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DEVELOPMENT OF HELIOTECHNICS FIELD IN UZBEKISTAN

Annotation. The article contains information about heliotechnics, and the stages of development of the heliotechnics field in Uzbekistan are covered in detail.

Key words. heliotechnics, solar energy, "Physics-Sun" energy saving, solar sand

Introduction. The development of science and technology, the development of new methods of energy production and its transformation, the creation of new efficient equipment and technologies, the centralization of energy distribution, i.e., measures to ensure that there are no interruptions in the supply of energy sources to the population and their correct distribution - events are being implemented.

The science of energy deals with the issues of converting the potential energy of natural energy resources into usable and useful types of energy in the national economy and solving related scientific and technical problems.

The growth of energy consumption, the decrease and increase in the cost of energy resources, the increase of dependence on imports, the pollution of the environment create the need to achieve energy efficiency, increase the efficiency of using traditional energy resources, and solve the problems of developing renewable energy sources. These factors motivated the rapid development of the energy industry. Because the increase in human population on earth is increasing the demand for energy. Since the 2nd half of the 20th century, the need for electricity has been greatly increased. It affects the management activity in order to reduce the consumption of fuel energy resources while maintaining the

production volume in the method of energy saving management. It is not difficult to imagine what kind of economic efficiency the use of solar energy can bring in the land of Uzbekistan, which has an average of 320 sunny days a year.

Methodology. It is known that the Sun illuminates the Earth's surface differently according to geographic latitudes. During the year, the solar energy corresponding to 1 m² of the Earth's surface varies from 300 W/m² to 1340 W/m². Central Asian countries have geographical, optical and energetic natural conditions for using solar energy. For example, the length of daylight in June is 16 hours, and in December it is 8-10 hours. In summer, there is 320-400 hours of open sunlight per month. In these places, as a result of the use of heliotechnical devices, a large amount of fuel and energy obtained from other sources can be saved. There is a great opportunity to use heliotechnics effectively in sunny Uzbekistan.

The field dealing with the prospects of using solar energy is called heliotechnics. "Helios" means "Sun" in Greek.

The rays of the Sun reaching the Earth's surface are a huge source of heat. The main task of heliotechnics is to find ways to effectively use this source, to create various devices and energy sources. Devices that convert solar energy into other types of energy are considered heliotechnical devices, and can be used for various purposes by converting light energy from the sun into heat or electricity.

Solar energy has been used in Uzbekistan since ancient times. Humans have been drying fruits and vegetables in sunlight since ancient times. For example, raisins of the highest quality are made by drying grapes in the sun. Dried apricots, melons, apples, peaches, etc.

Our great thinkers thought about the connection of the Sun's heat with the events on Earth. For example, Abu Ali ibn Sina in his book "Donishnama" wrote, "The reason for the flame of a lens is that it collects the rays coming from

one side to one point. This point is strongly illuminated and strongly heated," he writes.

Heliotechnical devices working with solar energy began to be built at the beginning of the 20th century. During this period, heliotechnical devices working with solar energy (evaporation of tobacco extract in sunlight, experimental greenhouses) were built in Uzbekistan.

Results and discussions. Attention has also been paid to conducting research in the field of heliotechnics. In 1934, the Laboratory of Heliotechnics began to operate in Tashkent.

In 1943, the Heliotechnical Laboratory was established at the Institute of Physics and Technology of the Academy of Sciences of Uzbekistan. Based on the research carried out in this laboratory, water heating devices, fruit dryers, cocoon coolers and dryers, and sulfur dilution devices were created using solar energy.

In 1946, a mirror-like paraboloid device with a diameter of 10 m was built at the Institute of Physics and Technology. This device, which collects solar energy, was used for steam and ice extraction.

In 1963, the Department of Geophysics of the Academy of Sciences of Uzbekistan was established. Based on the conducted scientific research, various devices designed to collect and use sunlight have been created. For example, medical devices that treat patients under the influence of collected sunlight, and devices that process seeds of agricultural crops with sunlight have been created.

Great progress has been made in the use of solar energy in our republic. In the 1960s and 1970s, a school of heliotechnics founded by our scientists U.O.Oripov, S.A.Azimov and others was formed in this field.

In 1976, on the initiative of S.A. Azimov, in accordance with the decision of our government, the "Physics-Sun" scientific production association of the Academy of Sciences of Uzbekistan was established. Researches of practical

importance were conducted by this association, and the results were put into practice.

Water pumps, medical equipment, water dispensers, greenhouses, dryers and coolers have been created based on solar devices with a high efficiency, and are used in various sectors of the economy, especially in providing hot water to buildings. introduced into the system.

In order to use solar energy more effectively, in 1987, a solar farm with a thermal capacity of 1 MW was built in the Parkent district of the Tashkent region, belonging to the "Fizika Sun" IICbB. Until now, only Odeo (France) had such a device. The concentrator of the device consists of a system of paraboloid mirrors with a focal distance of 18 m, and its size is 54×42 m. The energy collected in the solar cell is used to obtain heat-resistant materials, to create materials with electrical insulation properties resistant to heat and friction. Also, scientific and technical developments such as obtaining ceramic heat-resistant materials on the basis of local raw materials and industrial waste and creating technologies for the production of necessary items for medicine, energy, oil and gas, and light industry are being established. Pure metals without impurities are melted with the help of a solar furnace.

Solar energy is used in space stations with large capacity devices. Photocells are also used in low-power electronic devices (microcalculators, watches, mobile phones).

The development of solar energy in Uzbekistan is an important step towards a sustainable future. Thanks to the abundance of sunshine and the support of government initiatives, the country has a huge potential for solar energy development. By using solar energy, Uzbekistan can reduce greenhouse gas emissions, improve energy security, and create a clean and healthy environment for its citizens.

Conclusion. The use of solar energy is promising, solar energy is environmentally friendly and has great potential. The future of solar energy is bright. Solar energy is environmentally friendly, convenient, noiseless and limitless. As a result of the ongoing scientific research, solar space power plants and various devices and cars that work using sunlight are being produced. Many developments of portable solar power plants are being accelerated, especially the development and use of portable solar electrolyzers to help obtain environmentally friendly hydrogen energy.

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