



Over Steer Prevention System

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Abstract

In this paper we are going to investigate the vehicle active system to achieve zero accident on the road. In this project we investigate the control system of steering by applying electromagnetic force to steering column. This project formulate the vehicle dynamics with respect to the over steer phenomenon and use an electromagnetic speed control characteristics on steering motion. Electric power steering is a full electric system which reduces the amount of steering effort by directly applying the output from an electric motor is the steering system.

Introduction

Electric power steering system is a very important component in automotive handling and stability. It includes mechanical components. Such as a steering wheel steering column , pedestal bearing , belt pulley shaft wheel etc. And Electronic components such as electromagnet controller set up transformer, motor , variable frequency drive etc. This controller system is implemented in vehicle to achieve zero accident. According to World Health Organisation 1.2 Million people are killed in accidents every year one in every 25 seconds and 50 Million people are injured by road accidents. To power steering system when vehicle runs 80 km/h speed than roads and wheels contact becomes less driver feel the steering very smooth that time steering is moved by drivers hand undesirable direction and skidding of tyres may be accurate due to this chances of accidents is happen to avoid all these problems. We just made steering column hard by mounting electromagnet around it. Electromagnet is controlled by controller unit and ESU sensed by IR sensor which senses the speed in wheel RPM. This electromagnet will be actuated at only high speed. We can also set the speed of vehicle in controller unit display. Accordingly to this set speed electromagnet will charged and steering column will became hard. In India number of road fatality are happening every day no of these road fatalities could be reduced only by use of road safety gears and vehicle included with safety features. Modern safety features such as a over steer control system works on principle prevention is better than cure. They not only reduced the degree of damage to life and properly but they try to prevent before accidents is going to happen .Today's driver are dependent upon advanced technological system to help them while but in motion Antilock brake system. This is a four wheel system that prevents wheel locking by modulating the brake pressure when the driver makes an emergency stop. Traction control system is the second technology it's deals with the front to rear loss of friction between the tyres and the road during the acceleration . Electronic control system form by intercorporating the first two technology Antilock brake system and traction control system with additional capabilities . The over steer control system has been design to improve the cars lateral stability by electronically correcting and automatically assisting drivers in critically situations like understeer and over steer and in unfavourable conditions like rain, snow, sleet ice ESE system have sensors that monitor the speed the steering wheel angle lateral acceleration of the vehicle.

Problem Statement

In conventional vehicles there is no any over steer control & driver's safety if vehicle moving at highest speed. So that during highest speed to avoid the emergency condition or accident while vehicle will over steer it is need to make a safety for steering control. To optimize the modified steering column by setting the control parameters at optimum level without affecting the engine performance. To overcome this problem on over steer control we introduce over steer prevention system in automobile.

Objective

- 1) To reduce the problem of loss of control on steering at high speed vehicle running condition to avoid the accidents.
- 2) To provide make a reliable steering which will easily synchronizing with today's power steering system.
- 3) Offer control adjustment to steering steer as per driver effort requirement.
- 4) To maintain the response time of steering system & to maintain the driver safety in case of accident.

Methodology

- Literature Survey- We are going to do the Literature Survey by Studying the research so far done by the researchers in this field and going to determine or next work by Studying this.
- Problem Problem Identification- After doing the literature survey we are determine our final definition of problem and going to work accordingly.
- Design- After defining the problem Statement we will decide the design parameters and then do the Analytical Design.
- Fabrication- After going through above procedure we will fabricate the machine and will convert our concept into reality.

Working

Components are required an our project model like a supporting frame, steering wheel with steering column is vertically mounted by the pedestal bearing. An AC motor is connected to the speed controlleand set up transformer and IR sensor is used. Initially wheel is running with the power of AC motor and speed controller. This speed continuously sense by IR sensor and give feedback to controller. When speed of vehicle exceeds limit than set speed in controller unit. The electromagnet is energized by the supply where the magnetic field is produced is used to provide the prevention of over steer n steering mechanism. When the electromagnet is not energized the rotation of steering column is free when the accelerate the wheel through a variable frequency drive then torque is increased to more the steering wheel. The motor rotates the wheel through belt and pulley drive. The control panel is used to control performance of the system speed by varying no of turns of coil current through coil ultimately the magnetic properties will be change.

Advantages

1. The safety of driver .
2. The operation of the new system is well controlled.
3. It minimizes misalignment and less floor spaced is required.
4. It increases the safety and working condition.

Limitations

- The systems develop by only demonstration of over steer prevention system.
- The system develop by having rotary wheel demonstration model to which speed can be sense by infrared sensor but in an actual practice this IR sensor will locate in disc callipers in stationary brake part.
- The performance can be affected by electromagnetics device working.

Application

It is used in cars, Buses etc.

Conclusion

We have concluded that by applying electromagnet around the steering column for controlling the over steer a steering became a reliable for safety driving . It reduces the problem of loss of control on steering at high speed vehicle at running condition to avoid accidents.

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