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IMPROVING THE EFFICIENCY OF SOLAR PHOTOELECTRICITY STATIONS USING TWO-AXIS-SOLAR MONITORING EQUIPMENT

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Annotation: development and improvement of efficiency of the tracking mechanism for photoelectric batteries in relation to solar motion. The proposed two-axis solar tracking equipment is used in low-power solar photoelectricity stations and can also be used in other types of solar power devices.

Keywords: photoelectric battery, actuator, gedroyuritma, rechak.

A very important role in improving the efficiency of solar photovoltaic plants is played by two-axis solar monitoring equipment. This equipment is used to direct solar panels or modules to sunlight at the most effective angle. By tracking the motion of the sun, this equipment keeps the solar panels always aligned to the best possible light, allowing more solar energy to be collected and converted into electricity.

The work carried out in the field of solar energy in Uzbekistan consists of:

Solar photovoltaic plants are environmentally friendly, safe and cost-effective.

Solar photoenergetics (FE) has been growing on the global market by an average of 40% per year since 2005. Over the next 20 years, more than 2 million jobs are expected to be created due to solar photoenergetics. As a result, the emissions of 350 million tons of CO₂ gas entering the atmosphere will be reduced, the work of 140 coal-fired power plants will be stopped. The total capacity of solar photoenergetics is 650 GVt by 2030. Solar energy, as a natural and endless source, is becoming increasingly important in the modern world. In countries characterized by the abundance of sunny days, such as Uzbekistan, solar photovoltaic plants (QFS) provide enormous opportunities for the economy and the

environment. However, the efficiency of these stations will often depend on the intensity and angle of sunlight. The role of two-axis solar monitoring equipment is important here.

The main tasks of two-axis tracking equipment:

The two-axis tracking equipment significantly increases the energy production efficiency of solar photovoltaic plants by directing the solar panel to sunlight at an always optimal angle. This equipment accurately monitors the movement of the sun across the sky, moving the panel towards the sun so that the panel is constantly exposed to the right light.

By the decisions of the president of the Republic of Uzbekistan, land plots are allocated for the construction of photovoltaic plants. These decisions are part of a strategic approach to the development of solar energy in the country. The introduction of two-axis tracking equipment will help maximize the efficiency of QFs being built on these plots of land.

Solar energy, as a sustainable and endlessly renewable energy source, plays an important role in meeting our current and future energy needs. Solar photovoltaic plants use this potential by converting sunlight directly into electricity. However, the efficiency of solar photovoltaic panels depends on a variety of external factors, including the incidence of sunlight at an angle and temperature. For this reason, two-axis solar Observer equipment can significantly increase the efficiency of solar photovoltaic plants.

Two-axis solar Observer equipment:

The two-axis solar Observer equipment provides maximum sunlight reception by tracking the motion of the sun and directing the solar photovoltaic panels straight into the sun. The equipment moves along vertical and horizontal axes, so they can accurately track the movement of the sun across the sky during the day.

To improve the efficiency of solar photovoltaic panels, two-axis solar tracking equipment has the following advantages:

By always directing the panels straight into the sun, solar photovoltaic panels receive more sunlight and thus generate more electricity.

Temperature control: falling sunlight at right angles lowers the temperature of the panels, further increasing the efficiency of solar photovoltaic panels.

CONCLUSION:

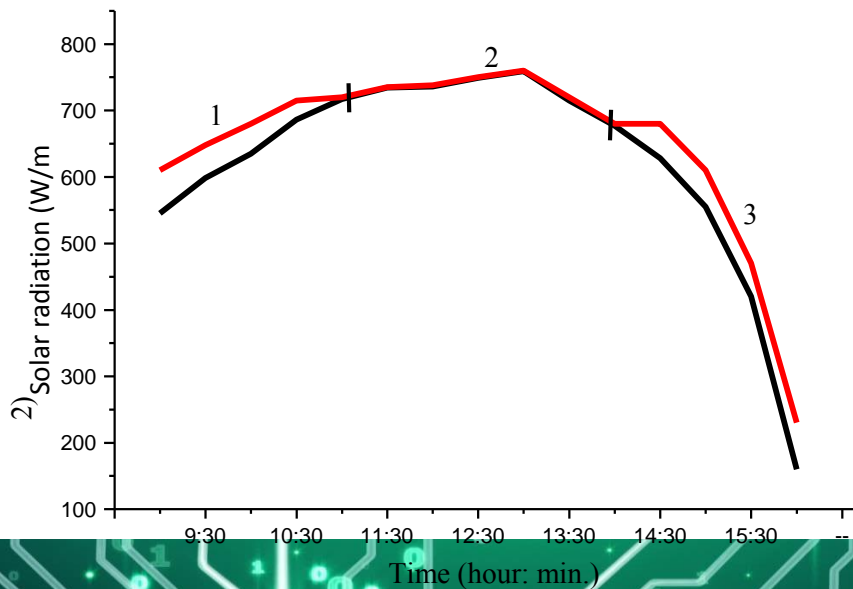
Using two-axis solar tracker equipment, it is an important step in improving the efficiency of solar photovoltaic plants, optimizing energy production and reducing

environmental impact. This technology will make the use of solar energy more efficient and cost-effective in the future.

