

A Performance Of Automotive New Brakes And Old Brakes For Automobile Vehicle

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Abstract: *This paper describes the different types of brake that are used in a automobile. In this review paper all the method is different to each other. In this paper we shows you the different details about different brakes that are ABS, Drum brake, regenerative brake, ABS with active suspension, IBS, ABS with regenerative braking system. In this paper the mainly focus that are all the brakes this is used in automobile industry.*

Keywords: *ABS (Anti-lock braking system), IBS, Regenerative braking system, ABS with active Suspension, Disc brake and Drum brake, Fuzzy Control, Magnetorheological brake (MRB), sliding-mode control.*

I. INTRODUCTION

The disc brake helps to stop the vehicle and in this brake is made for cast iron and composite material. It breaks the motion of wheel with brake pads. [1] This type of brake is use in an electric car and Hybrid vehicle that are based in ESP (electronic stability program). This equipped with a fictional brake system to the vehicle deceleration performance. [2] ABS is better technology as compare another, it stops the vehicle in a minimum distance and it applies the brake force in a pulse rate. It ensures the maximum braking power for stop the vehicle in a small distance. It reduces the slippage of wheel at braking time. [3] New regenerative brake force is also called an EABS and it saves to fuel to converting kinetic energy into electricity. In a braking time the recover energy is stored in a battery that is 8% amount. The amount of recovered energy is small and improving a braking comfort. [4] In a Hydraulic regenerative brake it reduces the fuel efficiency from 30% to 50%. In this the gas is used that is nitrogen and the piston compresses the nitrogen gas. If in the braking time of ABS is switch on than the regenerative brake is automatically off it does not interfere in safety [5] The mechanical connection in this that is between the brake and the brake pedal and the brake by wire is used in this braking system. This brake is controlled by ECU (electronic control

unit). This brake is fully electronically brake system and this brake is easy to adopt. This MR fluid (magneto rheological fluid) to increase the stiffness this is directly proportional to the strength. This fluid has a low density as compare ER fluid (electrorheological). [6] In this braking system it improved the braking power and comfort level. The working ABS and suspension their normal force is depend up on the road conditions. [7] In this brake it is more efficient brake to decrease the accident. It reduced the slippage at the road surface to reduce accident. [8] In new Intelligent braking system is ABS, it works more efficiently. In IBS was to find the drawback of braking system. To better performance in braking period and increase the brake performance but the main problem in this that is to adaption the pressure. [9, 10] The working of brake it is to reduce the speed of vehicle. The disc and drum brake are totally different. Disc is more efficient as compare drum brake. [11] It improved the fuel economy of result of energy. In this regenerative and ABS both works with each other. [12]

II. LITERATURE

A. AMEER FAREED BASHASHAIK AT ALL

In this test it has check the load are apply on a caliper. It analyzed the temperature is 300°F. In these boundary condition is zero displacement. In a brake caliper material is stronger that are titanium. In a manufacturing time they use a wet jet cutting. As compare aluminum, titanium has a higher density. Titanium is better than aluminum. The weight of the caliper must be required minimum. The sprung sported to the suspension system. Maximum displacement of brake it is 0.9906mm. [1]

B. JUNZHI ZHANG, CHEN LV AT ALL

Regenerative brake is mainly used in electric car that are based on an ESP. This system is also installed with a hydraulic system in front wheel drive electric car. This system also been installed between the master cylinder and the wheel cylinder and have 3- pressure sensor in the master cylinder. This system also be increase the brake comfort and easy to press the brake pedal. It also works with the ABS (anti-lock braking system) to reduce the slippage for vehicle. It maximizes the brake torque and also be increase the regenerative efficiency. In a hydraulic braking system, it also works with the regenerative braking system. In hydraulic system has a two valve in his motor that pump the fuel these valve are inlet and outlet to supply the fuel in a master cylinder. [2]

C. YESIM ONIZ, OKYAY KAYNAK AT ALL

In this brake have sensors and other sensors. In a vehicle it describes the longitudinal motion and also be angular motion of the tyre under the car. In this lateral and a vertical are near about neglective. Resistance force is too small at a braking time. In this braking torque is applied in a wheel. The friction force between in wheel and the road. When the brake is pedal is pushed and the brake force stop the wheel and road it stop the vehicle speed as compare to normal if the brake is apply. When the wheel slip is 0 than the car velocity and the speed is same. [3]

