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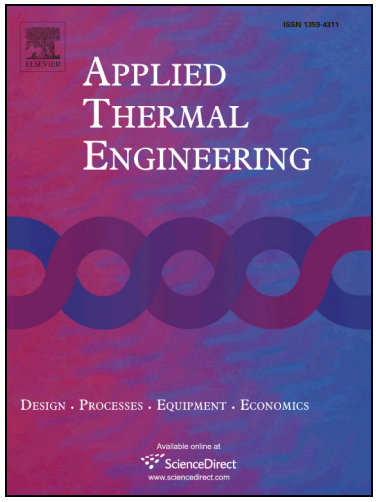


Research Paper

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# Configurations and pressure levels optimization of heat recovery steam generator using the genetic algorithm method based on the constructal design

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## Abstract

In last two decades, there was a great deal of attention on the optimum design and performance improvement of the heat recovery steam generator (HRSG) units. In the present work, considering different objective functions and utilizing the constructal design method, three configurations of HRSG are compared. The design method is based on the constructal theory and optimization technique is carried out by varying the geometric design parameters and steam pressure levels for different values of the exhaust gas temperatures. Optimum conditions of HRSG are obtained with the help of the genetic algorithm under the fixed total volume constraint. For each configuration of HRSG, optimal distribution of the heat surfaces (sizes) subject to the total volume constraint are derived such that the

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