

DANUBE HYDROPOWER AND SOME RELATED PROBLEMS

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Rezumat: *Dunărea are lungimea de 2912 km, debitul la vărsare de 6500 m³/s și un potențial energetic amenajabil de 42 TWh pentru exploatarea căruia ar trebui amenajate în jur de 50 centrale hidroelectrice. Aproximativ 30% din potențialul total se află pe sectorul ce formează frontiera româno-sârbă. Aici au fost ridicate două mari sisteme energetice și de navigație: „Porțile de Fier I” (1964-1971) și „Porțile de Fier II” (1977-1986). Contribuția prezentă, analizează Dunărea din punct de vedere energetic, compară CHE Porțile de Fier I cu realizări similare și examinează comportarea în exploatare a echipamentelor hidromecanice.*

Abstract: *Danube has a length of 2912 km, a 6500 m³/s final discharge and a hydroelectric potential of 42 TWh, the recovery of which necessitate to build approximately 50 power plants. About 30% of this potential is found at the river sector making the Romanian-Serbian border. Two important hydroelectric and navigation systems “Iron Gates I” (1964-1971) and “Iron Gates II” (1977-1986) were built here. Paper analyzes the Danube from the point of view of the hydroelectric potential, compares the Iron Gates power plants with other similar achievements and examines the running behavior of this huge hydraulic equipment.*

Keywords: Danube, hydraulic power plants, Kaplan turbines, Bulb turbines, cavitation

1. Introduction

Danube with a length of 2912 km, a basin of 817,000 km² and 6047 m³/s discharge is the Europe second largest river (after Volga 3692 / 1,380,000 / 8060). In an average year, the hydroelectric potential of Danube is about 42 TWh. Economically this potential can be utilized by around 50 power stations, with a total installed power of 8000 MW.

Approximately 30% from this potential is found on the Danube sector which is the Romanian-Serbian border (total length 229.5 km), with 8050 KW/km, but in some restricted zones even 82,000 kW/km, which represents for Europe the biggest specific power. In June, 1956 a common “Romanian - Yugoslavian Declaration was made in which was stated the decision to begin studies for the use of this huge hydroelectric potential.

After approximate two years of researches result the conclusion that two complex systems can be put into operation.

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