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Abstract Details

Title: Exergetic analysis of a single pressure heat recovery steam generator

Authors: Ashutosh mishra, siddharth arora

Abstract: In this study, a comprehensive exergy analysis is done on a one pressure level (single pressure) heat recovery steam generator of a combined cycle power plant (ccpp) consisting of two gas turbine cycles as topping cycle and a steam turbine with single pressure hrsg as bottoming cycle. The role and impact of both first and second law efficiencies are analysed to understand the performance of hrsg. The exergy destruction rate and exergetic efficiency are the two terms to judge the quality of net available energy and losses passing through the particular component and whole system so done with hrsg in this paper.a program code is established using matlab software to perform the calculations required for the exergy plant analysis considering real variation ranges of the main operating parameters such as pressure ratio, air fuel ratio and inlet temperature. The effects of theses parameters on the system performances are investigated.

Keywords: heat recovery steam generator, combined cycle power plant, exergy analysis, 2nd law efficiency, brayton cycle, steam turbine.