



ZBORNİK APSTRAKATA

12. Simpozijum termičara SGG

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12. SIMPOZIJUM TERMIČARA
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DRUŠTVO TERMIČARA SCG

MAŠINSKI FAKULTET NIŠ

MOGUĆNOSTI ISKORIŠĆENJA ENERGIJE IZ GRADSKOG OTPADA
ENERGY RECOVERY FROM MUNICIPAL SOLID WASTE

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In this paper, possibilities of applying of the waste incineration process in City of Kragujevac are presented. Also, in this research summary of waste as fuel and needed institutional and financial framework are given. Taking into the consideration the lack of data on waste quantities, content and flow, conclusion of this paper is that design of facility for waste incineration is impossible before gathering necessary data.

Key words: *municipal and industry waste, incineration, energy recovery*

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METODI DIJAGNOSTIKOVANJA ODVAJAČA KONDENZATA
STEAM TRAP DIAGNOSTIC METHODS

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The authors of the paper had intention to emphasize the importance of steam trap testing in order to eliminate irregular working conditions and redundant energy waste. Experience told us that this problem is underestimated in our industry. In this paper classification of steam traps was presented, as well as causes of their failure. Critical analysis of methods for steam trap testing and recommended testing intervals were also shown.

Key words: *steam systems, steam traps, testing and maintenance*

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**TOPLOTNA EFIKASNOST HIBRIDNOG I OBIČNOG RAVNOG
SOLARNOG PRIJEMNIKA U ZAVISNOSTI OD NJIHOVIH
KONSTRUKCIJSKIH PARAMETARA**

**HEAT EFFICIENCY OF HYBRID AND CONVENTIONAL PLANE
SOLAR COLLECTORS AS FUNCTION OF THEIR DESIGN
PARAMETERS**

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Za različite vrednosti konstrukcijskih karakteristika hibridnog i konvecionalnog ravnog solarnog prijemnika izračunate su vrednosti toplotne efikasnosti korišćenjem analitičkih formula. Za oba solarna ravna prijemnika dobijeni su da je njihova toplotna efikasnost veća ukoliko imaju niži koeficijent emisije fotoćelijskog panela (apsorbera), viši koeficijent apsorpcije fotoćelijskog panela (apsorbera), veći faktor efikasnosti solarnog prijemnika i veću debljinu donje toplotne izolacije. Za hibridni solarni prijemnik je dodatno dobijeno da je toplotna efikasnost veća ukoliko je koeficijent efikasnosti fotoćelijskog panela manji. Međutim, temperaturni koeficijent fotoćelijskog panela ne utiče na toplotnu efikasnost hibridnog ravnog solarnog prijemnika.

Ključne reči: *toplotna efikasnost, ravni solarni prijemnik, hibridni solarni prijemnik*

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THE SMALL HYDRO POWER PLANTS – NEW DEAL OF THE SERBIAN ENERGETIC

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Abstract--The influence of organized investment in small hydro power plant building on the development of deregulating electric market in Serbia is presented in this paper. The results of analysis of energetic, economic and ecological benefits that can be derived from the process are also presented. In the process of initiation, preparation and forming of such approach participants were Ministry of Mining and Energy of Republic of Serbia, Electric Power Industry of Serbia, Energy Efficiency Agency of Republic of Serbia and Energy Regional Euro Efficiency Center Kragujevac. They prepared comprehensive pre-study entitled "The Master Plan for Small Hydro Power Plants Building in Serbia". The aims of that pre-study were to:

- preliminary investigate the influence of organized investment in small hydro power plants building on the development of deregulating electric market in Serbia;
- simulate energetic, economic and ecological possibilities of different variants of such approach for the next fifteen years;
- establish the optimal scenario for organized building of small power plants.

All necessary political and administrative decisions related to the future development of Serbian national energetic sector are made and Electric Industry of Serbia had been already restructured. In this work, it has been attempted to identify methods for optimal management of the small power plants building in this new and for Serbian surrounding yet unsatisfactory clear economic conditions.

Besides the results of simulation of potential energetic, economic and ecological benefits from the Master plan realization, basic characteristics of original simulated mathematical model and developed software for determination of these characteristics are shown in this work.

Index Terms--Costs, CO₂, electric power, ecological advantages, master plan, economic advantages, small hydro power plant, mathematical modeling, NO_x, optimization, ash, income, profit, reduction of the emission, scenario, simulation, power, SO_x, tempo of the building, expense, water flow

I. INTRODUCTION

Since the first big oil crises during the 1970-s, there were few campaigns related to the problem of utilization of small water flows in Serbia. The campaigns were initiated by the government and they were ended as media events. The only exception is one such campaign in the 1980-s, when the Cadastral with about 800 location for the building of small hydro power plants (SHPP). Today, this result serves to all persons that try to admonish that at the Serbian territory unused energy resources with 500 – 600 MW of power exists so the views of state planners must be direct toward it.

For the first time the Energy Law instituted SHPP as future reality in Serbian Electric Energy System (EES) and stated true energy significance of small water flows. Benefits of SHPP use in the Law present challenge to business people and capital but in order to achieve organized exploitation of this renewable energy potential the relevant state agencies must support a series of directed steps.

Therewith, it should be mentioned that present and future investors in energy of small water flows are interested in:

- precise locations for SHPP building;
- the amount of energy that can be produced at every location;
- building costs of every concrete SHPP;
- payback time of the investment;
- estimation of the profit that can be earned during the time of SHPP exploitation.

This does not complete the list of potential equations that interested investors and businessmen can ask. They will be interested in:

- geo-morphological characteristics of the site;
- hydrological characteristics of water flows;
- the ownership of the land where small hydraulic accumulation and SHPP can be built;
- methodology, terms and conditions for obtaining the concessions from the competent state agencies;
- the position of the nodes of distributive electro-energetic network where SHPP can be connected;
- technical and other conditions and terms for connection of SHPP to the network;
- possibilities of physical approach to the locations for the building of SHPP, etc.

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