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Energy and Exergy Performance Optimization on a Real Gas Turbine Power Plant

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Abstract : This paper presents the energy and exergy optimization of a real gas turbine power plant performance of 100 MW of power, installed in the South East of Tunisia. A simulation code is established using the EES (Engineering Equation Solver) software. The parameters considered are those of the actual operating conditions of the gas turbine thermal power station under study. The results show that thermal and exergetic efficiency decreases with the increase of the ambient temperature. Air excess has an important effect on the thermal efficiency. The emission of NOx rises in the summer and decreases in the winter. The obtained rates of NOx are compared with measurements results.

Keywords : efficiency, exergy, gas turbine, temperature
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