

ACKNOWLEDGEMENT

I am greatly indebted in expressing my profound sense of gratitude to my mentor and supervisor **Dr. K. Ramanathan**, Assistant Professor (Senior Grade), Alagappa Chettiar Government College of Engineering and Technology, Karaikudi for his continuous encouragement, keen interest and enthusiastic support throughout the course of my research work. I am greatly obliged to **Dr. A. Elango**, Principal, Alagappa Chettiar Government College of Engineering and Technology, Karaikudi and a member of my doctoral committee for the constant encouragement given to me in completing this research work.

I express my sincere thanks to another doctoral committee member **Dr. V. Srinivasa Raman** for his constructive suggestion to make the thesis more valuable. I owe my sincere thanks to **Dr. S. Jayabal**, Head, Department of mechanical engineering for his positive support. My heartfelt thanks to **Dr. A. Athijayamani** and **Mr. Selvaraj**, Assistant Professors, Department of Mechanical Engineering, Alagappa Chettiar Government College of Engineering and Technology for their kind encouragement in completing this work.

I am extremely indebted to **Mr.G.Ganesan**, General Secretary & Correspondent, SACS MAVMM Engineering college, Madurai, for their valuable suggestions and immeasurable support during the course of my research work.

I wish to acknowledge my gratitude to my parents, wife **P.Saranya**, and my dear sons for their love, care and heartfelt encouragement which enabled me to complete this work. It is my bounden duty to thank all my family members who have devoted their patron and extended moral support to accomplish the mission.

PRASANNA VENKATESH R