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Effect of geometrical irregularities on the performance of a misaligned hybrid journal bearing compensated with membrane restrictor

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Abstract: The present study examines the influence of geometric irregularities on the performance of membrane compensated four pocket journal bearing under misaligned conditions. Geometrically irregular journal in form of barrel shape, bellmouth shape and circumferential undulated shape and three misaligned conditions viz. Mx, Mz and Mxz are considered in the analysis. The unknown fluid film pressure field in governing Reynolds equation is obtained by FE analysis using Gallerkin's technique. Numerically simulated characteristics of bearing system depict that presence of geometric irregularities of journal may influence the behavior of journal bearing operated in misaligned conditions.

Keywords: Geometric irregularities, Misalignment, Membrane, Newton Raphson Method.

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