ACKNOWLEDGEMENT

The author expresses deep sense of gratitude and sincere thanks to his mentor and research supervisor Dr. R. Marappan, Director (Academic), Paavai Engineering College, Paachal, Namakkal whose keen interest, valuable guidance, meticulous supervision, tireless effort and constant encouragement fetch successful completion of the research work.

The author thanks Dr. C. Jebaraj, Professor, Dr. V. Sundareswaran, Professor and Dr. L. Karunamoorthy, Professor, Department of Mechanical Engineering, Anna University Chennai for providing the necessary moral support, review and guidance.

The author records his profound thanks to Dr. Robert L. Jackson, Professor of Auburn University and Dr. Itzhak Green, Professor of Georgia Institute of Technology from whose findings the author has started this research work. The author also thanks the unknown reviewers whose comments have been the valuable input in streamlining this work.

The author also wishes to thank Prof. S. R. Damodarasamy, Principal, Mr. A. Baraniraj, Lecturer, Government College of Engineering, Salem, Prof. N. Saravanakumar, Asst. Professor, Department of Mechanical Engineering, PSG College of Technology, Salem and Mr. N. Vivek, Project leader, Cognizant Technologies, Chennai for their motivation and encouragement for this research work.

The author would like to thank his spouse S. Devasena, son M. Pranav and parents for their continuous support and encouragement throughout the studies.

R. MALAYALAMURTHI