

“Tyre, Wheel Rim and Run Flat Assembly Mechanism to Assemble Semi Automatically.”

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- **Abstract** - Now a days in automobile field new features and new generation are rapidly increases, due to this regularly do maintenance of vehicle is main role of user. So, our study is focus on the safety of operator in vehicle factory. It is an equipment to be used for tyre, wheel rim and run flat assembly which is Semi-Automatic, safer than existing manual process and will be helpful in increasing productivity, Reducing Cycle time, Man power and Trouble-free assembly. The machine is made up of raw material or scrap. Moreover, parts renewed with different modifications by various process like welding, turning, drilling etc. In this equipment consist many parts like static fitting rig, metal tyre lifting arm, compression bar, locking nut, compression bracket, top piece extension, compressed plates, pendant switch, hydraulic cylinder, hydraulic hoses and removable block. This set up is easy to run and no need of high skill employee

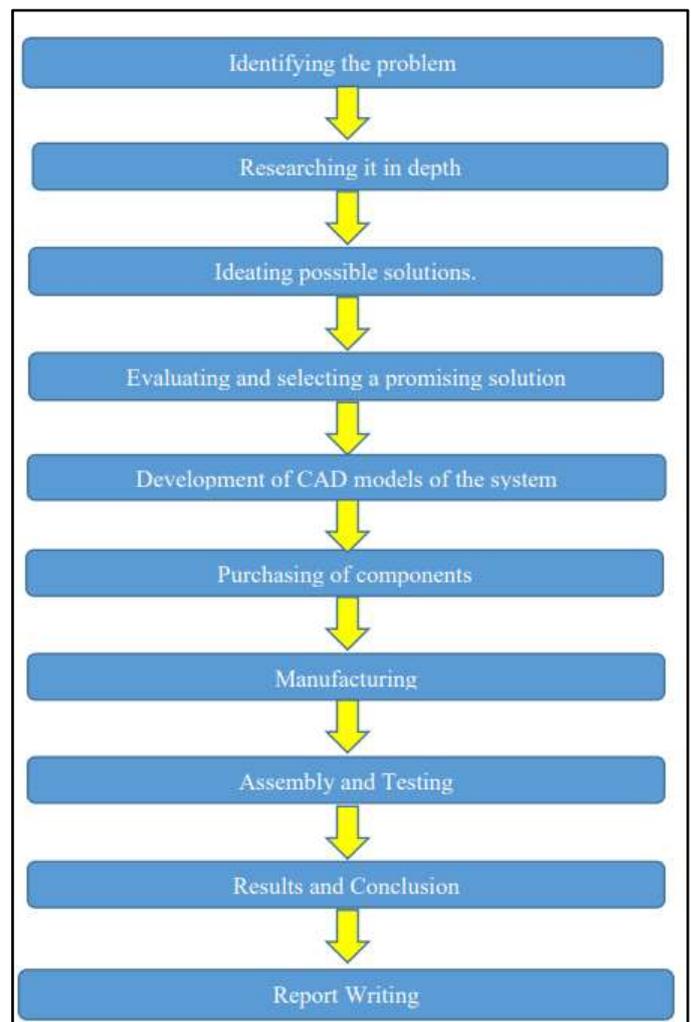
Key Words: Initial Concept, Material Selection, Finite Element Analysis (FEA), Testing and Validation, Final Product.

1. INTRODUCTION

The very regular tyre changer process is manually tyre changer may involve high force to remove tyre from heavy wheels or tyres. It also involves bending, reaching and twisting. This can cause musculature injuries to the shoulder, lower back, wrist and knees. Injuries can occur suddenly or gradually over time. Some other major factor is taken in consideration while doing this paper are as follows, Cost of powered tyre removing and fitting machine is much higher as compared to traditional manual tyre removing and fitting process. Removing or fitting of tyre on rim of wheel by manual is very effort full process and time consuming. Some time, hand tool which is use for removing the tyre from rim of wheel is damage the tube and tyre of wheel due to it is not properly handle, or due to human handling error. Manually removing and fitting of tyre on rim wheel is very skilled and experienced operator is required. This

machine is use for tyre, wheel rim & run flat assembly and disassembly. which is Semi-Automatic, safer than existing manual process and will be helpful in increasing productivity, Reducing Cycle time, Man power and Trouble-free assembly

2. METHODOLOGY:



3. PROBLEM STATEMENT:

Now a days automobile industries are booming due to globalization and many companies are focusing to become top seller in this cut-throat competition era. Therefore, tyre, wheel rim and run flat assembly mechanism is becoming bottle neck station because of manual assembly consequently, unable to fulfil daily production targets. Moreover, considering safety factor seems it is quite risky while assembling tyre because if tyre unlock while assembling manually then chances of severe injuries or some time operators become disable. In addition, considering cost of manpower is high because require more than one operator for assemble it.

4. CONCLUSIONS

The Tyre, Wheel Rim & Run Flat Assembly Mechanism has demonstrated significant effectiveness in enhancing efficiency, safety, and organization within the automotive Tyre and wheel rim and runflat assembly /disassembly process. Its flexible and ergonomic design delivers substantial benefits to operators, ensuring a streamlined and organized workflow. The successful deployment of this system provides a scalable solution that can be adapted to various tasks within the automotive assembly, maintenance and repair sectors. Future developments could focus on enhancing material durability and incorporating additional features tailored to specific tasks, further optimizing its functionality and versatility.

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