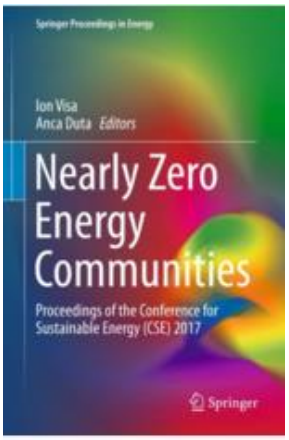

2017, pag. 490-499

Developing Modified Hydrodynamic Rotor for Flow Small Hydro

Ion Bostan, Viorel Bostan, Valeriu Dulgheru, Oleg Ciobanu, Radu Ciobanu, Vitalie Gladis

https://doi.org/10.1007/978-3-319-63215-5_35

Abstract

An efficient conversion of kinetic energy of river water into mechanical or electrical energy without building barrages is provided by micro-hydropower stations. Increased efficiency is achieved by an optimum position of the blades with hydrodynamic profile. The micro hydro power plant is posted in the river water flow. The position of blades compared to the water level is ensured by the Archimedes forces that react on the floating blades. The efficiency of the micro-hydro power stations as conversion systems of renewable energy sources kinetic energy of flowing river depend mostly on profiles of the hydrofoils used in the rotor's construction for interaction with fluid. The main goal of this paper consists in the elaboration of the modified hydrodynamic blades with modular structure, and based on them of the turbines with increased conversion efficiency. According to the opinion of authors, the constructive solutions of the micro hydro power plant presented in this work correspond to a great extent to the requirements advanced to the performance hydrodynamic rotor. This fact imposes the designing and execution of some experimental prototypes, which would validate the expectations. The industrial models of micro hydro power plant with modified hydrodynamic rotor and with indicated power of 4 kW have been projected, and fabricated. In present the hydro power plant are in testing stage.