also be made of light and corrosion-resistant materials[5-6]. In the following drawings, we can see their construction and working parts [7-8].



Figure 1. Aluminum roof clamps

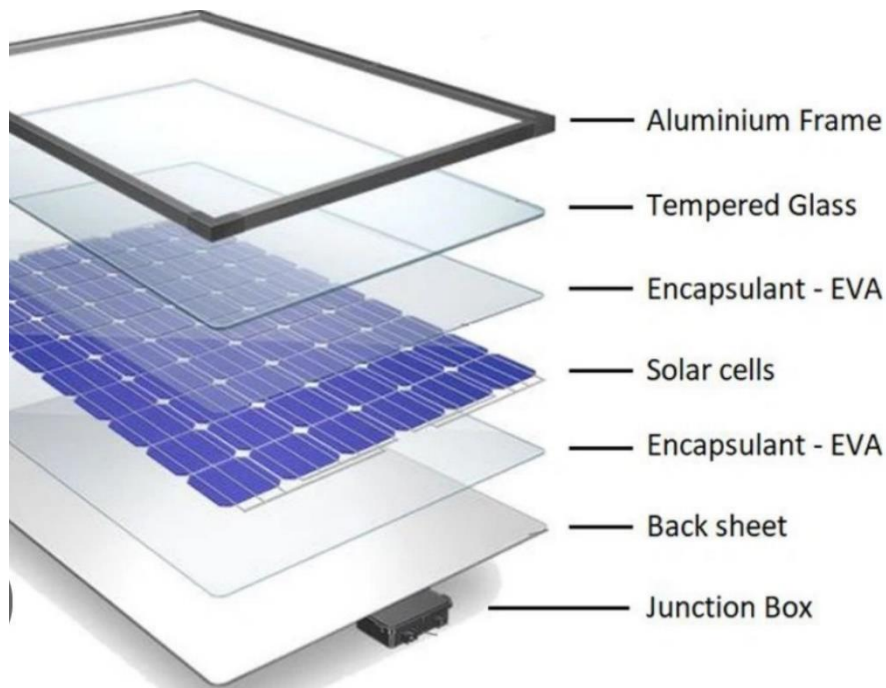


Figure 2. Constructions of solar panels in the inclined position.

In the implementation of such works, it is necessary to work together with all involved specialists, employees with a special permit to work at the facility. Since all work performed and installed devices are in a state of warranty, it is necessary to pay close attention to the operation of devices and passport classifications.

In the process of installing solar panels, specialists are required to study one by one the location of the solar power plant being created, the selection of the most convenient devices, as it involves complex processes in installation and design.

In the first place, the capacity of the solar photoelectric plant in the project is determined. This allows us to calculate the required number of solar modules and determine the area of the area. Then the experts will offer you the optimal drawing of the fastening system. Of course, in the presented drawing, it is necessary to choose the orientation of the photoelectric plant that allows to obtain the maximum amount of electricity with low output.

There are two main types of frameworks: static and dynamic. The main elements of the static system are made of high-quality aluminum profiles in this fastening system, and the supporting elements are made of zinc-coated steel. A characteristic feature of the static system is that the tilt angle of the modules oriented

with respect to the sun cannot be changed. It is logical that solar modules should be maximally illuminated during daylight hours and should be oriented towards the south. When building solar photoelectric plants, it should be away from trees, electricity and telephone cable lines, and television antennas. It should be noted that the formation of a temporary temporary shadow has a negative effect on the electrophysical parameters of photovoltaic modules in other cases, such as environmental dust and bird droppings. Another thing to pay attention to is the distance between the photoelectric panels. Because they reduce the number of crashes by touching each other.

III. Results and discussion.

Let's briefly touch on static systems: Modules can be placed on the table in several rows horizontally and vertically. Depending on the weight of the structure and several other classifications, the table (frame) can have one or two supports. The system, in which the structure is fixed, is attached to the ground in two ways:

1. Attach directly to the installation site by means of a pile.
2. Attaching the area to be installed with a concrete mixture.

These parameters are determined, first of all, depending on the geodesy and geology of the soil and the power of the station in the project.

Dynamic system - such a system is called "tracker" in English (tracker) or "monitoring device" in Uzbek. Its working process is very simple and it is designed to observe the sun as much as possible to increase the FIK of the device. There are two types of them, the first is single-axis and the second is double-axis.

A single-axis tracker changes its state with respect to only one axis. Usually, such a tracker looks like a static structure, and if you look at it, this structure is equipped with an actuator that changes the angle of inclination of the device. The actuator basically consists of a motor-reducer and a shaft. The stock moves the table up or down by attaching it to itself. A single-axis tracker changes its angle to the sun several times a year. This is managed by software that makes between 2 and 20 changes per year.

A two-axis tracker is a complex engineering structure that can be oriented in

two different planes. The difference between a two-axis tracker and a single-axis tracker is that it rotates the table through an unlimited 1800 angles, capturing maximum sunlight throughout the day from sunrise to sunset. It also has a horizontal fail-safe mode and is durable even in strong winds. They automatically control the system to maximize sunlight. The efficiency of such a system is 30-40% more than a static system. It is 15% higher than the single-support system [9].

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