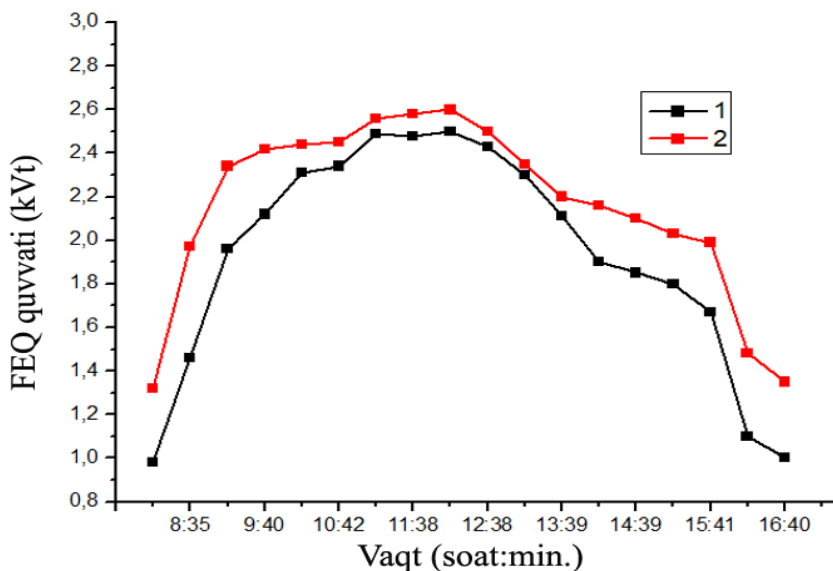
The use of two-axis tracking equipment at solar photoelectricity stations is important in improving the efficiency of solar use in sunny countries such as Uzbekistan. This equipment not only increases energy production, but also contributes to reducing the country's dependence on renewable energy sources.



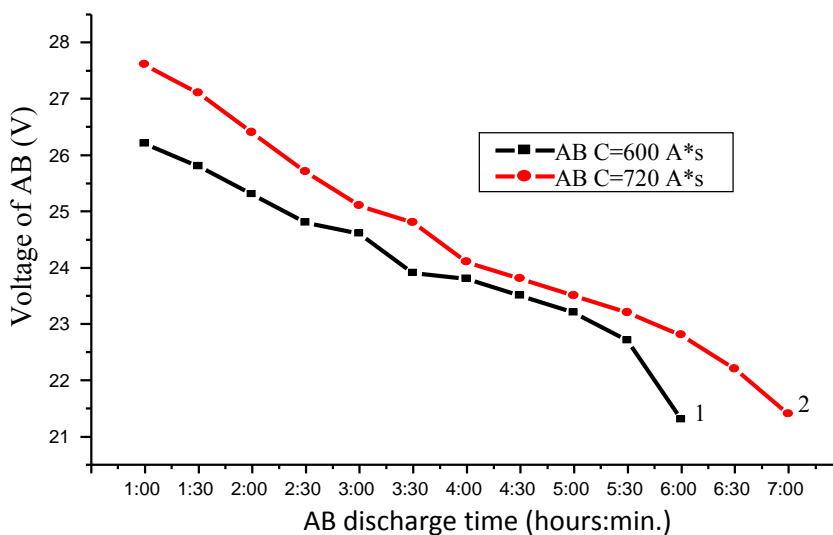
The best thing about the two-axis solar observing equipment is that they travel along the solar trajectory during the day on the azimuth and Zenith axis, ensuring that sunlight falls perpendicular to the surface of the solar photoelectric panels. The initial investment costs required for two-axis solar tracking equipment can justify itself in the short term.



Changes in solar radiation values during the day



Dynamics of changes in the maximum power of solar photovoltaic devices during the day



AB voltage discharge time bond

As can be seen from the graph at the top, in winter, in semi-open weather, the solar FEQ with and without a solar Observer construction had a 25% difference in average diurnal quotient.

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