

The comparison of various gas turbine inlet aircooling methods for various ambient condition trough energy and exergy analysis

Abstract :

The strong influence of climate conditions on gas turbine behavior is well known. During the summer season the output of gas turbines falls to a value that is less than the rated output under high temperature conditions. Cooling the turbine inlet air can increase output power considerably, because cooled air is dense, giving the turbine a higher mass flow rate and resulting in increased turbine output and efficiency. This study is to use the energy and exergy analysis method to evaluate the air cooling method used for enhancing the gas turbine power plant. In addition, the effect of inlet air cooling method on the output power, exergy efficiency and exergy destruction have been analyzed. Also at the end of the paper the comparison of two mentioned methods has been investigated.