THERMODYNAMIC ANALYSIS OF FRAME 9 E GAS TURBINE MODEL

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Abstract

The need for power generation has been increasing in our country and even around the world with the increase of population and other substantial needs. The power generation is majorly being done by steam power plants, thermal power plants, hydro power plants, gas turbine power plants and nuclear power plants. Of all these power plants gas turbine plant requires less initial investment.

The performance test on FRAME-9E gas turbine model has been conducted to find out the optimum pressure ratio, variation of turbine inlet temperature, and efficiency of the turbine at the test conditions by using diesel as a fuel at BHEL, Hyderabad.

The parameters affecting the performance of gas turbine are studied and performance characteristics of gas turbine are drawn. Effect of pressure ratio, air inlet temperature, turbine inlet temperature, compressor efficiency and turbine efficiency on performance of gas turbine is studied.

The performance test is conducted on MS 9001E model gas turbine at LANCO combined cycle power plant and thermal efficiency of the gas turbine and overall efficiency of combined cycle plant are calculated.