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THERMAL SCIENCE

International Scientific Journal

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THEORETICAL ANALYSIS AND EXPERIMENTAL VERIFICATION OF PARABOLIC TROUGH SOLAR COLLECTOR WITH HOT WATER GENERATION SYSTEM

ABSTRACT

The modeling of a parabolic trough collector with hot water generation system with a well-mixed type storage tank using a computer simulation program is presented in this paper. This is followed by an experimental verification of the model and an analysis of the experimental results. The maximum difference between the predicted and the actual storage tank water temperature values is found as 9.59 % only. This variation is due to the difference between the actual weather during the test period compared to hourly values and the convection losses from the collector receiver, which were not constant as accounted by the computer simulation program.

KEYWORDS

parabolic trough collector, hot water storage tank, solar hot water generation, system performance, simulation program

PAPER SUBMITTED: 2005-12-12

PAPER REVISED: 2006-01-18

PAPER ACCEPTED: 2006-03-15

DOI REFERENCE: [TSCI0701119V](#)

CITATION EXPORT: [view in browser](#) or [download as text file](#)

THERMAL SCIENCE YEAR 2007, VOLUME 11, ISSUE 1, PAGES [119 - 126]

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