

## WIRELESS PRESSURE GAUGE SYSTEM FOR VEHICLE

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### ABSTRACT

Today safety of human life major concerns. Nowadays up to 60-65% accidents are occurs due to transport of vehicle. These are occurring especially the low or high tire pressure and temperature (i.e. it increases the temperature of tire by friction). So tire burst is avoiding during a superhighway that time the instrument are used to prevent accident are “Wireless pressure gauge system for vehicles with air bag system”. In a wireless pressure gauge system for vehicle are used to measure the pressure and temperature of each tire and fill the air automatically and also it indicate the digital display. Also this project deals with the air bag system, at worst condition driver unable to stop the vehicle. Finally these kinds of instrument are used for a society and improve the need of practical application in more amounts.

**KEYWORDS:** Tire pressure, pressure sensor, transmitter, receiver, pneumatic cylinder etc.

### INTRODUCTION

One of the important stage for serious traffic accidents is bursting of tire. During a research they can shows that tire burst is mainly caused by abnormal tire pressure of air or higher temperature of tire because of friction of tire on the road or either speed of tire It increase the temperature. If the tire pressure is measure during a vehicle is moving condition that time they can reduce the sudden accident is much more. So this wireless pressure system are measured the pressure and temperature of air and to fill the air automatically if air is low.

In other nation like a USA (United State of America) are compulsory fitting these kit in tire. This electronic based instrument are measured the pressure and temperature of air are inside or outside. This system are used not only Measure the pressure and temperature of the air but also it save fuel and protect the tire.

### PROBLEM IDENTIFICATION

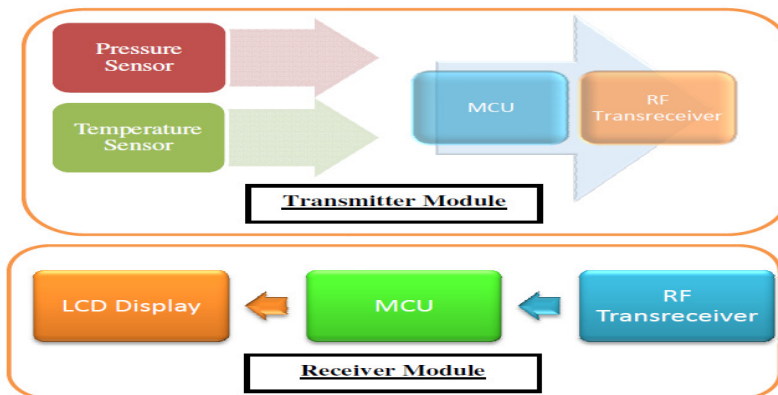
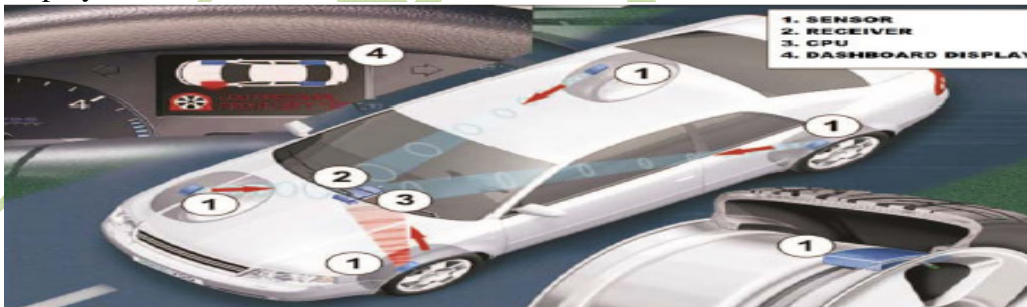
1. First problem induced to locate the sensors either inside or outside of tire. If the sensor is located outside the tire then it is effect on temperature reading directly due to atmospheric temperature means does not measure the temperature of tire accurately.
2. Second problem is transmission due to vehicle is moving condition that time result will obtain accurately.
3. Last problem is battery using indication kit.

