

Gas turbines are generally used for large scale power generation. The basic gas turbine cycle has low thermal efficiency which decreases in the hard climatic conditions of operation, so it is important to look for improved gas turbine based cycles. Among several methods shown their success in increasing the performances, the steam injected gas turbine cycle (STIG) consists to introduce a high amount of steam at various points in the cycle. The objective of the present work is to improve the performances of gas turbine used under Sahara conditions by injecting suitable quantities of steam in the upstream of combustion chamber. The suggested method has been studied and compared with a simple cycle. Efficiency, however, is held constant when the ambient temperature increases from iso conditions to 50C. Computer program has been developed for various gas turbine processes including the effect of ambient temperature. This is achieved by studying the effect of steam injection on the gas turbine performances. Data from the performance testing of an industrial gas turbine, computer model and theoretical study are used to check the validity of the proposed model. The comparison of the prediction results to the test data is in good agreement