

# **Chapter 1**

## **Introduction**

1.1 Selection of the project

1.2 Problem Definition

1.3 Design Objectives

1.4 Axle

1.4.1 Type of Axle

1.4.2 Forces Acting On Axle

1.5 Instantaneous Tire Pumping System (ITPS)

## **Chapter 2**

### **Review of Literature**

- 2.1 Loads applied to the rear axle in each load case are as follows
- 2.2 Material Selection
- 2.3 Corrosion fatigue influencing factors
- 2.4 Tyre Pressure Monitoring System
- 2.5 Tire Pressure and Fuel Efficiency
- 2.6 Under Inflated Tires
- 2.7 Tire Inflation Pressure Monthly Loss Rate
- 2.8 Contribution of the tire rolling resistance to fuel consumption
- 2.9 Automatic Tyre Inflation Management
- 2.10 Existing Systems
  - 2.10.1 Central Tire Inflation System
  - 2.10.2 HALO Tire Inflator
  - 2.10.3 Self-Inflating Tires
  - 2.10.4 Automatic Tyre Inflation System

## **Chapter 3**

### **Report on Present Investigation**

#### 3.1 Design of Rear Axle

##### 3.1.1 Aim

##### 3.1.2 Forces Transmitted onto Axle

##### 3.1.3 Material Selection

##### 3.1.4 Calculations

##### 3.1.5 CAD Modeling

#### 3.2 Instantaneous Tire Pumping System

##### 3.2.1 Aim / Objective

##### 3.2.2 Components Used For System

##### 3.2.3 Construction

##### 3.2.4 Working

##### 3.2.5 Circuit Diagram

##### 3.2.6 Working of Circuit

# **Chapter 4**

## **Results and Discussions**

### 4.1 Stress Analysis

#### 4.1.1 Mesh Information

#### 4.1.2 Study Results

#### 4.1.3 Resultant Forces

#### 4.1.4 Stress Analysis on ANSYS Software

### 4.2 Instantaneous Tire Pumping System

#### 4.2.1 Advantages of ITPS are mentioned below

#### 4.2.2 Applications

#### 4.2.3 Cost Comparison

## **Chapter 5**

### **Conclusion and Future Scope**

- 5.1 Axle
- 5.2 ITPS
- 5.3 Future Scope

## **Chapter 6**

## **References**