

# TUNABLE MAGNETORHEOLOGICAL ELASTOMERS. SOME MECHANICAL APPLICATIONS

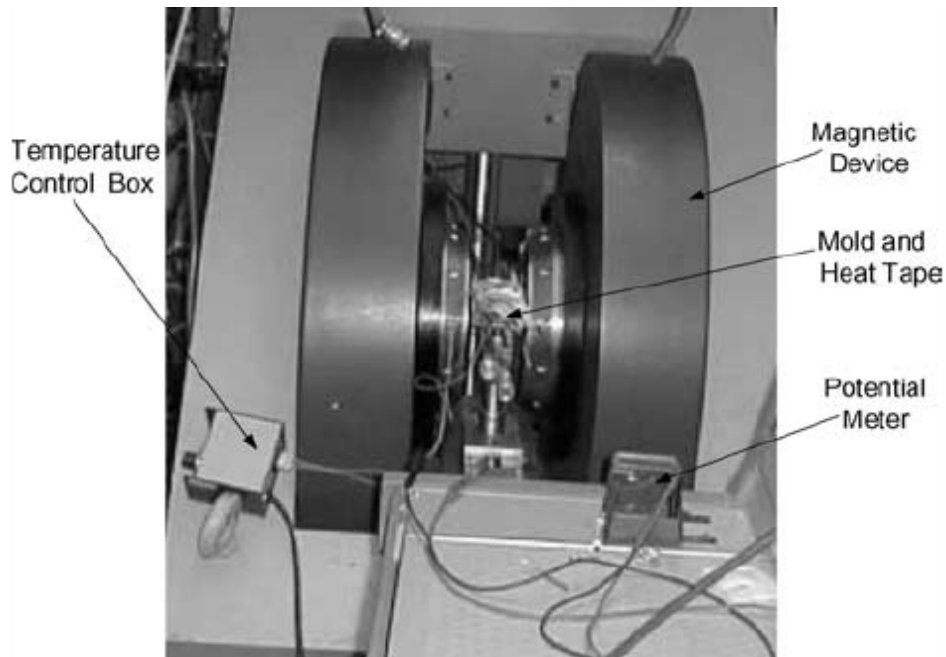
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Magnetorheological (MR) materials are a group of smart materials whose rheological properties can be controlled by the application of an external magnetic field. MR materials can be classified into two groups: MR fluids and MR elastomers. In relation to the MR fluids, the MR elastomers eliminate some important disadvantages of MR fluids as degrading of particles by oxidation and thermal action and also, the danger of sedimentation. The most representative field of mechanical applications for the MR elastomers is represented by the vibration dampers, stiffness tunable mounts, automobile suspension and robot artificial muscles.

In the paper, it is approached the study of a tunable automotive bushing.



Cured MR elastomer in an electrical magnetic device (Shen, Golnaraghi, Heppler, 2004)

## REFERENCES (SELECTIVE)

- [1] Jolly, M. R., Carlson, J. D., Muñoz, B. C., Bullions, T. A., (1996), *The Magnetoviscoelastic response of Elastomer Composites Consisting of Ferrous Particles Embedded in Polymer Matrix*, J. Intel. Mater. Syst. Struct., 7(11), p. 613-622.
- [2] Ginder J. M., Nichols, M. E., Elie, L. D., Tardiff, J. L., (1999), *Magnetorheological Elastomers: Properties and Applications*, SPIE, 3675, p. 131-138.
- [3] Davis, L. C., (1999), *Model of Magnetorheological Elastomers*, J. Appl. Phys., 85(6), p. 3348-3351.
- [4] Carlson, J. D., Jolly, M. R., (2000), MR fluid, Foam and Elastomer Devices, *Mechatronics*, 10, p. 555-569