ACKNOWLEDGEMENT

This is to acknowledge my indebtedness to my guide, **Prof P Prabhakaran**, Professor, Department of Mechanical Engineering, Faculty of Tech. & Engg., The M S University of Baroda, Vadodara, for his guidance and suggestions for preparing this PhD thesis. His towering presence instilled in me the craving to work harder and complete this daunting task timely with sufficient degree of independent study. I am highly thankful for his edifying guidance and encouragement provided to me throughout the completion of my PhD work that enhanced the confidence in me. The keen and personal efforts of the guide made the long process of this work a very pleasant end.

I am thankful to the SVM Institute of Technology, Bharuch, Gujarat, India for providing me this opportunity by sponsoring me for the doctoral research work and the moral support.

I am grateful to Mr M I Shamsi and H N Sarvaiya, in charge of Aqua Ammonia VAR system, Mr N B Vaghela, in charge of steam power plant and Mr R T Patel, in charge of gas power plant at GNFC, Bharuch for their valuable guidance in understanding the system performance and providing me all the required data for the system analysis.

I extend my special thanks to my friend Dr. Ragesh Kapadia, Department of Mechanical Engineering, SVMIT-Bharuch for having spent his valuable time in constructive discussion and drawing me out of troubles and solving queries, I faced during analytical problems.

Last but not the least I am thankful to the Almighty who gave me the strength and health for completing the work.

(V K Matawala)