Semi-Active Magnetorheological Seismic Isolators

Tech ID: 24843 / UC Case 2013-923-0

BRIEF DESCRIPTION

Novel semi-active magnetorheological seismic isolators that may be used in buildings and bridges to minimize structural damage during an earthquake.

FULL DESCRIPTION

Researchers at the University of California, Irvine have developed a novel semi-active magnetorheological seismic isolator. This new isolator is composed of magnetorheological nanocomposites embedded between two steel plates. The magnetorheological nanocomposites incorporate multi-walled carbon nanotubes which enhances the performance of the isolator. Two steel yoke supports two coils which may be controlled to generate a magnetic field to change the stiffness of the magnetorheological nanocomposites. During an earthquake, sensors activate the semi-active isolators to adjust their stiffness to isolate the building or bridge in which it is embedded.

SUGGESTED USES

These novel isolators may be used to reduce seismic damage in building and bridges.

ADVANTAGES

Unlike passive isolators, semi-active isolators have shown to use less energy and may be powered by batteries. Traditional semi-active isolators utilize fluids and they take up more space.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,581,214	02/28/2017	2013-923

STATE OF DEVELOPMENT

A prototype has been made and its dynamic mechanical behavior has been characterized.

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OTHER INFORMATION

KEYWORDS

Civil engineering, Seismic, Isolators, Buildings, Bridges

CATEGORIZED AS

» **Engineering**
» Other

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