

# Survey On Tubeless Tire Pressure Detection Indicator

Prof. Mrs. Dnyanada Hire<sup>1</sup> Shrushti Upadhye<sup>2</sup> Shruti Ranade<sup>3</sup> Divya Jadhav<sup>4</sup>

**Abstract:** The Tire Pressure Monitoring System (TPMS) implementation approach is suggested in the article for use in automobiles. The air pressure in a car's pneumatic tires is measured by the TPMS. The electrical component of the proposed TPMS immediately screws onto the tire stem. A pressure sensor, switch, signal conditioner, and microcontroller are all included in the device. When tire pressure abruptly fluctuates or crosses the maximum or minimum safe pressure level, an alert is triggered. Through the user interface, the user can modify the safe range of rapid changes as well as the lower and higher limits of tire pressure. On a tire, the system has been put into use. It has demonstrated to be user-friendly while providing reliable results.

**Keywords:** Tire, Pressure, Vehicle, detection, Pressure Levels.

## 1. INTRODUCTION

A study found that about 80% of the vehicles on the road have at least one under-inflated tire. Tires lose air as a result of normal driving (especially after hitting curbs or potholes) and temperature changes throughout the year. You can't tell if the tires are properly inflated merely by looking at them, and the car can lose one or two psi every month in the winter and even more in the summer. This device, which is mounted on the vehicle, allows the driver to change the inflation pressure in each of the car's individual tires.

These days, one of the most crucial criteria is the route of transportation. Thus, it is crucial to ensure vehicle safety. The number of accidents is likewise rising quickly. These mishaps are caused by a variety of variables. One of them is the incorrect inflation of tires. Normal driving (particularly after striking potholes or curbs), permeation, and seasonal temperature fluctuations all cause tires to lose air. The tread on tires wears down more quickly when they are underinflated. As a result of overheating, under-inflated tires degrade far more quickly than properly inflated ones. A slight decrease in mileage is also brought on by the under-inflation.

## 2. PROBLEM STATEMENT

As we are all aware, maintaining the proper tire pressure is crucial for extending the life of your tires. Due to the pressure reduction, the tire becomes underinflated, which has negative effects on the ride, fuel efficiency, and how quickly the tires wear out. In order to address all of these issues, we developed an autonomous tire inflation system that always inflates tires correctly.

## 3. OBJECTIVE

1. To develop a tire pressure monitoring system that runs continually.
2. To create a tire puncture control system that can give the vehicle controller input.
3. To connect the car and intelligent system so that the controller can view.

## 4. LITERATURE REVIEW

1. ***Nouman Naim Hasan, Adeel Arif, Usman Pervez “Tire Pressure Monitoring System with Wireless Communication” this paper introduce tire pressure monitoring system with wireless communication.***

The project proposes a way to implement Tire Pressure Monitoring System (TPMS) in vehicles. TPMS is used to measure the air pressure as well as pneumatic tires of automobiles. The TPMS has an electronic circuit which head on screws on the stem of tire. The unit includes a pressure sensor and switch, signal conditioning unit, microcontroller, RF transmitter and long life battery. An RF receiver is implemented to communicate with the TPMS unit and displays real-time pressures of all tires. The unit is easy to use especially the detached and re-attached to the tire. Modification to the tire is not required. The system as well as the each TPMS unit have unique identification code ID to prevent spreading of false data reception from the neighboring vehicles. The system's working condition will not get affected even if we change the tire or in case of maintenance. Warning will be displayed on display in case of tire pressure crosses the maximum or minimum safe pressure level, or even when it changes abruptly. There are two levels namely, lower level and upper level limit of tire pressure or safe range. user interface is used when abrupt changes occur in tire pressure level. The system has been implemented on a car. The system has given the accurate results to the user as well as have the less circuit complexity proving to be user friendly.

2. ***G. Prasanthi and V. S. Felix Enigo “A Smart Tire Pressure Monitoring Using Android Phones”.***

Improper tire pressure is a safety issue that is usually not taken seriously. In addition to causing accidents, under-inflated tires can cause a reduction in mileage, tire life, and performance. Over-inflated tires also have a negative impact on the safety of the vehicle. In this paper, we are presenting the idea of using a Tire Pressure Monitoring System in combination with an Android phone. Notifications and indications in the form of color changes are implemented to communicate proper warnings about under or over inflation of the tires via Serial Port Bluetooth Profile (SPP).

