

**Paper No: PU-SOE- Mech - 23**

**Estimation of Damping Force of double Ended Magnetorheological Damper through one way coupled CFD and FEA Analysis**

**T.M. Gurubasavaraju**

1. Department of Mechanical Engineering, School of Engineering, Presidency University, Bengaluru, India

**Abstract**

The magnetorheological damper has variable damping characteristic and the damping force is controllable, which made them employable in the semi-active suspension system of various engineering applications. Basically, there are three types of MR damper i.e monotube, twin-tube and double end. In this paper, a double-ended damper has been chosen to model and evaluated its dynamic behaviour through a computational approach. Electromagnetic circuit analysis and design have been carried out through Finite element analysis. The magnetic force induced in the fluid flow region is calculated at different currents. Later by using the Herschel Bulkley model the FEA and CFD analysis are coupled, which has been achieved by establishing communication between the Navier stokes and Maxwell equations. The damping force versus displacement characteristics are evaluated at different input currents and response were plotted. It has been observed that the compressive force and rebound forces are same in magnitude and opposite in sign which is due to negligible variation in the control volume of the damper.

**Keywords:**

CO2 absorption,nanofluids,relative absorption index,stability of saline water nanofluids,direct contact system.

**Publication Details:**

<b>Journal Name</b>	<b>Vol.</b>	<b>Month &amp; Year</b>	<b>Page No.</b>	<b>Publisher</b>	<b>Scimago Ranking</b>
Journal of The Institution of Engineers (India): Series C	22	July, 2021	NA	Springer	Q2