

Abstract Details

Title: Modeling and Analysis of Thermal Efficiency of Gas Turbine Power Plant Using Graph Theory and Matrix Method

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Abstract: Power generation is an important issue today. Gas turbines have turned out to be one of the most interesting techniques for electric power generation. It can be used in several different modes in industries such as power generation, oil and gas, process plants, aviation as well as domestic and smaller related industries. The use of gas turbine for electrical power generation has changed dramatically in recent years. In 1970s, gas turbines (particularly in Great Britain and North America) were primarily used for peaking and emergency application; aero derivative units with a heavy duty power turbine were widely used. One of the outstanding advantages of this type was its ability to produce full power in cold in less than 2 minutes, although this capability should be used only for emergencies because thermal shock will greatly reduce the time between overhauls. In India, thermal power is the largest source of power. About 75% of electricity consumed in India is generated by thermal power plants. More than 50% of India's commercial energy demand is met through the country's vast coal reserves. Public sector undertakings, National Thermal Power Corporation and several other state level power generating companies are engaged in operating coal based thermal power plants. The objective of present research work is to analyze the effect of Operating /performance Parameters on the thermal efficiency of Gas Turbine Power Plant. Also it is useful for finding the critical factor among different performance parameters of GTPP.

Keywords: Power generation, gas turbine for electrical power generation, thermal power.