### MOTIVATION

In a wireless pressure gauge system for vehicles are used to measure the pressure of each tire & fill the air automatically. Finally this kind of instrument are ecofriendly and used f.or society to reduce accidents.

### EXPERIMENTAL SETUP-

1. Sensor
2. Receiver
3. CPU/MCU
4. LCD Display



The system proposed here is direct TPMS [tire pressure monitoring system]. Transmitter module is also called pressure monitoring module and central receiver are used to measure the signal of tire pressure using sensors. In a pressure module contains pressure sensors, temperature sensors, micro-controller unit and radio frequency transceiver chip. In a Receiver module contains micro-controller unit and radio frequency unit chip, LCD display & buzzer circuit. TPMS system works on different frequency like 2.48 & 3.15 GHz. The system propose or use in this paper are uses a 2.48 GHz.

## **SENSOR**

### **PRESSURE SENSOR-**

In this topic we use MPXM2202 is a pressure sensor. This sensor is made up of a silicon piezoresistive material. MPXM2202 is a providing a highly accurate and linear voltage output. This linear voltage is directly proportional to the applied pressure. The sensor is a single, monolithic silicon diaphragm with the strain gauge and a thin-film resistor network integrated on-chip.

### **TEMPERATURE SENSOR -**

In this topic LM35 is a temperature sensor. The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly-proportional to the Centigrade temperature. The LM35 device has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from the output to obtain convenient Centigrade scaling. The LM35 device does not require any external calibration or trimming to provide typical

### **MCU [MICRO-CONTROLLER UNIT]-**

Atmega16 microcontroller is used in a Wireless Pressure gauge system for vehicle with air bag system. This microcontroller plays both role as a transmitting & receiving. This microcontroller unit support serial peripheral interference [SPI] protocol. The main purpose of this SPI is to convert the analog to digital converter .This microcontroller unit operates low power unit for its operation. This MCU does not transfer the signal directly so that's why the RF transceiver is used.

### **RF TRANSCEIVER-**

RF Transceiver means radio frequency transceiver. It receives the signal at ATMega 16 MCU. Generally it is receiving transfer device & it's translate the data up to 30m range.

### **LCD DISPLAY UNIT-**

In this unit show & detect the tire pressure and temperature. Also save the data in memory for using future study. It also acts the warning buzzer, it indicates the low tire pressure and temperature. And to next step to inform to activating air bag system.

## **FUTURE WORK & EXPECTED CONCLUSION-**

In a now days wireless pressure gauge system is prominent /improvementely used as a safety of vehicle as well as drivers. Generally this paper is proposed to safety precaution where accident is induced. Air bag system are usually used this purpose. In future the compressor are fitted in a tire or either air bags system works using compressors.

## **REFERANCES**

- 1] Avinash D. Kale, Shubhada S. Thakare, Dr. D. S. Chaudhari., *"Wireless Tire Pressure Monitoring System for Vehicles using SPI Protocol"*, ISSN: 2278 – 1323 *International Journal of Advanced Research in Computer Engineering & Technology* Volume 1, Issue 4, June 2012
- 2] Ajas.M.A, Aiswarya.T.G, AdershVinayak, Surya Balakrishnan, Janahanlal P.S, *"Tire Pressure Monitoring and Automatic Air Filling System"*, *IJREAT International Journal of Research in Engineering & Advanced Technology*, Volume 2, Issue 2, Apr-May, 2014 ISSN: 2320 – 8791
- 3] Brady, Stephen; Van Order, Deborah; Sharp, Asa*"Advanced Sensors and Applications: Commercial Motor Vehicle Tire Pressure Monitoring and Maintenance"*
- 4] Jennifer Drain, Rodney Hall, Christopher Pentl, Michael Snedeker Aaron Thurber *"TIRE PRESSURE MANAGEMENT SYSTEM"*