**Thermal analysis of gas turbine rotor blade**

**Abstract:**

A gas turbine, also called a combustion turbine, is a type of [internal combustion engine](http://en.wikipedia.org/wiki/Internal_combustion_engine). It has an upstream rotating [compressor](http://en.wikipedia.org/wiki/Gas_compressor) coupled to a downstream [turbine](http://en.wikipedia.org/wiki/Turbine), and a [combustion chamber](http://en.wikipedia.org/wiki/Combustion_chamber) in-between. The basic operation of the gas turbine is similar to that of the [steam power plant](http://en.wikipedia.org/wiki/Steam_power_plant) except that air is used instead of water. Fresh atmospheric air flows through a [compressor](http://en.wikipedia.org/wiki/Gas_compressor) that brings it to higher pressure. [Energy](http://en.wikipedia.org/wiki/Energy) is then added by spraying fuel into the air and igniting it so the combustion generates a high-temperature flow. This high-temperature high-pressure gas enters a turbine, where it expands down to the exhaust pressure, producing a shaft work output in the process. Gas turbines are used to power [aircraft](http://en.wikipedia.org/wiki/Aircraft), [trains](http://en.wikipedia.org/wiki/Train), [ships](http://en.wikipedia.org/wiki/Ship), [electrical generators](http://en.wikipedia.org/wiki/Electrical_generator), or even [tanks](http://en.wikipedia.org/wiki/Tank).

The rotating components of heavy duty gas turbine sustain significant thermal and torsional stresses during operation .The present work is directed towards the modeling of gas turbine rotor. And perform the transient thermal analysis to determine the effective heat transfer of the blade.

