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C1Po1C-05: Theoretical and Experimental study of High Speed tilting Pad Gas Bearings

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The characteristics of gas lubrication of tilting pad gas bearing make it have higher load capacity and lower friction force, and it is widely used in the field of high-speed turbine machinery. Especially in the special environment of low temperature, dynamic pressure gas bearings do not need additional bearing gas system to assist, greatly simplifying the system structure. However, the performance of dynamic pressure gas bearing is limited by the structure, especially depends on the machining accuracy and manufacturing technology. Based on the theoretical calculation and experimental analysis of tilting tile gas bearing, a bearing structure with good operation, high speed and good bearing capacity under low temperature environment is proposed in this paper. The simulation results show that the stability of the tilting pad gas bearing is improved by the improvement of the pressure distribution of the fulcrum, and the effects of heat transfer temperature, friction force and other factors on the static and dynamic performance of the bearing are discussed.

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