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Prospects for Electricity Production Using Renewable Energy Sources

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Abstract: This article discusses the problems of installing micro-hydroelectric power plants that use water energy coming from main canals and low-flow canals during the growing season in agriculture, as well as issues of saving organic fuels and obtaining cheap electricity as a result of their use.

Keywords: Global, energy volume, concept, higher education system, hydraulic unit, corruption, civilization.

Energy occupies an important place in human life and society, it allows us to satisfy various needs of people and improve their living conditions. The development of human civilization has always been closely related to the amount and types of energy used. The power of any country depends on its energy supply.

The reason for the global environmental tragedy occurring before the eyes of the current generation is that during the twentieth century the amount of energy used by humanity for the purpose of economic development has increased significantly. This has a negative impact on the environment. Because global warming on a global scale is directly related to the operation of thermal power plants using organic fuels and gases emitted into the atmosphere by an increasing number of internal combustion engines. In the next 40 years, more fossil fuels were produced than in the entire history of mankind. This century is no exception. Today, the volume of fuel used in the world is 12 billion tons of oil equivalent per year. The demand for organic oil is growing rapidly.

In recent years, the Republic of Uzbekistan has taken many right steps to improve the energy industry: increasing the production of renewable energy (this can reduce dependence on fossil fuels, improve the environmental situation), increase the efficiency of energy systems, and reduce energy consumption. consumption, as well as developing a culture of energy saving among the population., installation of electronic meters (electronic meters allow you to accurately measure energy consumption and make convenient payments, free from corruption and extortion) are among them.

It is assumed that the economy will be provided with energy resources by solving two problems. Firstly, diversification of the fuel balance through the widespread use of renewable energy sources. Their contribution to the production of electrical and thermal energy is expected to be

reduced by replacing traditional fuels with renewable types of energy. Secondly, this can be achieved through the implementation of a long-term program to reduce the energy intensity of production in economic sectors and improve the environmental condition of areas of production activity.

Reducing the energy and resource potential of the economy, widespread introduction of energy-saving technologies in production, expanding the use of renewable energy sources, and increasing labor productivity are considered priority tasks for the near future.

The implementation of a set of measures to accelerate the use of renewable energy sources is aimed at ensuring the production of industrial types of energy, such as thermal and electric, which makes it possible to replace hydrocarbons and direct them to the production of highly liquid products, in particular polymers. synthetic fuels.

The resources of 650 rivers, numerous irrigation canals and reservoirs flowing through the territory of Uzbekistan provide the technical capabilities for the construction of many hydroelectric power plants producing 21 TWh of electricity per year. This electrical capacity can be further increased once the potential of microhydropower is identified.

Currently, the Republic of Uzbekistan has adopted a number of government resolutions on the production of electricity from power points of irrigation networks using small and medium-sized hydroelectric power stations, and construction work has begun on their basis.

Small hydropower occupies an important place in our country, which has a large number of renewable, that is, energy sources that can be used several times.

The hydropower resources of the Republic of Uzbekistan are assessed as follows.

1. Annual total (or theoretical) hydropower potential – 88.5 billion dollars. kWh, of which:

- large rivers – 81.1 billion. kWh;
- medium rivers – 3.0 billion kWh;
- small rivers – 4.4 billion. this is kWh.

2. The flow of energy-generating water encounters too much resistance along its path and is wasted. The energy remaining from the spent energy is the technical hydropower potential, 27.4 billion rubles. equals kWh, from where:

- large rivers – 24.6 billion. kWh;
- medium rivers – 1.5 billion. kWh;
- small rivers – 2.3 billion. this is kWh.

3. The flow of water passing through the equipment of a hydroelectric power station overcomes great resistance. After all the resistance, the remaining net cost-effective hydropower potential is $16.6 billion. this is kWh.

The efficiency of a small hydroelectric power station depends on the correct choice of its location and the equipment used in its construction. Small hydroelectric power plants are subject to a number of requirements that are taken into account during design.

1) be unified and fully automated;
2) technical and economic indicators of the equipment used can be competitive with traditional sources of energy supply;
3) minimal negative impact on the environment;
4) low cost of the hydraulic unit;

5) simplicity of installation and assembly work, mobility of the device and the possibility of repair work;

6) simple and convenient device maintenance and reliable use.

In addition, there are a number of requirements for the quality of electricity produced. The quality of electrical energy is related to the frequency of its current and the level of stability (invariance) of voltage among consumers.

In our experiments, we installed a micro-hydroelectric power station in the form of a charkhpalak in a medium-speed flowing channel. During the installation period, we selected a synchronous machine, calculating the following dimensions. These are water flow, pressure and water flow. Calculations showed a current of 4.5 kW. The generator we chose provided electricity to two households.

Picture 1 micro hydroelectric power station

The gross hydropower resources of the republic are small - 9.2 million cubic meters. t.b.e. (tonne of oil equivalent) is estimated. The development of small hydropower in Uzbekistan is currently facing many problems, for example: the topographic and hydrological aspects of small watercourses and the economic indicators of the regions in this area have been very little studied, in connection with the transition to the development of large hydropower resources. The capacities of hydroelectric power stations on large rivers, small watercourses and small hydroelectric power stations are being studied, it is projected that little attention is paid to their work in practice, and the production of basic devices in the republic is not enough for industrial capacities, etc.

To create a new generation of small hydropower plants, a critical analysis of previous experience, a new approach and new collective criteria for assessing the efficiency of hydropower resources are required.

People living near small streams and fast-flowing rivers have no idea that they can provide their home with a lot of energy (lighting, TV, computer, refrigerator, etc.). In this case, the use of a microhydroelectric power station that concentrates energy allows you to obtain 4000-5000 W of energy per day. Its dimensions are very small and it is very easy to install.

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