SMALL HYDROPOWERS

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Abstract:

Small hydropower (SHP) is a type of renewable energy source that is increasingly recognized for its potential to generate electricity with minimal environmental impact, particularly in remote and rural areas. This paper provides a comprehensive review of small-scale hydropower systems, focusing on their technological advancements, environmental benefits, and economic feasibility. It discusses the criteria for site selection, design considerations for SHP plants, and the various types of turbines suitable for low-head and low-flow water sources. The paper also evaluates the role of small hydropower in meeting global energy demands while contributing to rural development and reducing greenhouse gas emissions. Furthermore, the paper examines the policy frameworks and incentives that encourage the development of SHP projects. Challenges such as regulatory barriers, financial constraints, and potential ecological disturbances are addressed, with recommendations for sustainable practices and community engagement. This study underscores the necessity for integrated resource management and cross-sector collaboration to optimize the advantages of small hydropower.

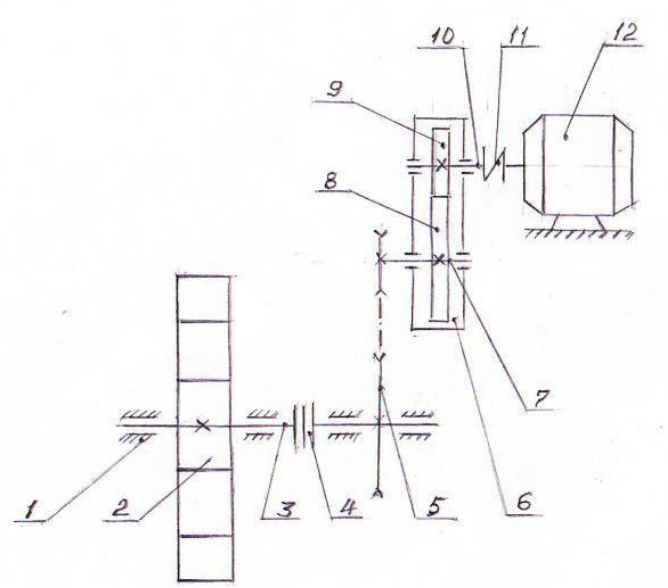
Keywords: Small hydropower, renewable energy, rural electrification, sustainable development, low-head turbines, green energy, environmental impact, economic viability, energy policy, resource management.

Design of a device that receives electricity from flowing water resources. The Republic of Uzbekistan is rich in various electrical resources differs from regions. Their rational use is the present day grow up going electricity to energy has been desire to satisfy known We will not be mistaken if we say that it will be implemented. So it is relevant It is natural that the issue is of interest to many experts. Nowadays in return energy from sources use issue not enough our in our countryrather, it is one of the urgent issues facing experts all over the world in kolmok. Because the available resources (gas, oil products, coal, peat, etc.)the sharp decrease in reserves, along with the demand for themincreased to go near in the future humanity in front huge problems cause release obviously That's it therefore, there is in return energy from sources use the issue from

now on point to enter into for the purpose is appropriate.

Emphasizing transition ok in return (sun, biogas, water, the wind and s.o.)energy interest increased going one at the time them to design sources

issues of choice and affordability remain problematic. Of course this is the case has its own characteristics. Many people are interested in water and electricity stations stopping passable if we them ubiquity, structure simplicity, less spend expenses Demand to be done, manage and control to do ease,to many obviously although them design and to build according to accurate one Recommendations, calculation books are not available. Attempts by experts in this regard There are, however, specific features of the proposed structures open not given and water sources parameters according to accurate instructions no. Therefore, the problems of calculation, construction and operation of such devices A number of problems are not visible without solving them the goal cannot be reached. Based on this, the service in this graduation work Electricity using water flowing through the service area in order to obtain, work was carried out on the mini GES device. From the generator organize found vine work exterminator the device project kinematic scheme 2.3-in the picture given.

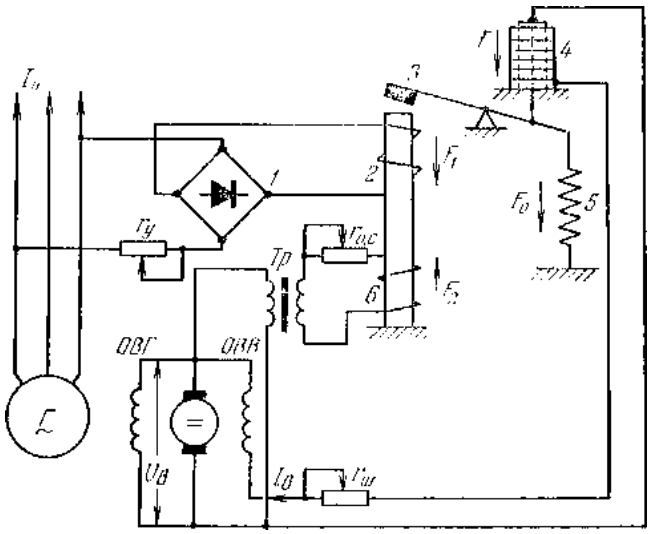


Electro-generator moving parts, chain drive andkinematics of the drive consisting of a cylindrical gear wheel and an accelerator scheme

1st base part; 2-parts; 3.5- blades and drive sprocket shafts; 4-disc clutch; 6-accelerator housing; 7-leading shestyernya; 8th leader gears; 9th leading gear; 10-drive gear wheel shaft; 11th clutch; 12th electric generator.

Synchronous the generator automatic manage system work exit

Electric energy in the supply him parameters, i.e voltage, vine, vine frequency defined at the border holding stand up main from tasks one is counted. The following in the scheme synchronous generator voltage automatic respectively defined at the border holding to stand provider automatic manage system has been developed. Synchronized using a carbon adjuster belowthe generator to provoke automatic manage system principle scheme given.



He drives a synchronous generator using a carbon rectifier automatic manage principle of the system scheme.

1-diode rectifier; 2-electromagnet; 3rd lever; 4-coal column; 5th spring; 6-electromagnet stocking; T $_r$ -transformer; OVV- trigger stir up watercress; OVG-generator stir up chulgami

The adjustable voltage of the generator is rectified by bridge 1 is transferred to the rectifier electromagnet 2, which generates an electromagnetic force F $_1$ lever 3 to influence shows and coal column compression power F $_0$ the weakens. Coal column while coal of pucks organize found will be. The force generated by spring 5 resists F $_0$ F $_{1 \text{ and}}$ coal column in the generator voltage decline, As a result F1 reducing the force and the resistance between the pucks leads to the fact that The current in the excitation winding of the OVV generator increases, the generator voltageand rises. As the voltage increases, the adjustment process is reversed develops.

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