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능동 자기베어링을 이용한 회전체 요소부품의 동특성 추출방법

Dynamic Characteristic Extraction of Rotor Element Using Active Magnetic Bearing

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ABSTRACT

A rotor system has non-linear dynamic characteristics according to rotating speed. Its dynamic characteristics should be known to control it and estimate its behavior. Estimating of its dynamic characteristics is very difficult when it is rotating. If active magnetic bearings are equipped for control, the magnetic bearings can be used as exciting actuators to measure frequency response functions. Exciting signal is added to control signal and vibrating signal of the rotor is measured, we measure the frequency response function between vibrating signal and exciting signal. Because the mass of a rotor can be known, its damping ratio and its stiffness can be estimated to compare the measured frequency response function and its analytic transfer function. To probe the ability of this method, we simulated a rotor system with an active magnetic bearing and its dynamic characteristics were estimated. The results are shown that the suggested method has the ability estimating the dynamic characteristics of rotor system.

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