3. **Lukman Medriavin Silalahi , Mudrik Alaydrus , Agus Dendi Rochendi , Muhtar Muhtar “DESIGN OF TIRE PRESSURE MONITORING SYSTEM USING A PRESSURE SENSOR BASE”.**

At present, the Tire Pressure Monitoring System (TPMS) is used to keep track of the condition of the tire pressure. But, there are no peculiar response befalling following the gain of tire pressure is disclosed. As a matter of fact, driving comfort and safety is judged by the level of the pressure present in the tire. That is why, this given resolution is a technique to incorporate a TPMS with the Pressure Sensor Base (PSB). The given TPMS has an electronic circuit which is directly associated with the valve of a tire. A warning indication is showed everytime the tire's pressure surpass the safe pressure level. However, when the pressure being measured is beneath the safe lowest pressure level value measured is below the lowest level ,, the compressor will start immediately. Many experiments were carried out to get the desired result from the system. The composite TPMS is an substitute tool for the motor-driven sector. The TPMS is used to maintain the tires as well as to enhance the driving comfort and safety.

4. **Amogha Abbi , T. Ramakrishnaiah “Tire Pressure Monitoring System”.**

The Tire Pressure Monitoring System which is used moment indicates only whether the air pressure in any of the tires is below a particular position of safety. This avoidable signal has made it possible for the statistical death rate to come up to 650 deaths per time. This design displays values through nonstop monitoring. thus, this exploration proposed a system to cumulate the colorful factors of the tire and to display it to the motorist for a safer experience. The proposed TPMS has an electronic device unit that's attached to the tire and transmits the values of the pressure, temperature, and the wheel alignment to the unit to be placed inside the vehicle, observable to the motorist. This unit includes pressure detectors, microcontrollers, RF transmission, and batteries. An alert is introduced which indicates if the pressure exceeds the maximum or minimal safe pressure position. Several trials have been carried out to dissect the proposed system. The integrated TPMS has proven to be an effective volition to maintain the tires and aims to ameliorate the comfort and safety of the motorist.

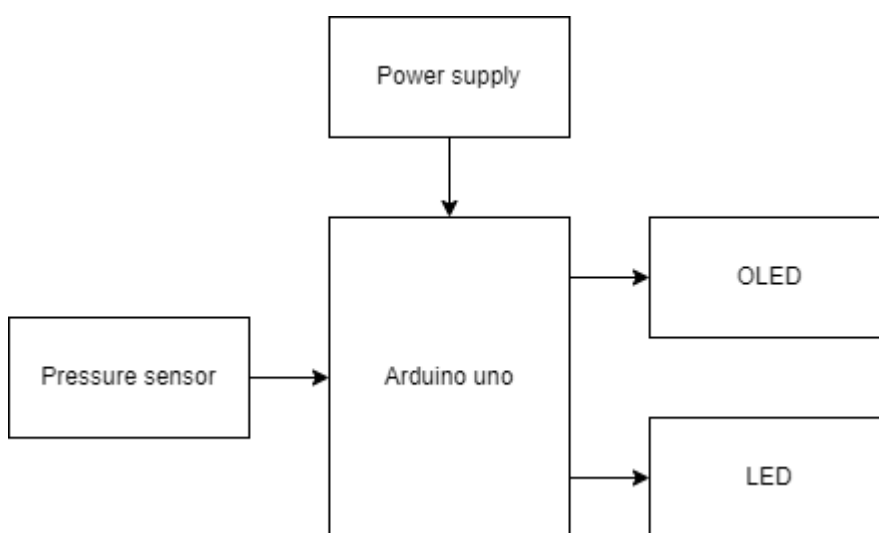
5. **Dheeraj Kumar , Manish Chamoli, Ms. Rasveen3 “WIRELESS ADVANCE TIRE PRESSURE MONITORING SYSTEM”.**

This design is to design a system which monitors the vehicle tire pressure and therefore give air pressure data to the motorist through TV display. The proposed design will ameliorate safety and vehicle performance. In the design pressure detector is used which adds intelligence in auto and reduce number of accidents. Our design will display the current pressure data of tires with high/ low pressure warning. Also if the air pressure is constantly dwindling in tires it gives an suggestion of tire perforation. Due to presence of piezoelectric detector, this design don't bear an fresh source of battery for power force. Hence, it'll feeds safety to the motorist & vehicles and also increase the life of tires.

## 5.METHODOLOGY

The approach taken to put this work into practices is to design and develop the tubeless tire pressure using Arduino uno, pressure sensor, OLED, LED. When the tire pressure goes below to the given condition then red LED will blink automatically. The proposed method consists of power supply, Arduino uno, pressure sensor, OLED, LED. After uploading the program in Arduino uno, we will give them external power supply, due to that our circuit will start. When the tire pressure goes below to the given condition then red LED will blink automatically.

System Architecture:



## 6.CONCLUSION

It aims at providing an excellent notification system and assists in monitoring appropriate tire pressure. It reduces or increases the tire pressure according to requirement of the tire and helps in gaining best mileage and most importantly assures to provide comfortable and safe driving. The displayed results explain that the system is more accurate and efficient. The proposed system is more user-friendly, reliable, easy to install and highly beneficial for the automotive industry. The installation of such a system in vehicles is a low cost affair so all the passenger vehicle can take the advantage of this essential system at affordable installation budget.

## 7.REFERENCES

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