

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
BELAGAVI-590018**



A

PROJECT REPORT

ON

**“DESIGN, FABRICATION AND AN INVESTIGATION OF
VIBRATIONAL CHARACTERISTICS OF MR DAMPER”**

(Sponsored by KSCST Proposal Number 38S0715)

Submitted in partial fulfillment of the requirement for the award of the

Degree of

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in

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by

PROJECT ASSOCIATES

**Name: Khandoba. G. Musale
USN: 2KE11ME019**

**Name: N. R. Suraj
USN: 2KE11ME025**

**Name: Karthik. K
USN: 2KE12ME404**

**Name: Kiran. R. Hiremath
USN: 2KE12ME405**

Under the Guidance of
Mr. Vinay V. N
Assistant Professor



Department of Mechanical Engineering
K.L.E. Institute of Technology, Hubballi-30
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ABSTRACT

Magneto-Rheological (MR) dampers are semi- active control devices that use MR fluids to produce controllable dampers. In the present work, experimental setup is designed and fabricated as per standards.

Magneto rheological fluid samples are prepared. In this silicone oil is used as a carrier fluid and is mixed with micron sized iron particles. In order to reduce sedimentation, white lithium grease is used as an additive in the MR fluid samples. Considering the permeability, magnetic flux strength and magnetic flux intensity, variation of vibration amplitude for different samples of MR fluids is studied.

The advantage of MR dampers over conventional dampers are that they are simple in construction, compromise between high frequency isolation and natural frequency isolation, they offer semi-active control, use very little power, have very quick response, has few moving parts, have a relax tolerances and direct interfacing with electronics. Magneto- Rheological (MR) fluids are controllable fluids belonging to the class of active materials that have the unique ability to change dynamic yield stress when acted upon by a magnetic field. This property can be utilized in MR damper where the damping force is changed by changing the rheological properties of the fluid magnetically. Semi-active control devices have received significant attention in recent years because they offer the adaptability of active control devices without requiring the associated large power sources.

Magneto rheological fluid (MRF) is a smart fluid whose properties can be controlled with the help of metal particles and magnetic field. These fluids have the ability to transmit force in a controlled manner with the help of magnetic field, thus improving their performance especially in areas where controlled fluid motion is required. Some applications of magneto rheological fluid technology are in dampers, brakes, journal bearings, pneumatic artificial muscles, optics finishing, fluid clutches, aerospace etc. where we give electrical inputs and get the mechanical output comparatively faster and in a controlled manner.