VIDYAVARDHINI'S NATIONAL CONFERENCE ON TECHNICAL ADVANCEMENTS FOR SOCIAL UPLIFTMENT

VNC - 2020 TASU
4TH APRIL, 2020

VNC - 2020 TASU

Organized by:
Vidyavardhini's College of
Engineering & Technology
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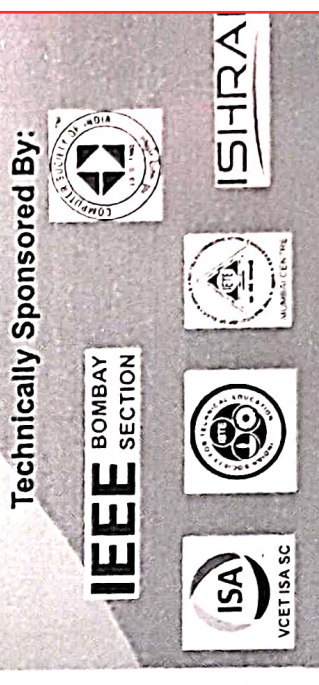   National President, ISHRAE

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About us:

Vidyavardhini means a Body committed to enhancement of Knowledge. Vidyavardhini was established as a registered society in 1970 by late Padmashri H. G. alias Bhausaheb Vartak for the noble cause of education in rural areas.

Vidyavardhini's College of Engineering and Technology, Vasai is located on the sprawling campus of Vidyavardhini, spread over an area of 12.27 acres. It is a short, two minutes walk from Vasai Road (W) Railway Station. The college is also accessible by road from Mumbai.

Vidyavardhini Society received approval from AICTE to start the new college of Engineering & Technology with effect from July, 1994. The college is affiliated to the University of Mumbai for the four year degree program leading to the degree of Bachelor of Engineering in six branches.

Objective of VNC 2020 TASU

Technology has always been potential tool for simplifying the way we do things. Present time demands directing the technological advancements towards addressing societal challenges such as improving health care, education environment, sanitation, agriculture, smart city, etc., VNC 2020 TASU aims to provide an opportunity to researchers, academicians, Industrialist and students to interact and share their ideologies and contributions made for social upliftment with the aid of technological advancements.

Best paper award for each track

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Any other relevent topics

Publication Information
Proceedings of VNC - 2020 TASU will be published with ISBN number

1. Selected Papers will be published in International Journal of Information Technology, Published by Springer Nature, ISSN: 2511-2104 (Print Version), ISSN: 2511-2112 (Electronic Version)
2. All papers will be published in IJERT, ISSN: 2278-0181

Important Dates:

Submission of full length paper
15TH Feb 2020
Paper Acceptance Notification
22ND Feb 2020
Submission of Final Version of Paper
29TH Feb 2020
Registration Deadline
5TH March 2020
PPT Submission
20TH March 2020
Conference
4TH April 2020

Registration Fee Details:

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Experimental Analysis of Hydrodynamic Journal Bearing

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Abstract- Hydrodynamic journal bearings are widely used due to their high load carrying capacity and good damping properties. Journal bearings have been widely used in rotating machinery. The bearing carries higher loads which reduces film thickness and also increase temperature of bearing due to fluid film temperature increment. The pressure distribution is important in both load capacity estimations (static performance) and dynamic analysis. We can analyze the pressure of fluid film and total deformation of hydrodynamic journal bearing by Fluid Structure Interaction technique. This paper describes FSI technique with optimization. Keywords: static performance, fluid interaction technique

I. INTRODUCTION

Hydrodynamic journal bearing is defined as a mechanical element which supports high load due to wedge shape geometry formed during the relative motion between journal and bearing surface. Hydrodynamic journal bearing is widely used due to its high load carrying capacity and good damping properties [1]. The major problem with hydrodynamic bearing is failure of fluid film during the operation. This may cause metal to metal contact between journal and bearing surface. This leads to wear and friction which overheats the surfaces [6]. Hence the power loss increases. In this paper FSI technique has been used to predict the performance characteristics of a hydrodynamic journal bearing.[2] Three dimensional studies have been done to predict pressure distribution along journal surface [3]. The FSI technique can give accurate pressure distribution. The fluent and static structural modules are coupled to generate actual load on shaft and baring inner surface [4]. The optimization technique also used to get optimum results so that bearing can be modified so as to get better results.[7]

II. OPERATING CONDITIONS

The fig.1 shows the fluid film of bearing and oil inlet at upper side of fluid film. The material used for bearing is Aluminum.

Table I
Operating Conditions

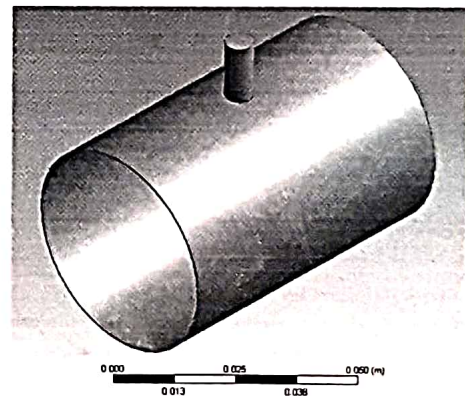| Bearing Diameter	85
Bearing Length	60
Journal Diameter	50mm
Radial Clearance	0.3μm
Rotation Speed	4500rpm
Lubricant viscosity	0.0277 Pa. s
Lubricant density	860 Kg/m³

III. MODEL AND MESHING

Fig. 1 Fluid Film Geometry in Ansys

The journal has given random offset origin while modeling the geometry. The origin of journal is considered as parameter(X and Y position of origin). The eccentricity and attitude angles also added in parameter set as input with random values. A relation between journal origin, eccentricity and attitude angle is made so that at end of solution we can get value of eccentricity and attitude angle.The meshing of fluid film is done in fluent meshing.