

# **COMPUTATIONAL STUDY OF TURBINE CASCADE**

A Major Project Report Submitted in Fulfilment

For The Requirement of the Degree of

**Master of Engineering**

In

**Mechanical Engineering (Thermal)**

By

**Devendra Singh**

**ROLL NO – 18601**

Under the guidance of

**Prof. SAMSHER**



**DEPARTMENT OF MECHANICAL ENGINEERING**

**DELHI COLLEGE OF ENGINEERING DELHI-110042**

**UNIVERSITY OF DELHI**

July 2011

## DECLARATION BY THE CANDIDATE

Date: \_\_\_\_\_

I hereby declare that the work presented in this dissertation entitled **COMPUTATIONAL STUDY OF TURBINE CASCADE**” has been carried out by me under the guidance of Dr. Samsher, Professor, Department of Mechanical Engineering, Delhi College of Engineering, Delhi and hereby submitted for the partial fulfilment for the award of degree of Master of Engineering in Mechanical Engineering (THERMAL) at Delhi College of Engineering (Delhi university), Delhi.

I further undertake that the work embodied in this major project has not been submitted for the award of any other degree elsewhere.

---

## CERTIFICATE

It is to certify that the above statement made by the candidate is true to the best of my knowledge and belief.

Dated:-----

**Dr. SAMSER**

Professor

Mechanical Engineering Department

Delhi College of Engineering, Delhi-42

## **Acknowledgement**

I would like to acknowledge those people and institute who have given me the knowledge and light of guidance which has helped me wade through the darkness. Here, I express my heartily and sincere gratitude and indebtedness to Dr. SAMSHER, Professor in Mechanical Engineering Department, Delhi College of Engineering, Delhi for his valuable guidance and wholehearted cooperation. He has a special place in my heart for many reasons but to be limited, he is the one who inspires me to move ahead in life with persistence and endurance.

My heartily thanks to all of my Professors for their expertise and rounded personality they have imparted to me.

My special thanks go to parents who have given me the strength, love and care to carry out this course successfully.

DEVENDRA SINGH

## **ABSTRACT**

Roughness over the turbine blade is mainly caused by erosion corrosion and deposition. The roughness varies along the blade height and also over different stage of blade. To see the effect of roughness, three profiles have been taken and were checked for different roughness over only pressure surface, only suction surface and over both the surfaces together. The study has been carried out using Fluent software. It has been concluded that the loss coefficient increases with roughness. Roughness over pressure surface is more detrimental than suction surface. Study also reveals that roughness over reaction profile is more detrimental than that of impulse profile.

