

Performance improvement of an MRE-based isolator using a multi-layered electromagnetic system

Yongmoon Hwang¹⁾, Junghoon Lee²⁾, Youjin Kim³⁾ and *Hyung-Jo Jung⁴⁾

1), 2), 3), 4) *Department of Civil and Environmental Engineering, KAIST, Daejeon 34141, KIAST*

4) hjung@kaist.ac.kr

ABSTRACT

A magnetorheological elastomer is one of smart materials which can control the stiffness according to a magnetic field. That is, a constant level of the magnetic flux density has to be generated. However, several limitations occurred in previous studies. An MRE-based isolator using a multi-layered electromagnetic system which can behave together with the deformation of the MRE is proposed to address these limitations. By using the multi-layered electromagnetic system, it can not only minimize the loss of the magnetic flux density but also maintain a certain level of magnetic flux density in the MRE. Therefore, the larger MR effects can be obtained. In this study, the superiority of the proposed MRE-based isolator was validated numerically and experimentally.

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¹⁾ Graduate Student

²⁾ Post-Doctoral Researcher

³⁾ Graduate Student

⁴⁾ Professor