

Design and Development of a Lightweight Go-Kart Vehicle with Emphasis on Driver Safety, Ergonomics, and Injury Risk Reduction

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ABSTRACT

Our kart is designed in such a way that it provides an aerodynamic effect on the kart in order to overcome the dynamic forces which are acting on it. Our kart is prepared to reduce the impact forces on the kart during crashes. To withstand all types of forces on the kart we required to use AISI4130 (chrome alloy steel) material. It has good mechanical and chemical properties. Our kart is designed to reduce maximum number of welds at joints. So, we made our kart to bend at required positions. We put our maximum efforts to increase the effect and usage of the kart chassis by considering all these parameters. We studied different welding joints which suits for the kart to increase performance and durability of the kart.

This report concentrates on explaining the design and engineering aspects of making a go kart. This report explains objectives, assumptions and calculations made in design of a go kart. The design is chosen such that the Kart is easy to fabricate in every possible aspect. We approached our design by considering all possible alternatives for a system and modeling them in CAD software namely **CATIA**, subjected to analysis using **ANSYS** based on analysis results, the model was modified and a final design was fixed. The design process of a vehicle is based on various engineering aspects depending upon safety and ergonomics, market availability, cost of the component and safe engineering practices. We prepared different designs considering different parameters, but at last we decided to chosen this model as it is matching to all our design challenges. The main challenge that we faced while designing is that to complete the overall kart including fabrication within the low cost as possible.

Keywords: Aerodynamic, AISI4130, Objectives.

I. INTRODUCTION

All content should be written in English and should be in 2 column.

- ◆ Page type will be A4 with normal margin, word spacing should be 1.
- ◆ No space will be added before or after paragraph.
- ◆ This section should be typed in character size 10pt Times New Roman, Justified

II. RESULT & DISCUSSION

The results and discussion may be combined into a common section or obtainable separately. They may also be broken into subsets with short, revealing captions.

Tables:

Table 9. Comparison table for motoring mode

	PI	PID	FUZZY
SPEED(rpm)	1500	1500	1500
Settling time of speed	0.8	1.8	0.4
Speed fluctuations	±20rpm	±10rpm	-
Torque ripples	±6	±0.5	±0.05

III. CONCLUSION

This fragment should obviously state the foremost conclusions of the exploration and give a coherent explanation of their significance and consequence.

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