

Numerical and Experimental Analysis of Magnetic Rheological Damper of Light Duty Load Carrying Vehicle

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Abstract

A Magneto rheological damper is one of the most advanced devices used in a semi-active control system to mitigate unwanted vibrations because the damping force can be controlled by changing the viscosity of the internal Magneto Rheological (MR) fluids. The most widely used configuration of MR Damper incorporates an annular gap through which the magnetically active MR Fluid is forced to flow. The numerical analysis was carried on a double slot piston rod of varying slot lengths. The analysis was done using COMSOL. The analysis showed that a double slot piston rod with equal slot dimensions was most feasible to be used for experimentation. The experimentation was carried on a typical double slot MR Damper with two coils in parallel connection. It has been experimentally seen that response of Magnetic Rheological fluid damper is better to 10 V (2 Hz) as compared to 5 V (1 Hz) frequency.

Keywords

Magneto Rheology Damping force Magnetic flux Viscosity

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