인공생명 알고리듬을 이용한 프로팅 링 저널 베어링 지지 축계의 최적설계

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Optimum design of rotor supported on floating ring journal bearing by the enhanced artificial life optimization algorithm

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Key Words : Enhanced Artificial, Floating Ring Journal Bearing, Optimum Design

Abstract : This paper presents an optimum design of rotor-bearing system using a hybrid method to compute the solutions of optimization problem. The present hybrid algorithm, namely Enhanced Artificial Life Algorithm(EALA), is a synthesis of an artificial life algorithm(ALA) and the random tabu search(R-tabu) method. We applied EALA to the optimum design of rotor-shaft system supported by the floating ring journal bearings. we will propose the optimum shape of rotor, position and shape of bearings. The result is compared with the optimization results by the conventional ALA and SQP. Through this study, we investigate the reliability and usefulness of EALA.

과급기 축계의 진동 해석

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Vibration Analysis of Turbocharger Rotor-Bearing System

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Key Words : Impedance Description, Floating Ring Journal Bearing, Turbocharger

Abstract : Recently rotating machines have became high speed and high power and light weight. Bearings are one of the main components which influence power loss and stability of rotating machines. Appropriate bearing should be selected with considering characteristics of rotating machine. Floating ring journal bearing(FJB) consists of an inner film and outer film, and possess high damping and stability. FJB has been for adopted into turbocharger for the high stability at high operating speed. Therefore, the analysis of dynamic properties of floating ring journal bearing is required. In this paper, the static equilibrium locus of inner film and outer film are calculated by using the impedance description, and dynamic coefficients are composed into the equivalent stiffness and damping coefficients of FJB by using the equilibria of force between inner film and outer film.