D. ZHANG JUNZHI, LI YUTONG AT ALL

New regenerative braking is also known as an EABS; in this system the manufactures installed the ABS in this system. The position of ABS control is in the mount with hydraulic brake. It controls the effect of hydraulic braking torque middle in the regenerative braking torque. In this system kinetic energy changes into the electricity that electricity stored in the battery. The big issue is this brake efficiency is limited in it near about 55.75kj. The braking torque is 70Nm maximum. In this it reduces or decreases the frictional brake energy that is observed by the frictional brake. [4]

E. H CATHCART, D CEBON AT ALL

In this system the flow rate of the air per wheel does not applicable 1501/mint. In this system the pressure losses by the

valve and in hydraulic loss will be done by the heat of hydraulic fluid by on the driving cycle. This system also adds or increases the weight or mass of the vehicle. In a second order the temperature is not applicable to its effect on its efficiency. The rider controls the throttle and brake pedal to driver demand and its controller fully depend upon the velocity. That controller is a PI (proportional-integral). In the scale meter when we seen the video that value are between the zero and 1, 0 means the no braking torque and the 1 means the full braking torque. When the energy stored use to acceleration of the vehicle and this system reduce the kinetic energy and it also be reduce the fuel consumption that is too good for vehicle. [5]

F. EDWARD J. PARK, DILIAN STOIKOV AT ALL

MR fluid is generated by adding by the micron size and iron particle such as oil, water and silicon. With the form of magnetic field it arranges the iron particles in a form of linear chain. This fluid is designed by as simple Bingham plastic model. In this fluid, it took into the non - constant magnetic field. It improved the braking torque. This brake is also fitted MRB into the passenger car. [6]

G. WEI-YEN WANG AT ALL

In addition the optimal slip ratio and normal force both are changed and if the vehicle loss its friction than the vehicle slip or stopped the method of over control slip. With the ABS it degrades the slip of vehicle and save the life of rider and active suspension increase the comfort level. [7]

H. AYMAN A. ALY AT ALL

It works depend up on road surface and road condition. In ABS it ensured the wheel blockage there are in different road condition and surfaces. Since, it has high control and high dynamic frequency that is neglected. Its controller must be unstable equilibrium aspects. [8]

I. G. L. GISSINGER AT ALL

In a brake it has two brake pads first is "outboard pads" and the second is "inboard pads". These pads are gripped with the whole surface of rotor and rotor made for a metallic composite material and it floats on the driving hub by the polymeric. The rotor is fully attached with the wheel through driving hub. [9]

J. DRAGAN ALEKSENDRIC AT ALL

It changes the hard feel of brake pedal and improved the comfort level of brake pedal. Braking torque control the speed of vehicle increased or decreased while at driving time, in this the maximum braking pressure is 40 bars. [10]

K. C. HOHMANN AT ALL

The lining of drum brake is changed during of wear and the brake shoes are separately attached with the brake lining

between the drum. Drum brake is not much efficient as compare disc brake.

In a disc brake it works on hydraulic fluid, the main advantage of disc brake that is heat can be transferred into the environment directly. In this brake the normal force is generated by the hydraulic pressure. In the brake the hydraulic pressure is directly applied of the brake pads into the caliper. [11]

L. J ZHANG AT ALL

Regenerative brake works with ABS it has more efficient as compare both are single. The bus, truck speed and wheel angular velocity or speed is mix with the two degree of freedom or multiple degrees of freedom. Vehicle dynamic relation between the road force and tyre are longitudinal slip in it. [12]

III. CONCLUSIONS

In all the research paper the best research paper as a highly advanced technology that is New Regenerative Braking System with ABS that are much efficient as compare another as compare another type of braking system in vehicle.

- ✓ This technology is modern it is used in the motor bike and in car etc. It works with a hydraulic fluid.
- ✓ ABS is too advanced technology in Automobile Industry. It stops the vehicle in minimum distance.
- ✓ In EABS that is best technology, it is upgraded version of regenerative brake work with the ABS and it is highly advanced technology.
- ✓ In this ABS and active suspension both works and they are advanced and they work with each other.
- ✓ In new IBS system this is advanced but it is modern technology.

In IBS this was down grade version of NEW IBS but it is better as compare another.

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