

## MR 댐퍼의 동특성 해석

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### Dynamic Characteristics Analysis of A Magneto-Rheological Damper

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**Key Words** : Magneto-Rheological fluid (MR 유체), Magnetic Field Analysis (자기장 해석)  
Herschel-Bulkley Model (허셸-버클리 모델)

**Abstract** : MR(Magneto-rheological) fluid is smart fluid that can change its characteristics when magnetic fields are applied. Recently, many researches are going on this MR fluid for the application in a variety of areas including automobile shock absorbers. This paper describes the design procedure of a MR damper and the analysis results of its dynamic characteristics. MR fluid in the magnetic field shows initial yield shear stress and increasing resistive viscosity with final saturation thereafter. Herschel-Bulkley model is used to simulate the flow characteristics of MR fluid and magnetic analysis is used to identify the magnetic property of the MR fluid in the orifice of the damper. The dynamic characteristics of the damper was predicted and compared with the experimental results for typical sinusoidal excitations.

## 압전 공진 션트회로가 부착된 빔의 동적 모델링

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### Dynamics Modeling of Beams with Piezoelectric Resonant Shunting

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**Key Words** : shunt circuit (션트 회로), piezoceramic (압전체), vibration control (진동 제어).

**Abstract** : General modeling of a resonant shunting damper has been made from piezoelectric sensor/actuator equation. It is found that an additional damping, which is augmented to a system, is generated by the shunt damping effect. The transfer function of the tuned electrical absorber is derived for both series and parallel shunt circuit. The governing equations and associated boundary conditions are derived using Hamilton's Principle. The shunt voltage equation is also derived from the charge generated in PZT due to beam vibration. The frequency response function of the obtained mathematical model is compared with that of the tuned electrical absorber and experimental work. The vibration amplitude is reduced about 15 dB at targeted second mode frequency..