수직축 인-라인 고속 원심펌프용 증속기 개발에 관한 연구

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A Study on the Development of Increasing Gear Box for the High Speed Vertical In-Line Centrifugal Pump

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Key Words : Centrifugal pump, Critical speed, Journal bearing, Increasing gear box

Abstract : In this study, the increasing gear boxes for the high speed vertical in-line centrifugal pump are developed through rotor dynamic analysis. The developed increasing gear boxes are two kinds for 18000rpm and 25000rpm at the output shaft. The gear sets suitable for high speed and high load are manufactured by investigating AGMA bending strength and AGMA surface strength severely. The rotor dynamic analysis on gear sets and bearings is performed in order to avoid the critical speeds and other troubles. As a result of study, the two increasing gear boxes for the high speed vertical in-line centrifugal pump are designed and manufactured.

반경방향 고온초전도베어링의 Squeeze Film 댐퍼 설계

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Squeeze Film Dampers for High Temperature Superconducting Radial Magnetic Bearings

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Key Words : Squeeze Film Dampers, Superconducting Magnetic Bearings, Rotordynamics

Abstract : Squeeze film dampers(SFDs) are designed and analyzed for radial superconducting bearings. The designed SFDs are mounted on the superconductors submerged in liquid nitrogen such that the dampers should supply additional damping to the relatively underdamped superconducting bearing support. Basic theory of SFD with superconducting bearing are introduced. Rotordynamic simulations are provided to support the feasibility of the superconducting magnetic bearings mounted on SFDs for a horizontal flywheel energy storage system.