iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** VII **Month of publication:** July 2020

DOI: http://doi.org/10.22214/ijraset.2020.7017

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VII July 2020- Available at www.ijraset.com

Review Paper on Magneto Rheological Based Automotive Semi Active Suspension System for Two Wheeler

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Abstract: ***It is commonly realized that MR liquid is a sort of planned materials whose rheological properties are controllable with the utilization of an outer attractive field. In view of these highlights, MR dampers have increased a lot of consideration of scientists attributable to their remarkable properties, for example, controllable damping power and generally quick reaction time. This article offers an ongoing survey on the MR damper innovation, especially concentrating on the application to different fields. Possible constraints, difficulties, and similar points of interest of MR damper are fundamentally investigated. So as to advance the functional utilization of MR damper in application from the car to the military division, this audit sums up various MR dampers and their critical commitment.***
Keywords: MR damper, Magneto Rheological (MR) Fluid, semi- active damper

I. INTRODUCTION

Vibration control device have been acquainted with limit or to evacuate the unreasonable vibration of the system. Magneto rheological dampers (referred to likewise as MR damper) are used for vibration control at different places like common structures or for vehicle structure from street stuns and seismic activity, which might be moved to voyager or occupant of the common structure. Subsequently, a vibration control system adds to the wellbeing of structures and individuals. Different sorts of gadgets are used as vibration control gadgets. The damper is an exceptional one. A damper is comprehensively characterized into three classes, which are active, passive and semi- active Uninvolved dampers have numerous restrictions; nonetheless, these ones are the favored ones by architects. An passive damper is utilized to ingest vitality from the system. In a uninvolved suspension system, damper qualities are static and no input system is presented in it. On the opposite side, the dynamic suspension incorporates an input system, sensors and controllers. The vitality might be included or consumed by a functioning suspension system. A semi- active suspension system is presented in vibration control to conquer the drawbacks of detached and dynamic (active) suspension systems. It is a mix of an active and an passive suspension system. In a semi- active system, just the damping level is tuned with outside vitality sources. If there should be an occurrence of no force, the system functions as a detached damping system. In this way, a semi-dynamic system has continuous controllability in power on and off condition. Detached suspension system has unaltered plan and set up, that can't be changed after establishment. On account of a semi-active suspension system, such changes can be performed with no inconvenience. Hence, semi-dynamic suspensions have more propelled highlights than passive and dynamic suspensions.

II.LITERATURE REVIEW

Banna Kasemi et al. [1]. have clarified in the paper entitled "Fluffy PID Controller for Semi-Active Vibration Control Using Magneto-rheological Fluid Damper" that a mostly three kinds of control gadgets aloof gadgets, dynamic gadgets and semi-dynamic gadgets. In this paper creator clarifies the semi dynamic control gadgets. Magneto-rheological (MR) dampers, variable hole dampers and tuned fluid dampers are instances of semi-dynamic gadgets. In this paper creator led tests to build up the conduct of the MR damper likewise the conduct of MR damper is considered and utilized in actualizing vibration control. The relations between power - relocation and power speed have been built up for the MR damper with differing current. The creator found that power for the upward movement and descending movement of damper cylinder is expanding with current and speed. From the outcomes it is gotten that, power reaction over differing current and removal, can be utilized as MR damper model. Utilizing this model, a controller can control the MR damper's variable damping yield to control the vibration of a vehicle, which gives the travelers better solace.

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R.Sundarrajan et al. [2] have clarified in the paper entitled "Execution of Magneto-rheological dampers in guards of Automobiles for diminishing effects during mishaps" that the paper contains actualizing the magneto Rheological guard in the front wheels of the four wheeler, which results into the decrease of the misfortune and misshapening of vehicle during mishap. This paper additionally comprise the fundamental characters and properties of the magneto rheological liquids (MR). In this paper creator examined the exploration consequences of the previous decades in Magneto Rheological liquids and their applications are additionally looked into. It is one of the significant materials utilized by significant specialists in planning parts like brakes, dampers, grips. Additionally the creator clarified Magneto-rheological methods which are utilized to decrease the effects during crash of vehicles.

Martin Orecny et al. [3] have clarified in the paper entitled "Utilization of a magneto-rheological damper and a powerful safeguard for a suspension of a working machine seat" that the paper creator clarified two options of semi dynamic suspensions of a seat of working machine. The first is magneto-rheological damper and the subsequent one is the blend of magneto-rheological damper and dynamic safeguard. In this paper the affectivity of a DA on seat suspended by a MR damper was considered. The adjustment in the seat spring firmness changed about for 3x, however the impact of the applied DA assisted with decreasing the compelling estimations of removals just for 5%.From this paper the creator presumed that the impact of the applied DA is immaterial than the MR dampers since MR dampers lessens the maximal amplitudes to values that are practically unnoticeable for the administrator arranged on the seats.

Sadak Ali Khan et al. [4] have clarified in the paper entitled "Standards, Characteristics and Applications of Magneto-Rheological Fluid Damper in Flow and Shear Mode" that the different methods of utilization and qualities of MR liquids are talked about. Scientific displaying of the MR liquid dampers dependent on Bingham plastic model and Herschel Bulkley model are introduced. In this paper creator clarified Magneto-rheological (MR) liquids as their material properties can be tweaked through an applied electro-attractive field. Uncommonly, they are prepared to do reversibly transforming from a straight Newtonian liquid to a semi strong with in a small amount of the milli seconds and the yield quality of this semisolid is controllable.

