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Electric Go Kart

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Abstract: *The report aims at discussing the design procedure of the Go-Kart vehicle. The report is an account of application of extensive engineering concepts, production engineering, project management and team work. The report is a submission proof that these ideas have been efficiently and viably converted into a high performance vehicle. With the vision to eliminate the harmful gases in the air caused due to smouldering of fuel and to form a pollution-free environment, we have designed an electric go-kart. This report is aimed at designing and developing a working and more cost effective model of an electric go-kart. The design and fabrication of the go-kart are made simple so that it could be operated even by non-professional drivers. The design is made keeping in mind the high strength of vehicle which can sustain more weight and provide the best facilities at a low cost.*

Keywords: Go kart, Electric Vehicle, High Performance Vehicle, Project Management

I. Introduction

Go cart vehicles are popular among the whole world for adventure and sports . Generally they are made by using gasoline engines which are more noisy and causes pollution. Go cart vehicles are popular among the whole world for adventure and sports . Generally they are made by using gasoline engines which are more noisy and causes pollution.

Electrical vehicles are future of the world. Rather than using gasoline engine our aim is to design and develop Electric Go Cart vehicle by using high torque motors and batteries. It will be a single sitter cart whose chassi will be made from PVC Pipes. The main objective behind this project is to make a ecofriendly and more robust go cart vehicle . It has a simple design and economically affordable are the key features of our cart which has multiple applications like it cab be used for Adventure purpose and Sports

II. Problem Statement

Conventional Go Karts are generally made from gasoline engines that's why they are creating lot of pollution Conventional Go karts are more noisy due to the gasoline engine Efficiency is less in conventional Go karts , More vibrations due to Gasoline Engine and Conventional Go Karts has more complex design

III. Methodology

The design is mainly focused on the following objectives: Safety, Serviceability, Strength, Ruggedness, cost, durable, lightweight, high performance, ergonomics, and aesthetics

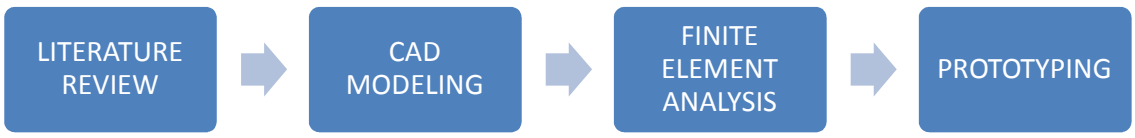

Figure 1: Methodology of Design

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IV. CAD MODEL

Figure 1: CAD model of go kart

First step in methodology is design of vehicle and finite element analysis which is most important part in designing of vehicle proper material selection is important towards performance and safety of vehicle. As we are making an economical design we are focused on the cost of the vehicle .the cost of the vehicle should be less as possible. therefore we use PVC pipes and wood for assembly of vehicle .We had made a model of our vehicle which is shown in figure.

Table 1: Complete Vehicle Specification

Parameters	Specifications
Overall length	1.9069 m
Overall width	1.1938m
Overall Height	0.5 m
Wheelbase	1.1684
Track width	0.9632m
Ground Clearance	0.0632m
Max Speed	12.6 km/hr
Max Acceleration	1.2m/s^2
C.G Height	0.1397 m
Overall Weight	30kg
Steering Ratio	1:1
Weight Distribution	35:65
Motor	18V, 14A
Battery	18V, 7 A

V. MOTOR SPECIFICATION

Motors are most important part of any electrical vehicle. motor performance affects overall performance of any electric vehicle . according to need motor selection should be done carefully .Underrated Motors and Over Rated motors both are not preferable because if the motor is under rated then it cant give desired performance .and if motor is over rated then its maximum power get wasted and vehicle becomes un efficient Now a days DC motors are widely used in electric vehicle sector which are more efficient and long life

Sr No	Parameter	Specification
1	Type	DC
2	Voltage	18V
3	Current	14A

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4	Power	250 W
5	Stall Current	1.11 A

Table 1: Motor Specifications

VI. BATTERY

Lithium ion batteries are most preferred batteries for any electric vehicle because of its high efficiency and power storing capacity. though we are using 18 v motors we require a two 12 v batteries in series to provide enough voltage to the motor

Parameter	Rating
type	Lithium ion
Voltage	12 V
Capacity	7 AH
Weight	10 Kg
Cooling System	Natural cooling
BMS	Integrated

Table 2: Battery Specification

VII. MOTOR SPEED CONTROLLER

Speed control of DC motor is important in Controlling the motor. The main type of the controller which is widely used in Pulse Width Modulation Type controller. This controller works on the basis of pulse width modulation for speed control of DC motor We can control the speed of a motor using an open loop control or closed loop control strategy. The open loop control is the simplest form of motor control; here we simply set the drive voltage value and the motor characteristics and the load determines the operating speed & torque. But you will find that most motor applications require automatic control, where the voltage is varied automatically to produce the desired motion. This is where closed loop or feedback control comes in play. This requires a torque sensor to feed back the output values to continuously compare the actual output to the desired value normally called the set point. The controller then actively changes the motor output to move closer to the set point.

VIII. PROCESS

After selection of Material we can start making a prototype of the Electric Go cart . For this Prototype We need a Proper tools and a well Equiped workshop. Prototype is made under the guidance of instructors prototyping is carried out in following steps

- Step 1 Cut The PVC Pipes and assemble the chassie
- Step 2 Cut the Plywood and attach it to chassie
- Step 3 Attach the wheels to Chassie
- Step 4 Connect the motors to the rear wheels
- Step 5 Attach steering to front Wheels
- Step 6 Connect the battery And controller with Motors
- Step 7 Attach the sit
- Step 8 Test the Go Kart

IX. CONCLUSION

In this way by using easily available material we can make a go kart which is ecofriendly as well as low in cost the material like PVC pipes and Plywood are easily available in market and it is also cheeper in cost. the kart can be used as internal transportation in big resorts ans temples .this kart can be modified into a good looking vehicle by improving body of kart .

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