ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my Professor and adviser, Dr. A.V.Sita Rama Raju, for his valuable guidance, cooperation, encouragement and endless patience, without whose inspiring guidance this investigation would be a dream to me. Besides his busy schedule, he has always shown interest towards this research work. I am very grateful for his generous support throughout the course of this work.

I am extremely thankful to Dr. D. N. Reddy, Honourable Vice-Chancellor of JNT University Hyderabad, for his kindness in sanctioning Six months study leave for completing my present Ph.D. work.

I sincerely thank Dr. G. Tulasi Ram Das, Registrar, JNT University Hyderabad, to be kind enough for according permission for my study leave without which I could not have completed this.

I specially thank Dr. T.K.K. Reddy, Director, Academic Audit Cell, JNTUH for his encouragement and support to complete this work.

I thank Dr. M. Ashok Kumar, BOS Chairman, Department of Mechanical Engineering, JNTUH College of Engineering, Hyderabad for according permission to submit this research work.

I thank Dr. N.V. Ramana Rao, Principal, JNTUH College of Engineering, Hyderabad for according permission for my study leave.

I thank Dr. A. Chenna Kesava Reddy, Head, Department of Mechanical Engineering, JNTUH College of Engineering, Hyderabad for the co-operation and support rendered in submission of this work.

I am extremely thankful to Dr. P. Ram Reddy, Principal and Director, Malla Reddy Institute of Engineering and Technology; Director, Malla Reddy college of Engineering for Women, for the kind and whole-hearted cooperation extended in bringing out the thesis in the present form.
I am thankful to **Dr. K.N. Murthy**, Sr.DGM (Retd), BHEL Corporate R&D Division, Vikas Nagar, Hyderabad, working currently as Principal, Swami Vivekananda Institute of Technology, Hyderabad, for the encouragement and incessant guidance rendered by him during the work, which has generated inspiration and confidence in me to carry out this investigation.

I express my gratitude to **Sri. M. Dakshina Murthy**, Sr.DGM, BHEL Corporate R&D Division, Vikas Nagar, Hyderabad for his support and encouragement at different stages of my work and guiding me in conducting the experiments.

I express my heart felt thanks to **Dr. A.S. Panwalker**, AGM, CFD group, BHEL Corporate R&D Division, Vikas Nagar, Hyderabad for his timely advices and constant encouragement in carrying out CFD analysis.

I thank **Prof. K. Rajagopal** for the moral support and encouragement given in completing my research work.

**I thank Prof. K. Vijay Kumar Reddy** and **Prof. M.Sreenivasa Rao**, Department of Mechanical Engineering, for the encouragement given by them in carrying out this research work.

I thank **Prof. K. Eshwara Prasad**, Co-ordinator, EDC, JNTUH and **Prof. M. Manzoor Hussain**, Department of Mechanical Engineering, JNTUHCEH for encouraging me to submit the work in the present form.

I specially thank, my colleagues, **Dr. A.V.S.S.K.S. Gupta, Dr.E. Ramjee, Dr.M.T.Naik, Dr. J. Suresh Kumar and A. Aruna Kumari, P. Prasanna**, who helped me in obtaining study leave.

I am extremely grateful to all the Staff members of Mechanical Department, JNTUH College of Engineering, Hyderabad for their timely help and suggestions whenever sought for.

I thank **Dr. K. Kalyani Radha**, Principal, Sri Sai college of Engineering and Technology, Anantapur, who helped me in many stages of this work.
I thank Dr. L. Syam Sunder, faculty of Mechanical Engineering, SNIST for the help extended in presenting the thesis in the present form.

I thank Sri. C. Vishnu Mohan Rao, Assistant Professor, University College of Engineering, Kothegudem for his timely help and suggestions given whenever sought for.

I appreciate the M.Tech and B.Tech final year students, Department of Mechanical Engineering, who helped me in taking readings.

I thank Prasad Rizol and Vijay Kumar, Lab Assistants, Heat Transfer Lab, Department of Mechanical Engineering, JNTUH College of Engineering, Hyderabad, for helping me in conducting the experiments.

My sincere thanks are due to my father C.V.S.R. Krishna Sarma and father-in-law S. Subrahmanyam, for their efforts in bringing me to this level of submitting the thesis. I am grateful to my mother-in-law S. Bhanu for sharing my household responsibilities.

My gratitude is due, to my husband S.S.R. Murthy and children S. Naga Shalmali and S. Naga Sammitha, without whose support, I could not have completed this work.

I thank God for the blessing he has rendered upon me in successful completion of this work.

Finally I thank all those who helped me directly or indirectly in carrying out this research work.

NAGA SARADA