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Experimental Challenges and Solutions in Design and Operation of the Test Rig for Water Lubricated Journal Bearing

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Abstract : The study deals with the challenges in developing a test rig to test the performance of water lubricated journal bearing. The test rig is designed to simulate the working conditions of the bearing in order to understand their performance before they are put in operation. The bearing that is studied is the commercially available water lubricated bearing which has a rubber liner bonded with a rigid metal shell. The lubricant enters the bearing axially through a pressurized inlet tank and exits to an outlet tank which is at sufficiently low pressure. The load on the bearing is applied through the dead weight system which acts both in upward and downward direction so that net load acts on the bearing. The issues in feeding the lubricant into the bearing from the inlet side and preventing the leakage of the lubricant is discussed. The application of the load on the test bearing while maintaining the bearing afloat is also discussed.

Keywords : axial groove, hydrodynamic pressure, journal bearing, test rig, water lubrication
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