World Academy of Science, Engineering and Technology
International Journal of Energy and Power Engineering
Vol:11, No:07, 2017

Thermo-Exergy Optimization of Gas Turbine Cycle with Two Different Regenerator Designs

Authors : Saria Abed, Tahar Khir, Ammar Ben Brahim

Abstract : A thermo-exergy optimization of a gas turbine cycle with two different regenerator designs is established. A comparison was made between the performance of the two regenerators and their roles in improving the cycle efficiencies. The effect of operational parameters (the pressure ratio of the compressor, the ambient temperature, excess of air, geometric parameters of the regenerators, etc.) on thermal efficiencies, the exergy efficiencies, and irreversibilities were studied using thermal balances and quantitative exegetic equilibrium for each component and for the whole system. The results are given graphically by using the EES software, and an appropriate discussion and conclusion was made.

Keywords : exergy efficiency,gas turbine, heat transfer, irreversibility, optimization, regenerator, thermal efficiency
Conference Title : ICPEPE 2017 : International Conference on Power Electronics and Power Engineering
Conference Location : Istanbul, Türkiye
Conference Dates : July 27-28, 2017