ACKNOWLEDGEMENT

I am greatly indebted to Dr. R. Ravikumar, Professor, Department of Mechanical Engineering, Ariyalur Engineering College, Ariyalur for his inspiring guidance, whole hearted support, cooperation, encouragement, readiness to spare his valuable time.

I am thankful to Dr. P. Asokan, Professor, Department of Production Engineering, National Institute of Technology, Tiruchirappalli for his whole hearted help to complete the research work in time.

I am thankful to Dr. S. Ravi, Professor, Department of Manufacturing Engineering, Annamalai University, Chidambaram for allowing me to make use the facilities available at the institute.

I grateful acknowledge the encouragement given by Dr. M. Kamal Basha, Principal, Arasu Engineering college, Kumbakonam.

I thank all my colleagues and students for their constructive suggestion and help where ever sought for.

I wish to express my whole hearted thanks to my beloved parents.

KUMAR K