

Investigation of Main Operating Parameters Affecting Gas Turbine Efficiency and Gas Releases

Authors : Farhat Hajer, Khir Tahar, Ammar Ben Brahim

Abstract : This work presents a study on the influence of the main operating variables on the gas turbine cycle. A numerical simulation of a gas turbine cycle is performed for a real net power of 100 MW. A calculation code is developed using EES software. The operating variables are taken in conformity with the local environmental conditions adopted by the Tunisian Society of Electricity and Gas. Results show that the increase of ambient temperature leads to an increase of T_{pz} and NO_x emissions rate and a decrease of cycle efficiency and UHC emissions. The CO emissions decrease with the raise of residence time, while NO_x emissions rate increases and UHC emissions rate decreases. Furthermore, both of cycle efficiency and NO_x emissions increase with the increase of the pressure ratio.

Keywords : Carbon monoxide, Efficiency, Emissions, Gas Turbine, Nox, UHC

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