DESIGN AND FABRICATION OF AUTOMATIC TYRE INFLATION AND DEFLATION SYSTEM

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ABSTRACT

The main aim of our project is to develop a "Automatic tyre inflation and deflation system" .This can be placed in all automobiles while long drives and that can be utilized while climbing uphill or down hills. It is very necessary for the every automobile to be cautious while driving through long distances. So we have fabricated this machine to fill the air automatically by using control units. In this project main function is suddenly the air is decreased to the automobile vehicles the sensor signal alerted to the person when the use of air tank to fill the air in the tyre. Then the air pressure is increased to the tyre in the vehicle it is same as the process of indicating the sensor signal through the person when the use of solenoid valve to reduce the excess air in the tyre.

Keyword: - *Tyre, inflation, and Long Drives etc ….*

1. INTRODUCTION

The "Automatic tyre inflation and deflation system" is a Mechanical device which is widely used in automobile works. The manual work increases the effort of the man power (operator) during the air checking in vehicles. The Air Maintenance Technology system developed through this project replenishes lost air and maintains optimal tire cavity pressure whenever the tire is rolling in service, thus improving overall fuel economy by reducing the tire's rolling resistance. Automation can be achieved through computers, hydraulics, pneumatics, robotics, etc., of these sources, pneumatics form an attractive medium for low cost automation.

Today automobile sector plays a big role in the economics of all the countries in the world and lots of researches have been carried out to improve the efficiency of the vehicle one the techniques to improve the efficiency of an automobile is inflate the tyre regularly. As its well-known, one of the most serious problem that the large motor vehicle have whether they are for the transportation of passenger or cargo and especially those used for middle or longer distance travel, resides the ensuring the correct performance of the tyres. This means making sure that tyre are inflated and stay inflated for the right amount of pressure for the load being carried and for road condition this way one can ensure not only the preservation of outer covering of the tyres, but also the correct operation of vehicle without any risks.

The deflation is a process of letting air or gas out of the tyres. Deflation is the problem of an automobile vehicle. Because a certain period of time in air reduced to the vehicle for running time. So a long distance travelled vehicle scarable things for deflation. The air is also decreasing the tyre. Fleet tyre managers typically ask how frequently they should be checking tyre pressure and loss so much of air during the course of the year. Osmosis of air through the tyre casing can lead to a loss 1to 3 PSI per month, depending on the specific tyre make and model. The type of compounds used in the manufacture of the tyre can have a big impact on osmosis. The composition and gauge of the tyre inner liner compound also plays significance in osmosis.

2. LITERATURE SURVEY

A tyre is a ring-shaped covering that fits around a wheel's rim to protect it and enable better vehicle performance. Most tires, such as those for automobiles and bicycles, provide traction between the vehicle and the road while providing a flexible cushion that absorbs shock. The earliest tires were bands of iron placed on wooden wheels, used on carts and wagons. The tire would be heated in a forge fire, placed over the wheel and quenched, causing the metal to contract and fit tightly on the wheel. A skilled worker, known as a wheel Wright, carried out this work. The outer ring served to "tie" the wheel segments together for use, providing also a wear-resistant surface to the perimeter of the wheel. The word "tire" thus emerged as a variant spelling to refer to the metal bands used to tie wheels. The first practical pneumatic tire was made by Scottish inventor John Boyd Dunlop while working as a veterinarian in May Street, Belfast in 1887 for his son's bicycle, in an effort to prevent the headaches his son had while riding on rough roads S. Dunlop is credited with "realizing rubber could withstand the wear and tear of being a tire while retaining its resilience".

