

PROPERTIES OF HYDRODYNAMIC POROUS BEARING WITH EXTERNAL PRESSURE

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Porous material has been applied as an important media in the bearing for years because of its self lubricate property. Present industry requires higher load and precision for precision machining. In this study, the hydrodynamic porous bearing with external pressured which represented as a specific function is investigated. The external pressure is supplied by several fluid chambers similar to static pressure bearing pad. To simplify the modelling of pressure, we found the function of oil flow in the outer surface of porous bearing by finite elements methods and built the simulation module for cross-validation. Considering the different parameters, the load capacity was optimized and showed the hydrodynamic effect. This hydrodynamic effect is not showed in traditional porous bearing of same oil thickness.