

ABSTRACT

Hydraulic engine mounts (hydro-mounts) are passive devices used to isolate automobile engine vibration from the chassis at different automobile operating conditions. In this research project, a semi-active hydro mount using Magneto Rheologic (MR) fluids is introduced. A semi- active hydro mount can be used to optimize the mount performance in attenuating unwanted vibration for a wider range of vehicle operating conditions. The MAEMS developed in this work can change its yield shear stress once under a magnetic field and hence, it can be tuned by applying electromagnetic field. The tuning ability allows us to vary the natural frequency as well as to increase the damping stiffness of the mount.

INTRODUCTION

Hydraulic engine mounts (hydro-mounts) are passive devices used to isolate automobile engine vibration from the chassis at different automobile operating conditions. In this research project, a semi-active hydro mount using Magneto Rheologic (MR) fluids is introduced. A semi- active hydro mount can be used to optimize the mount performance in attenuating unwanted vibration for a wider range of vehicle operating conditions. The MAEMS developed in this work can change its yield shear stress once under a magnetic field and hence, it can be tuned by applying electromagnetic field. The tuning ability allows us to vary the natural frequency as well as to increase the damping stiffness of the mount.

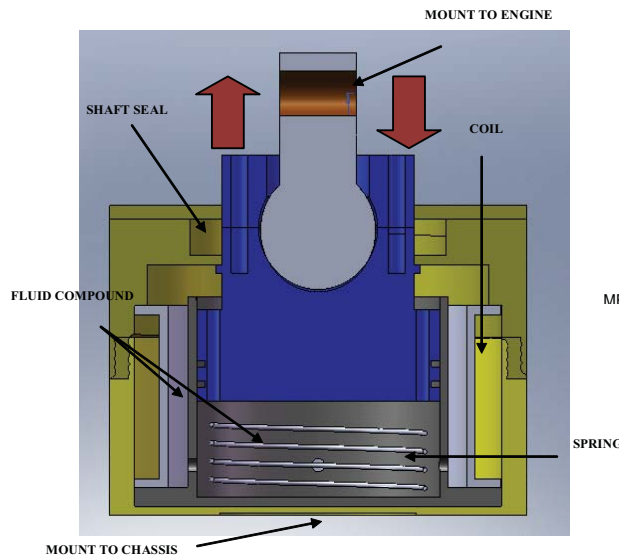


Figure 1: Cross-Sectional View of the Proposed MAEMS.

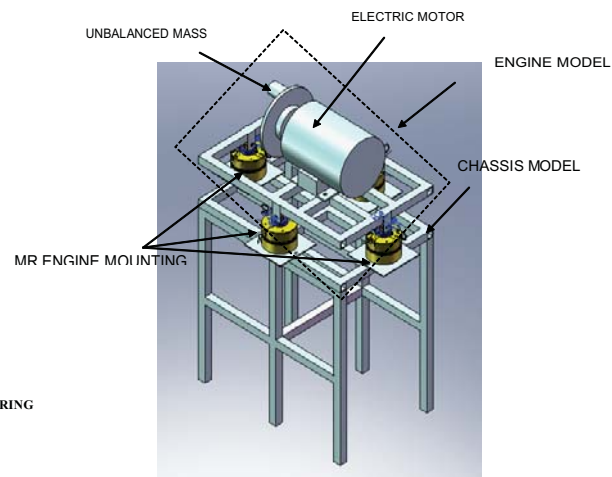


Figure 2: MAEMS Test Rig.

ADVANTAGES

- ~ Quiet operation
- ~ Electronically controlled variable damping stiffness
- ~ Able to attenuate unwanted vibrations from both engine or road irregularities
- ~ Low energy consumptions

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