



TECHNOLOGY

Self-Powered Magnetorheological Dampers

OVERVIEW

Magnetorheological (MR) fluid-based dampers, which are one of the promising semi-active actuators, have been widely applied to control and suppress unwanted vibration and shock of various systems. Current MR dampers need power sources such as power supply and current amplifier to activate MR fluid inside the damper.

Researchers at University of Maryland College Park have developed self-powered MR dampers operated by the energy harvested from vibration and shock environment. To demonstrate the feasibility and effectiveness of the invention an energy-harvesting device was theoretically constructed by the inventors and added to MR dampers. Also the dynamic equation and vibration isolation capabilities evaluations for the self-powered MR damper are theoretically derived. Inventors observed that the self powered MR damper can provide good vibration isolation performance against transient, steady and random excitations without any sensor and other modern control algorithms.

This technology can be applied to all the semi-active and active damper systems that need a power input for its operation. This technology can be used to mitigate shock and vibration of systems and structures specifically unwanted periodic vibrations. Applications include dampers for engine mounts, shock absorbers, vibration isolators, seat dampers, lag-dampers and recoil dampers, etc.

For more information, please contact the Office of Technology Commercialization, University of Maryland College Park, via phone 301-405-2924 or e-mail at otc@umd.edu.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Aerospace

EXTERNAL RESOURCES

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