

Intelligent Puncture Indicator

Aand NishaU.¹, Yelgunde Tejashri.S.², Jamadar MahadeviM.³, Waghmare HarshelS.⁴, Prof.Madane VijayJ⁵

Dept of Electronics And Telecommunication Engineering
Karmayogi Engineering College, shelve, Pandharpur.

Abstract- Now a days the safety of human life is very important. Road accidents increases day by day due to various reasons and most of the reason of the accidents are the skidding of vehicle due to sudden puncture of tyre. So the aim of our project is to reduce the road accidents. This paper represents a robust intelligent puncture indicator that will indicate that the tyre is puncture or the air pressure. So that accidents will be avoid. The design work is initially simulated on an electronic simulator software 'PROTEUS' before being assembled on electronics breadboard and later transferred on to a PCB.

Keywords- Ultrasonic sensor, microcontroller.

I. INTRODUCTION

The safety of vehicle is depends on the tyres and of the vehicle. Tyres plays a major role in safety of the vehicle or passengers. Tyres are made of natural rubber or synthetic rubber with carbon black, layers of fabric and the steel encased in rubber. If tyre run on low pressure then it will affect the braking and comfortness of the driver and also it will cause the fail of tyre which will cause the accidents. To avoid road accidents causes due to the puncture of tyre it is necessary to make the device that indicates the air pressure in tyre hence we will use the ultrasonic sensor. It emits ultrasonic waves and receives waves which are reflected back from the target and the distance will measure. The readings will display on display screen given on dash board. For the pressure in tyre we will give the three conditions which are shown by the 3 LEDs which will also give on dash board.

II. SYSTEM DESIGN & IMPLEMENTATION:

The portable Ultrasonic sensor will use and it is interface with low current consumption AT89S52 microcontroller chip which acts as the main part of the system. The choice of microcontroller used is due to the sufficiency of its output ports without using a decoder or multiplexer and the flexibility with regards to programming and reprogramming. The overall circuit performs sensitive job of detecting distance between the chase of vehicle and ground surface and readings will display on display Screen. According to pressure in tyre, three conditions will consider and according to that condition three LED's which will give on dashboard.

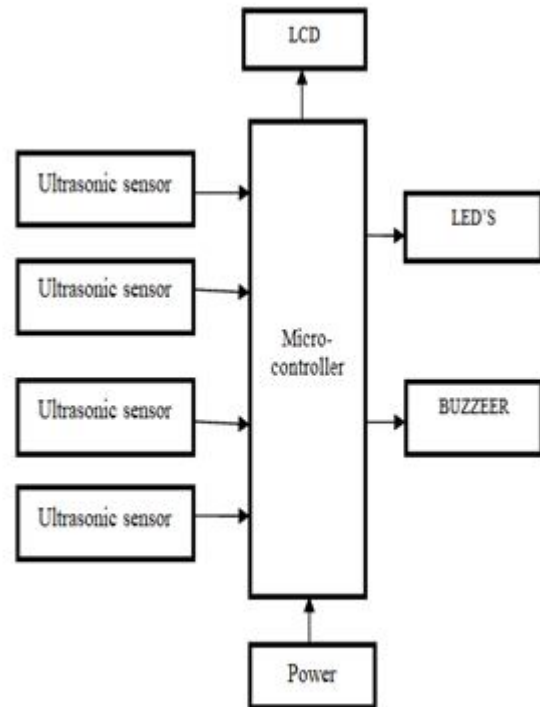


Fig 1.0 Block diagram of intelligent puncture detector

III.WORKING

The puncture detector will indicate the decreasing pressure in tyre, it measure the distance between ground clearance and ground by ultrasonic sensor. The output of sensor will give to the microcontroller. The output of microcontroller will give to the LCD, LEDs and buzzer. Three LEDs will use in this circuit viz. red, green, and yellow. At normal condition of the tyre pressure the green LED will glow. When the pressure of tyre will become below the 70% then yellow LED glow.

MICROCONTROLLER

A microcontroller is a small computer used in one IC containing a processor core, memory and programmable input output peripherals. A microcontroller is used and designed for embedded applications.

ULTRASONIC SENSOR

It measures the distance by emitting the ultrasonic waves and receives reflected waves from the target.

LED

It is light emitting diode.

LCD

It is an output device which is used to display the output of sensor.

III. EXISTING SYSTEM

- **Manually:**

In this method the driver not get any information about the decreasing pressure in tyre. At worst condition the information is get to the driver.

- **By detecting occupants:**

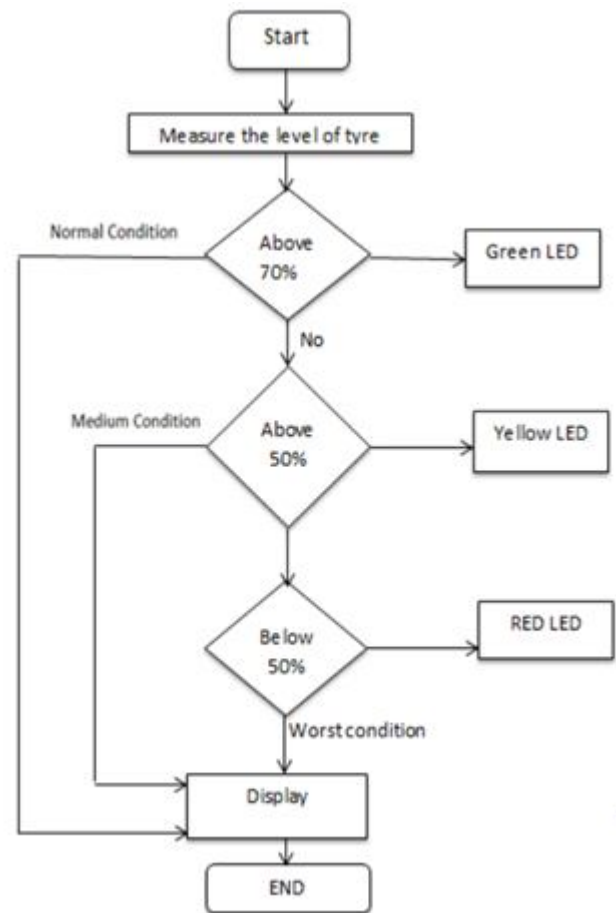
The pressure gauge is used for measuring the pressure in tyre. Now a days the pressure sensors are available which are placed at the tube valve.

IV. PROPOSED SYSTEM

The proposed system overcomes all the drawbacks of existing system. The ultrasonicsensor is used to measure distance from ground clearance to ground surface and this will gives the pressure condition in tyre.

V. CONCLUSION

Intelligent puncture detector will gives the prior information about the tyre. It is to be used in any vehicle.



REFERENCES

- [1] "FEA chapter III: Tyre Pressure Survey and Test Results" National Highway Traffic Safety Administration, 2009.
- [2] Reza N Jazar, "Vehicle Dynamics Theory and Applications", Springer Publication, 2008.
- [3] Tandy Jr D, Pascarella R, Tandy K, Neal J, "Effect of Eging on Tyre Force and Moment Characteristics", SEA Technical Paper, Paper id: 2010-01-772,2010.