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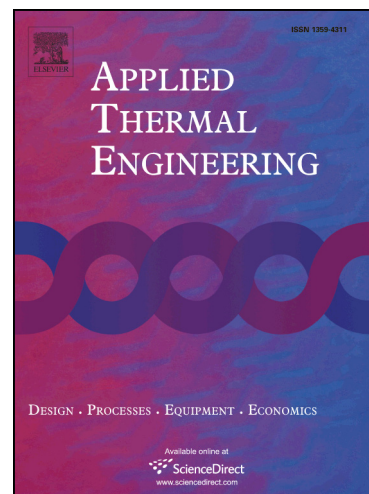
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THERMAL PERFORMANCE OF GAS TURBINE POWER PLANT BASED ON EXERGY ANALYSIS

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Abstract

This study is about energy and exergy analysis of gas turbine power plant. Energy analysis is more quantitatively while exergy analysis is about the same but with the addition of qualitatively. The lack quality of the thermodynamic process in the system leads to waste of potential energy, also known as exergy destruction which affects the efficiency of the power plant. By using the first and second law of thermodynamics, the model for the gas turbine power plant is built. Each component in the thermal system which is an air compressor, combustion chamber and gas turbine play roles in affecting the efficiency of the gas turbine power plant. The exergy flow rate for the compressor (AC), the combustion chamber (CC) and the gas turbine (GT) inlet and outlet are calculated based on the physical exergy and chemical exergy. The exergy destruction calculation based on the difference between the exergy flow in and exergy flow out of the component. The combustion chamber has the highest exergy destruction. The air compressor has 94.9% and 92% of exergy and energy efficiency respectively. The combustion

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