

47.



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**47. MEĐUNARODNI
KONGRES I IZLOŽBA
O GREJANJU HLADENJU
I KLIMATIZACIJI**

**47th INTERNATIONAL
CONGRESS & EXHIBITION
ON HEATING, REFRIGERATION
AND AIR CONDITIONING**

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**Belgrade, Sava Center,
30 November – 2 December 2016**

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OPTIMIZACIJA GEOMETRIJSKIH VELIČINA SOLARNIH PRIJEMNIKA HEURISTIČKIM OPTIMIZACIONIM METODAMA

OPTIMIZATION OF SOLAR COLLECTOR GEOMETRIC PARAMETERS USING A HEURISTIC OPTIMIZATION METHODS

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Ovaj rad predstavlja nastavak istraživanja grupe autora u oblasti optimizacije stepena iskorišćenja solarnih prijemnika sunčeve energije. Dosadašnji rad se zasnivao na metodi optimizacije poznatoj kao metoda slučajne pretrage, koja je jedna od najstarijih heurističkih optimizacionih metoda. U radu su rezultati prethodni istraživanja upoređeni sa rezultatima dobijenim novom metodom optimizacije koja se naziva Teaching-Learning based optimization – TLBO. Predstavljen je način funkcionisanja ove metode, kao njena primena na optimizaciju solarnih prijemnika. Za potrebe novog rada unapredjen je dosadašnji matematički model, kako bi u optimizaciju bio uključen što veći broj promenljivih koje imaju uticaja kako na proizvodnju tako i na cenu solarnih prijemnika. U obzir su uzeti prijemnici sa cevima kvadratnog poprečnog preseka, kao i prijemnici sa cevima okruglog poprečnog preseka. Izvedeni su zaključci i data je uporedna analiza rezultata dobijenih metodom slučajne pretrage i metodom TLBO.

Ključne reči: solarni prijemnici, faktor iskorišćenja, metoda slučajne pretrage, teachnig-learning based optimization.

This paper is an extension of ongoing research in the field of solar collector efficiency optimization. The present research is based on a method known as a random search optimization, which is one of the oldest heuristic optimization methods. In this paper, the results of previous research are compared to results of a new optimization method named the Teaching-Learning based optimization - TLBO. It is presented the mode of this method operation, as well as its application in optimization of solar collectors. For the TLBO method an extended mathematical model is used in order to involve as many variables as it possible, which affect both the production and the costs of solar collectors. This research takes into consideration the collectors with the cross section of square pipe profile and collectors with the round

