

Manufacturing and Testing of an All Terrain Vehicle

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Abstract— Single unit of all-terrain vehicle (ATV) have been fabricated by 4th year Mechanical Engineering students of Mechanical Engineering, (VIVA Institute of Technology). The purposes of this project are to manufacture ATVs at low cost. The students have to organize themselves to build the ATVs within budget constraint. This project emphasizes on detailed practical and engineering applications of the topics of Vehicle Dynamics and Automotive Technology which are taken by the students within the same semester. The students have all the freedom in deciding the specifications of the ATVs.

Keywords—ATV, Manufacture, Vehicle Dynamics

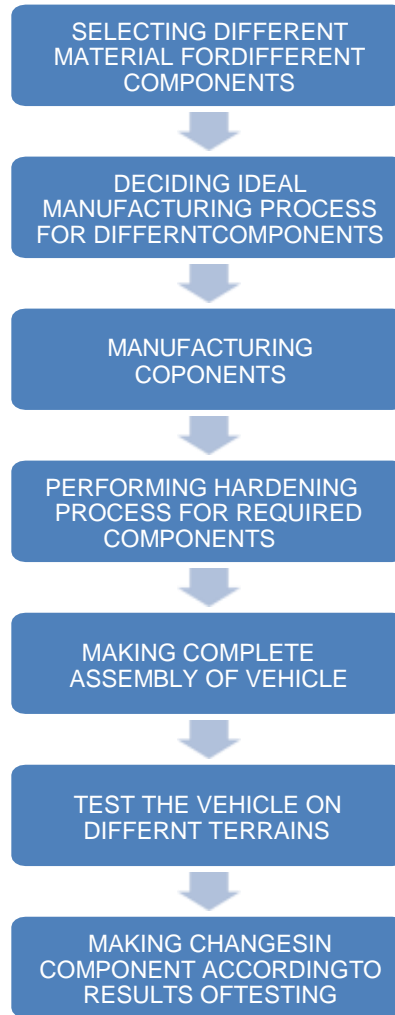
I. INTRODUCTION

The objective of the study is to fabricate safest vehicle for driver. The roll cage is being strictly fabricated in accordance with SAE BAJA rule book. 3D Assembly of whole vehicle & Line model of the roll cage is modeled in SOLIDWORKS 2018. Different processes are used to manufacture different components with a view to reduce cost and achieve proper tolerances at same time. Different validation techniques are used to validate safety standards and attain required performance of vehicle. The Centre of Gravity was kept in middle of the vehicle & closest to the ground for maximum vehicle stability.

II. PROBLEMSTATEMENT

An all-terrain vehicle (ATV),also known as off-road buggy consists of a quad, quad bike, three-wheeler, four- wheeler as defined by the American National Standards Institute (ANSI) is a vehicle that travels on low-pressure tires, with a seat that is straddled by the operator, along with handles for steering and cornering control. As the name implies, the ATV is designed to handle a wider variety of terrain than most other vehicles. Although it is a street-legal vehicle in some countries, it is not legal within most states and provinces of Australia, the United States orCanada.

III. METHODOLOGY



IV. CONCLUSION

The chosen design was the safest and the most reliable car for any long terrain. All the parameters like safety, cost, performance, aesthetics, reliability, durability, standard dimensions and material were also taken in consideration on the same time. Where ever possible finite element analysis was done on the regularly loaded parts and modifications were done to avoid any type of failure. In case of rolling front and rear curved members behind the driver's seat take the side load equally, not like in other designs where only the rear curved members were made to bear the side rolling loads.

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