

PREFACE

This thesis is a record of work performed in the department of mechanical engineering at Indian Institute of Technology, Kharagpur, during the period April 1980 to March 1983. Its objectives are twofold :

1. To present an exposition of fundamentals of 'Velocity slip' relating to externally pressurized porous gas bearings ,

2. To demonstrate through the analysis of two most widely used bearing configurations, such as, thrust and journal bearings, how these fundamental principles can be applied to the solution of porous gas bearing problems involving factors like anisotropy, gas supply pressure and other operating conditions.

By this process, many new facts have been evolved and new relations of facts have also been established. As the closed form solutions were not possible to obtain, numerical results in the form of graphs and tables have been included at the end of each Chapter . Based on the application of these results and discussions thereon, it will certainly help practising engineers involved in design and application of such bearings. It is hoped, this may contribute to the

advancement of knowledge in the field of externally pressurized porous gas bearings.

Some of the work published by the author jointly with his supervisors are included in this thesis. The author has formulated the problem , solved , computed and presented the results ; and is grateful to his supervisors for their assistance in reviewing and editing the manuscript of these papers. As some of these are in press and have not yet come out in printed form, the copies of the publications could not be submitted along with the thesis. However, the available reprints have been annexed at the end of this thesis.

The author is highly indebted to Prof. B.C. Majumdar and Dr. M.S. Rao , for their invaluable guidance at every stage of this work. The author is thankful to the Head, Mechanical Engineering Department, I.I.T., Kharagpur, for providing necessary facilities during the course of this work.

The author also takes this opportunity to thank Prof. S.K. Basu, Principal and Dr. N. Patnaik, Head of Mechanical Engineering Department, University College of Engineering, Burla , and the authorities of Sambalpur University, Orissa, for sponsoring him for this research programme.

Thanks are due to Mr. R.K. Mukherjee, Mr. A. K. Chattopadhyaya, Dr. G. Panda and Dr. D. Acharya for their kind and generous help during various phases of this work.

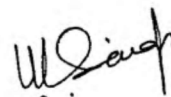
Thanks are also due to Mr. A.D. Bhunia for his fine drafting and Mr. P.K. Banerjee for neatly typing the manuscript.

The author expresses his deep sense of gratitude for his elder brother Mr. H.B. Singh, whose constant encouragement and moral support has helped him complete this work.

Lastly, the author wishes to place on record his great appreciation for his wife Moni and children Munu and Mami, for their patient and active cooperation throughout the course of this work.

Kharagpur,

Dated the April 6, 1983



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