3. WORKING

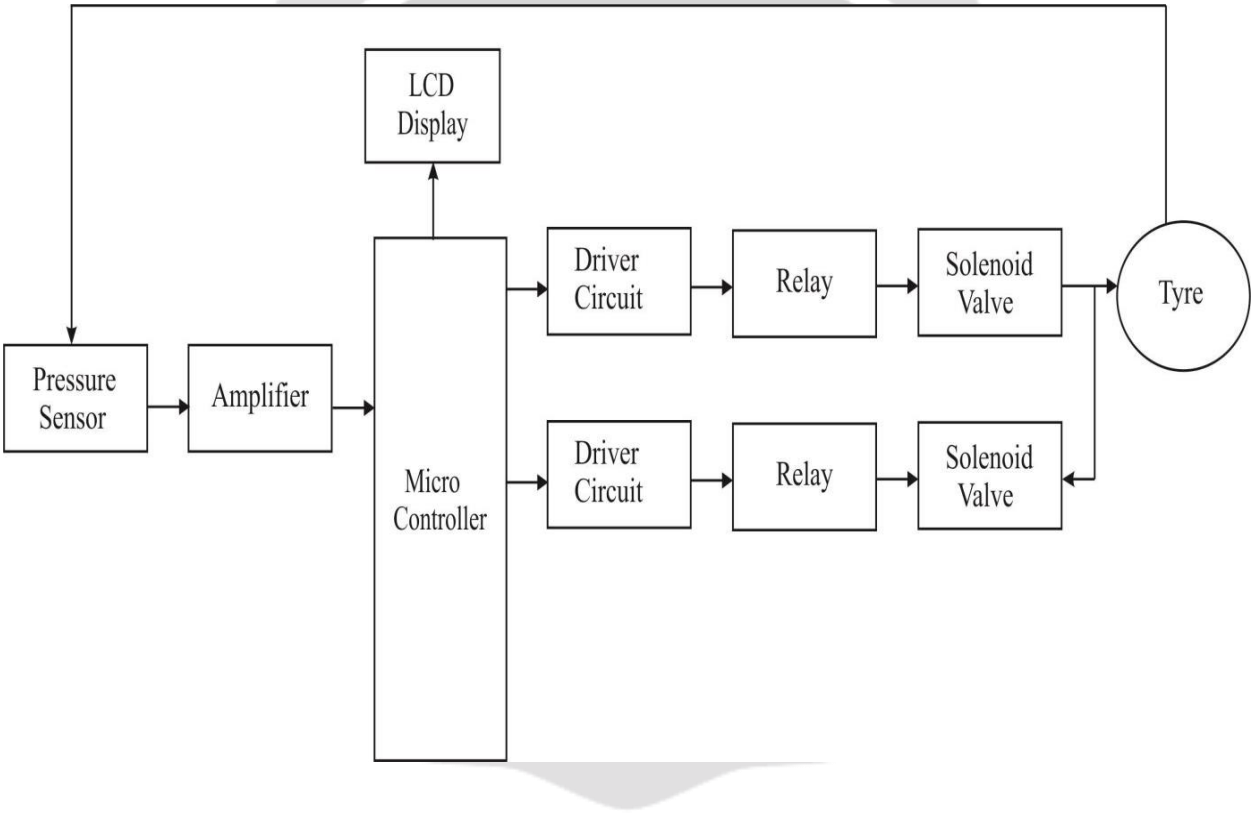

Fig 1 Block Diagram

Our project consists of solenoid valve, control unit, pressure sensor and Tyre model. We are using pressure sensor to detect the pressure level in the Tyre. The level of pressure is already programmed in the control unit. When the pressure level is decreased, the sensor gives signal to the control unit. After that the controller unit will open the solenoid valve for filling the air when the required pressure is obtained the control unit will turn OFF the solenoid valve. In case the pressure level will be more than the required level means control unit will switch ON another solenoid valve for air to the atmosphere. When the required pressure is reached the operation will be stopped by the control unit.

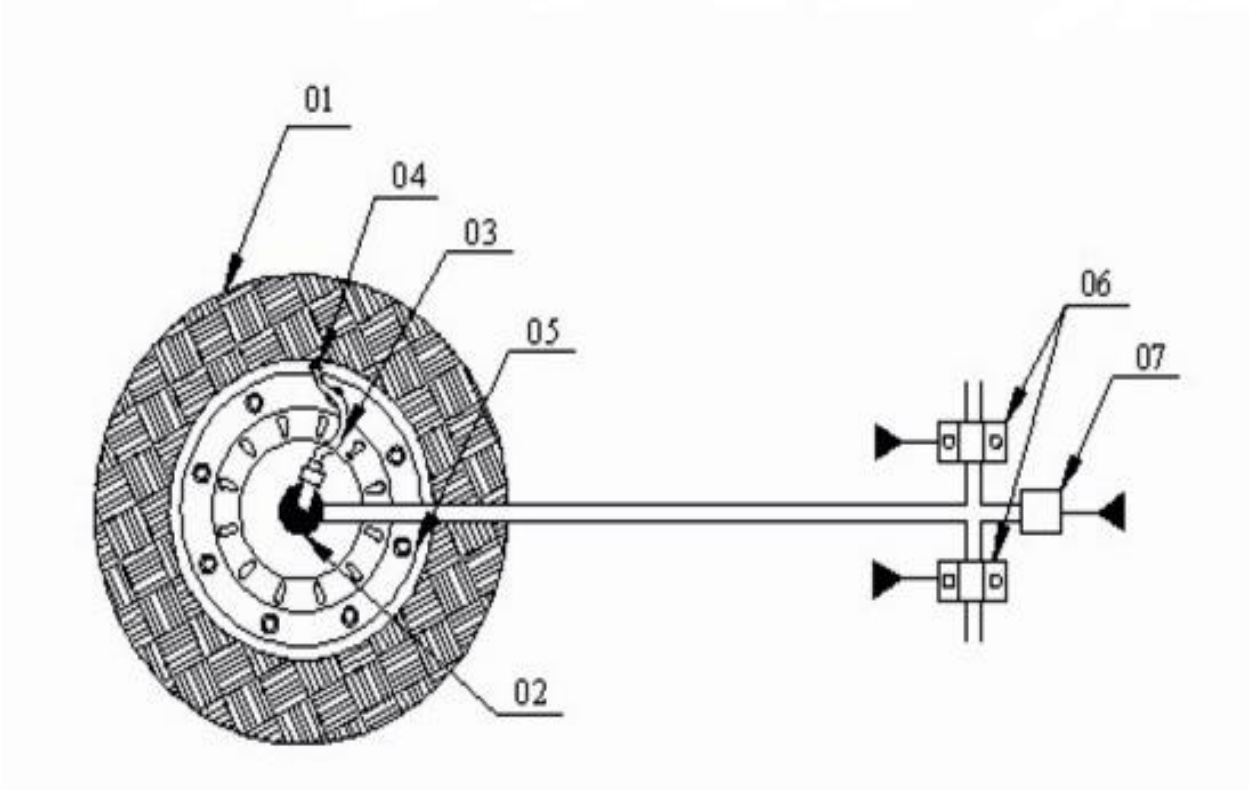

Fig 2 Circuit Diagram

4. CONCLUSIONS

The project carried out by us made an impressing task in the field of automobile field. This project will reduce the cost involved in the concern. Project has been designed to perform the entire requirement task at the shortest time available. In this project is used to all the automobile vehicles. Now the project is designed to the ideal condition vehicles. Then our project developed to the next level of running condition vehicle. Because of their vehicles will be a running condition some times to puncturing the tyre. So the alternative sensors are used to their process. Then the air will be filled in the tyre pressure per the seconds. They calculate and the air filling efficiency and to find out the punctured tyres. So easily identified the punctured and to solve the problems. In this process is an advanced technique of our project.

5. REFERENCES

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