

자기부상열차용 인버터 및 컨버터 소음에 관한 연구

김현실, 김재승, 강현주, 김봉기, 김상렬(한국기계연구원)

A Study of Maglev Train Inverter and Converter Noise

Hyun-Sil Kim, Jae-Seung Kim, Hyun-Joo Kang, Bong-Ki Kim, and Sang-Rul Kim

Key Words : maglev train, inverter and converter noise

Abstract : Noise of the VVVF inverter and DC/DC converter, which are the most dominant noise sources of maglev train at low speed, is studied. The coils inside inverter and converter are excited by the electro-magnetic forces, which results in core vibration and generations of the noise. It is found that the spectra of the noise show many harmonics, where there exist several different fundamental frequencies. Some noise reducing techniques are known for the transformer noise such as changing stiffness and using different core materials that make less electrostatic responses, and consequently less noise. In this study, it is shown that the most effective and feasible noise reducing method is to increase the switching frequencies of the inverter and converter, where high peaks are significantly reduced.

1" 마이크로 스토리지의 진동특성 분석에 관한 연구

한우섭* (삼성종합기술원) 홍민표* (삼성종합기술원) 변용규* 고정석*

Vibration Analysis of 1" Micro Storage

W. S. Han, M. P. Hong, Y. K. Byun, and J. S. Ko

Key Words : NRRO, 1" micro storage, modal analysis, vibration analysis, HDD

Abstract : In recent years, the demand of mobile device, such as digital camera, camcorder and PDA, increases remarkably. So, requirements of the mobile information data storage used in the mobile devices increase noticeably also. 1" micro storage is a kind of mobile storage, which has a CF type II form factor, and the similar structure of the general 3.5" HDD. In this paper, we performed the vibration analysis and experimental study of disk-spindle system in 1" micro storage, such as measurement of the NRRO of the disk, and modal analysis. The analytical results with the experimental data are verified by comparing the simulation results.