

# AUTOMATIC TYRE PRESSURE INFLATION SYSTEM

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**Abstract** – Project is concerned about and to develop an “automatic tyre pressure inflation system”. As we are aware that by drop of few pressure units in vehicle its results in the reduction in mileage, tyre life, safety and performance.

This system can be placed in every in automobile under any operating condition, this will not only maintain the correct tyre pressure but also increase tyre life, mileage and safety so we have fabricated this system to inflate and deflate the tyre automatically by using control units. This system is named automatic because it checks the tyre pressure continuously using built control device and accordingly gives alert signals to the driver about the tyre condition.

**Key Words:** Vehicle Performance, Vehicle Efficiency, Vehicle Safety, Pressure switch, Solenoid Valve.

## 1. INTRODUCTION

According to a study, approximately 80% of the vehicles on the road are driven with one and more tyre under inflated. Tyre loses air during normal driving (especially after hitting pot holes or curbs) and seasonal changes in temperature.



Fig 1.1: Tyres Wear

The vehicle can also lose one or two psi each month in winter and even more in the summer and you can't feel if they are properly inflated just by looking at them [2].

This is a system which is installed on the vehicle that enables the operator to adjust the inflation pressure of individual tyre of the vehicle.

This system has three general goals:

- a) TO DETECT: -If the air pressure in tyre has dropped (Continuously check the air pressure in each tyre).
- b) TO NOTIFY: -If there is any dropped in the air pressure in any tyre.
- c) TO INFLATE\DEFLATER -In case of over pressure or under pressure the tyre pressure is maintained inflate the tyre to the required level if there is a drop in the tyre pressure and there has to be an air supply as well as check valve that opens only when needed.

## 1.1 PROBLEM DEFINITION

As we are aware that maintenance of correct tyre pressure is extremely important for the enhancement of tyre life. Due to drop in the pressure the tyre goes underinflated and reduces fuel economy, quickest tyre wear, not proper rolling, discomfort ride etc.

So to solve out all these problems we make an automatic tyre inflation system, which will properly inflate the tyre all the times.

## 2. LITERATURE REVIEW

Over a period of 12 weeks in 2013 a trial was conducted involving two cement tankers in NSW, Australia. For the first 6 weeks this system was turned on in both tankers and for another 6 weeks this system was turned off and graphs are prepared which shows that trucks with this system was in good condition like average vehicle idle time, average vehicle time spent using power take off, Avg. Emission and fuel combustion.

We also carried out a survey of different people and asked them when they inspect their tyre pressure, the report is as follows:-

5.40%	-	6 Monthly
8.10 %	-	Bi-monthly
24.32%	-	Monthly
13.51 %	-	5-10 days
43.24 %	-	Weekly
5.40%	-	3-5 Days





### 3.2 Advantages

There are many important positive points of this system as explained below;

1. The main advantage is that you don't require to check tyre pressure daily, it saves the time of air filling.
2. This will reduce the tyre wear because of uniform pressure in the tyres.
3. The cost of the system is optimized, but increases safety, comfort and efficiency. [5]
4. The weight of the system is very less so one can use in cars, buses etc. [5]
5. With this you don't have to stop in that area, which is not safe for you, when a tyre gets punctured.

### 4. CONCLUSIONS

We can conclude that this system ensures us that each and every tyre is properly inflated to the proper tyre pressure throughout the journey and it also improves tyre life, reduces tyre wear, increases fuel efficiency and also increases the overall safety of the vehicle, it also monitors the tyre pressure constantly, provide us the proper inflation and deflation of the tyre, and helps in providing a comfortable ride with better mileage

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