

AUTOMATIC CLUTCHING AND BRAKING SYSTEM

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Abstract: The aim is to design and develop a control system based on intelligent electronically controlled automotive braking system is called "AUTOMATICA CLUTCH AND BRAKING SYSTEM" this braking is consist of IR transmitter and receiver circuit and the vehicle. The IR sensors is use to detect the obstacle there is any obstacle in the path the IR sensors the sense the obstacle and giving the control signal to the breaking system. The relay is used to disconnect the motor supply voltage.

Index Terms: Clutch, IR, Braking, Automatic, Intelligent

I. INTRODUCTION

We have pleasure in introducing our new research automatic clutch and braking system, which is fully equipped by IR sensors circuit. It is a research which is fully equipped and designed for Automobile Vehicles. This forms an integral part of best quality. This product underwent strenuous test in our Automobile vehicles and it is good. The SENSOR OPERATED BRAKING SYSTEM can stop the vehicle within 2 to 3 seconds running at a speed of 50 km. The intelligent braking system is a fully automation project. This is an era of automation where it is broadly as replacement of manual effort by mechanical power in all degrees of automation. The operation remains an essential part of the system although with changing demands on physical input as the degree of mechanization is increased. Degrees of automation are of two types, viz. 1. Full automation 2. Semi automation In semi automation a combination of manual effort and mechanical power is required whereas in full automation human participation is very negligible. Braking systems of commercial vehicles were always given the highest importance concern safety issues and in particular active safety. Due to different design and load characteristics of these vehicles, different performance of their braking system especially related to different wheel brakes and their tribological behavior are the main reasons why the operation of their banking system should be constantly monitored and controlled depending on the drivers demands and the adhesion characteristics between types and road. Inappropriate braking of these vehicles may cause heavy accidents due to relatively longer stopping distance and higher energy output of barkers particularly in the case of vehicle combination Intelligent Braking System Ever-increasing demands in term of responsiveness and control are

being made on system for brake and chassis management in commercial vehicles. The traditional medium used for brake system (compressed air) can be now controlled with the speed and precision offered by modern electronic abilities. Intelligent Braking System going to introduced in commercial vehicles providing rapid brake response during parking for drivers and vehicles safety.

Objectives

- 1) As there is always problem regarding with parking of vehicle properly and with minimum time.
- 2) Many time driver unable to judge the proper distance between back side of vehicle and obstacle during parking. This parking problem tends to damage of vehicle most of time and cause critical parking To provide safe parking To avoid damage of Vehicle. To provide comfort for driver with regarding parking purpose.

Functions

Intelligent Braking System provides many useful functions.

1. It will Provide Safety for driver
2. It will provide Safety for rear side of vehicles During parking
3. It will judge the proper and required distance between back side of vehicle and wall for parking.
4. It will immediately give control signs to apply brake instantly.

Intelligent Braking System means a braking system that provides a safety for vehicles during the parking of vehicles in parking area. Many times it seems that the driver unable to judge the obstacle at back side vehicles during the parking of vehicle. The project, Intelligent Braking System is planning to introduced a new advanced system in automobile market. Damaging During a parking of vehicle is quite major problem but until there in no solution on this problem. So we introduced a new system that will avoid damaging of vehicle during parking. Intelligent Braking System will open up new and promising opportunities to engineer in order of safety and discipline. Basic human being is many time unable to judge the accurate and safe required distance during the parking in parking are.

Braking System is introduced for providing safety and comfort to driver during parking of car. The main aim of system is to avoid critical damage of vehicles at the time parking. Most of time derives unable to judge proper distance

between car and obstacle, so this system will helpful as well as important in car safety. The intelligent braking system will open up a new ideas and concepts for automobile industry. The Frame material such mild steel angles and plates were purchased and obtained from workshop. Electronic equipment such as IR sensor, control circuit for valve were made by an skilled electronic engineer and adapter for external power supply of DC motor, IR sensor and control circuit were purchased from nearby electronic shop. Welding of frame was done in welding Workshop, circuit for control unit and sensor were made by with the help of an electronic and telecommunication engineer.

