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TEST RESULTS OF PAD TRACKING FOR A SPHERICAL PIVOT TILTING PAD BEARING

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ABSTRACT

Most tilting pad journal bearing dynamic characteristics estimation methodologies assume perfect shaft tracking by the pads. Pads having a point or line contact can be assumed to track the shaft motion in most light to moderate loading conditions. Heavier loading conditions may demand the use of spherical pivots to avoid pivot failure. The spherical pivot is very attractive for this reason, but the tilting motion is rather a sliding motion that must occur in the precision ball socket. Results from an experimental study will be discussed that shows the direct pad motion versus shaft vibration correlation. A “fixed test bearing, floating shaft” type of test rig previously built for bearing dynamic characteristics extraction was modified for this test. This paper talks briefly about the modifications carried out on the rig. The special instrumentation and data acquisition systems implemented are also discussed. Results of the tests are presented for various loading conditions. Conclusions are drawn based upon the results obtained to date and recommendations are given for additional testing required to fully understand the pad motion and tracking ability of the spherical pivot design.