

## 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 exergetic 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, Turkey

**Conference Dates :** July 27-28, 2017