II. MODEL DESCRIPTION

:Whole assembly of automatic clutch and braking system consists of following main parts. **Frame:** Frame is made up of 40C8 material. Frame is generally made up in order of required dimensions. Dimension of frame Length: 24 inch Width: 18 inch Height: 5 inch. **DC Motor:** One D.C. motor is mounted on one wheel to provide free rotation of wheels Specification of MOTOR Torque: 200mm Volt :12V DC, **IR sensor and control unit** IR sensor unit is mounted back side of frame. External power supply is provided to IR Sensor. Control unit is connected to solenoid valve in order to actuation of valve. **Two working wheels** of free rotation are mounted on both end of metal shaft. Two **ball bearings** are provided foe smooth rotation of both wheels and both ball bearings are mounted on rectangular bar.



Fig. IR Sensor



Fig. Actual model for regenerative braking

Working principal:-

Automatic clutch and braking system is work on principle of Working of clutch and braking system which is equipped by using IR sensor circuit. Wheels are continuously rotating in clockwise direction as the connected to the wheel. IR circuit consists of one transmitter called as IR Transmitter and one receiver called as IR Receiver . IR Transmitter continuously transmitting the INFR Red rays. If any obstacles is there in a path, the Infrared rays reflected. This reflected Infra-red rays are received by the IR Receiver. The IR Receiver circuit receives the reflected IR rays and giving the control signal to the control circuit. The control circuit is used to activate the on off switch. As the switch activated it will allow motor to stop.

Component Diagram System consists of following main Component: 1.Frame 2. D.C Motor 3. IR Sensor 4. Control unit 5. Motor shield

ADVANTAGES OF REGENERATIVE BRAKING SYSTEMS

- Improved Performance.

- Improved Fuel Economy- Dependent on duty cycles, power train design, control strategy, and the efficiency of individual components.

- Reduction in Engine wears.

- Reduction in Brake Wear- Reducing cost of replacement brake linings, cost of labor to install them, and vehicle down time,

- Emissions reduction- engine emissions reduced by engine decoupling, reducing total engine revolutions and total time of engine operation.

- Operating range is comparable with conventional vehicles- a problem not yet overcome by electric vehicles.

APPLICATIONS OF REGENERATIVE BRAKING



Fig.Arduino Board

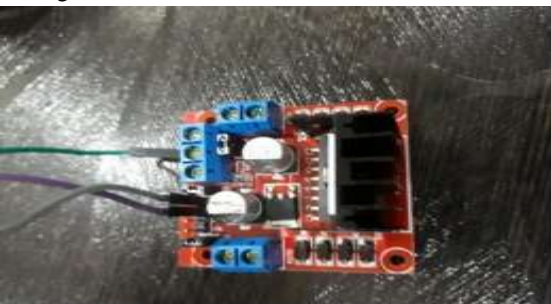


Fig. Motor Shield

SYSTEMS

- For recovering Kinetic energy of vehicle lost during braking process.
- One theoretical application of regenerative braking would be in a manufacturing plant that moves material from one workstation to another on a conveyer system that stops at each point.
- Regenerative braking is used in some elevator and crane hoist motors.
- Regenerative Braking Systems are also

III. CONCLUSION

The automatic clutch and braking system is completed successfully, and it is demonstrated with the sensor. All the components which we use are in working condition and this system can be easily implemented to any of cars and vehicle.

The regenerative braking system used in the vehicles satisfies the purpose of saving a part of the energy lost during braking. Also it can be operated at high temperature range and are efficient as compared to conventional braking system. Regenerative braking system has a wide scope for further development and the energy savings. The use of more efficient systems could lead to huge savings in the economy of any countr

FUTURE SCOPE

Regenerative braking systems require further research to develop a better system that captures more energy and stops faster. As the time passes, designers and engineers will perfect regenerative braking systems, so these systems will become more and more common. All vehicles in motion can benefit from these systems by recapturing energy that would have been lost during braking process. Future technologies in regenerative brakes will include new types of motors which will be more efficient as generators, new drive train designs which will be built with regenerative braking in mind, and electric systems which will be less prone to energy losses.

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