

## Hydrodynamic Analysis of Journal Bearing Operating With Nanolubricants

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**Abstract :** In this paper, the static and dynamic characteristics of hydrodynamic journal bearings operating under nano lubricants are presented. Hydrodynamic journal bearings are used in turbo machines of power plants to support heavy load. In power plants, bearings are getting failure because of its inability to support the heavy load due to various reasons. Failures of bearings make the power plant to be shutdown. The load carrying capacity of journal bearing mainly depends upon the viscosity of the lubricants. The addition of nano particles on commercially available lubricant may enhance the viscosity of lubricant and in turn, change the performance characteristics. In the literature, though many studies have been carried out for the hydrodynamic bearing operating under Newtonian and non-Newtonian lubricants, studies on hydrodynamic bearings operating under nano lubricants is scarce. Thus, it is felt that there is a need to recompute the performance characteristics of journal bearings operating under nano lubricants.

**Keywords :** hydrodynamic, journal, bearing, analysis

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