

증기터빈용 대형 틸팅패드 저어널베어링의 상부패드 Fluttering 특성 연구

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Study on the Characteristics of the Upper Pad Fluttering in a Large Tilting Pad Journal Bearing Using a Steam Turbine

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Key Words : Tilting Pad Journal Bearing, Upper Pad, Fluttering Frequency, Fluttering Amplitude

Abstract : This paper describes the fluttering characteristics of the upper pad in a tilting pad journal bearing(6-pad, LOP type) using a steam turbine. In order to investigate the phenomena of the pad fluttering experimentally, the absolute vibration of the upper pads, the relative vibration between the bearing and the shaft and the circumferential distribution of the film thickness are measured under the different values of oil supply flow rate, shaft speed and bearing load. It can be known that the fluttering mechanism of the upper pads has a tendency of the self-excited vibration from the study of fluttering frequencies and amplitudes with the change of shaft speed. Furthermore, it is observed that the incipient pad fluttering velocity is increased by the increase of oil supply flow rate and fluttering amplitude of the upper pads is increased by the decrease of the oil flow rate and by the increase of bearing load.

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Base Acceleration Feedforward Control For An Active Magnetic Bearing System Subject To Base Motion

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Key Words : base Motion, acceleration feedforward control, active magnetic bearing, adaptive control

Abstract : This paper concerns on a non-rotating single-DOF beam-active magnetic bearing(AMB) system subject to arbitrary shaped base motion. In such a system, it is desirable to retain the beam within the predetermined air-gap under foundation excitation. Motivated from this, an adaptive acceleration feedforward control is proposed to reduce the base motion response without deteriorating other feedback control performances. Experimental results demonstrate the effectiveness of the acceleration feedforward control.