OVERVIEW OF A NEW METHOD FOR DESIGNING HIGH EFFICIENCY SMALL HYDRO POWER PLANTS

by

Milun J. BABIĆ*, Dušan R. GORDIĆ, Dubravka N. JELIĆ, Davor N. KONČALOVIĆ, Dobrica M. MILOVANOVIĆ, Nebojša M. JOVIČIĆ, Milan Z. DESPOTOVIĆ and Vanja M. ŠUŠTERŠIČ

Faculty of Mechanical Engineering, University of Kragujevac, Kragujevac, Serbia

Original scientific paper
UDC: 621.221.620.9.001.573
DOI: 10.2298/TSCI100515022B

Significant number of research projects in the area of renewable energy sources (especially for small hydro power plants) has been made within the Department for Energy and Process Engineering and Regional Euro Energy Efficiency Center at Faculty of Mechanical Engineering (University of Kragujevac, Serbia) since early eighties. The results are various; numerous domestic and international recognition and technical performance tell about the success of the research. Research projects have been following the technical and technological development of research equipment and economy growth. This has led to the development of software for designing turbines of small hydro power plants. In order to notify the public about possibilities of our software, in this paper is briefly described a mathematical model and procedures for calculating and designing of small hydro power for known conditions. As an argument for assessing the validity and potential of our research results is shown constructed small hydro power plant "Bosnia 1", 2 x 100 kW power.

Key words: *SHP, optimal shape, meridional plane, cross section, turbine, impeller, CAD, CATIA*

Introduction

For years, with more or less success, the problem of energy use of both listed and uninvestigated hydro potentials have been trying to be put in first plan at the local scene in order to obtain the status of development priorities. Insisting on small hydro power (SHP) plants and putting extra attention on their significance is justified, because the energy that can be obtained from it is not negligible.

For some time, many international and domestic companies and entrepreneurs without the media exposure, almost stealthily are investigating the most cost-effective

* Corresponding author; e-mail: nastasija@kg.ac.rs