Bhau K. Kumbhar et al. [5] have clarified in the paper entitled "Amalgamation and portrayal of magneto-rheological (MR) liquids for MR brake application" that the Magneto-rheological (MR) liquid innovation can be utilized in different mechanical applications like safeguards, actuators, and so forth. MR liquid is a savvy material whose rheological attributes change quickly and can be controlled effectively in nearness of an applied attractive field. MR brake is a gadget to transmit torque by the shear worry of MR liquid. In this paper creator clarified the synthesization of MR liquid examples which will regularly meet the necessities of MR brake applications. Likewise the creator concentrated on synthesization of different electrolytic and carbonyl iron powder based MR liquids by blending oil as a stabilizer, oleic corrosive as an antifriction added substance and gaur gum powder as a surface covering to diminish agglomeration of the MR liquid.

III. CONCLUSION

There is expansive extension for development in the current plan of MR damper. Electrical flow is utilized to create an electromagnetic field required to actuate MR fluid for its viable use. All things considered, application, there are chances that current gracefully or battery arrangements may not be accessible on the genuine site (war field, play area and so forth.). The current provided for electromagnetism reason can make a few issues like hard cake development, heat age, clustering and so forth. MR fluid has a high thermal conductivity, so the heat produced during electromagnetic impact because of current gravely influences the thickness of MR fluid and diminishes sedimentation time. Through this survey, obviously there is the requirement for change in standard structure of MR damper. A basic damper can be changed over into semi-dynamic damper by utilizing magneto rheological approach. So as to satisfy this necessity, a basic changeless magnet get together can be presented around a damper.

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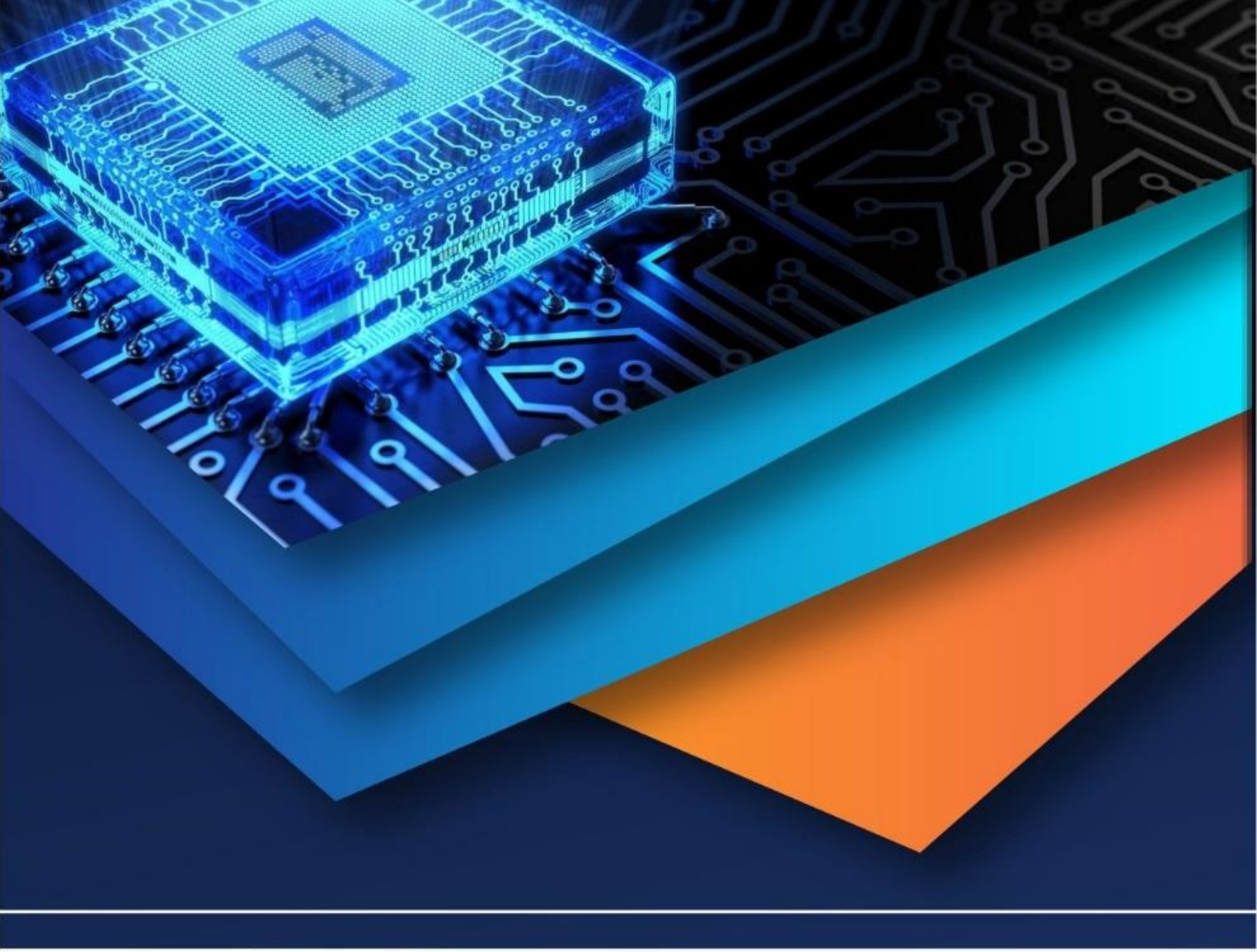

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