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Design of Electric Car Using PVC Pipe and Approach

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ABSTRACT:This work which was carried out by a team of final year students of mechanical engineering, is aimed at the design and fabrication of electric cars using PVC pipes. It is a go-kart project that was designed to carry a maximum weight of 50 Kg. Our project fabricates using 70% locally sourced material. This project aims to reduce the usage of the organic fuel-powered vehicle and to Design a vehicle that works efficiently in the emerging electric vehicle sector. This type of vehicle also helps to reduce carbon emissions from a vehicle. Go-kart is a four-wheeled vehicle without suspension and differential. It is a lightweight design for racing. Go-kart has low ground clearance in comparison to Other Vehicles. The objective of the project is cost-effectiveness use of locally source material and creating a go-kart whose speed limit can be varied.

Keyword – Electric Vehicle, Go- Kart, PVC Pipe, Battery Powered, Design

I. INTRODUCTION

Electric vehicle technology has been around since 1800. The electric vehicle was very popular and several EVs vehicle sold until 1918. The benefit of this vehicle is to a reduction of a different form of air pollution because of the generation of energy that is devoid of greenhouse gas emission, reduction of over-dependence of fossil fuel and energy supply diversification, enhancement of eco-development, and as well as the much need of job creation on manufacturing and installations. An electric vehicle can be better, Author Discuss About Improvement Of Chassis system. The Kart Was Designed Using Basic Automobile Principle. It Is Used FEA Technique To Prove Its Effectiveness. The Result Of Analysis Revealed That The Location Of Max Deflection and stress.

[4] As Per Satish Kumar The Research Work Or Design and analysis of an electric Kart By quicker, and more fun to drive than gasoline cars. Today Tesla Company builds not only an electric vehicle but also an infinity scalable clean energy generation and storage product. They use lithium-ion batteries are termed battery electric vehicles (BEV'S). Lithium-ion batteries have the highest charge capacity of any particlebattery formulation in history for the money. Other benefits of electric cars include easy maintain, eco-friendly, low maintenance, cost-effective, less pollution, renewable energy, and enhance safety.

II. LITERATURE REVIEW

[1] As Per Mr. D. Raghunandan The Research Work Design And Analysis Of Go Kart chassis. the designing of Chassis For Go Kart Help In Identify The Strength And Weakness Of The Build And Design. Author Describe The Modification Chassis To Rectify The Weak Points And To Strength It With Slight Modification.

[2] As Per Prabhudatta, Design And Fabrication Of Go Kart Vehicle With Improved Suspension And Dynamics, Bits Pilani K. K. Birla, Goa campus. The Author Discuss About Model Analysis Of the Model And Nothing Down The Limitation Of the Model. They Special Give Attention To Improvement Of Suspension System And Dynamics Over the Last Model. It Also Discusses the New Design Procedure And The Transmission, Suspension, And Steering System Of The New Go Kart Model.

[3]As per Chaitanya Sharma, Work on Design And Fabrication of Environment-friendly kart

Considering Various Factor Like Strength, Durability, And Toughness. The FEAAnalysis Of the Chassis Is Carried Out By ANSYS software.

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III. VARIOUS PART DESIGN SPECIFICATION

WHEEL

A wheel is a circular block of a hard and durable material at whose center has been bored a circular hole through which is placed an axle bearingabout which the wheel rotates when a moment is applied by gravity or torque tothe wheel about its axis, thereby making together one of the six simple machines.we are using a 14" inches bicycle wheel. this wheel is typically designed to fit into the frame and for via dropouts, and hold bicycle tires.

DC MOTOR

A coil of wire with a current running through it generates an electromagneticfield aligned with the center ofthe coil. The direction and magnitude of the magnetic field produced by the coil can be changed with the directionand magnitude of the current flowing through it.We are using an 18V DC Motor With a Speed of 300 RPM and power of 250W.

BATTERY

An electric battery is a device consisting of one or more electrochemical cells with external connections provided to power electrical devices to electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode. We are using a battery of 12V power up to 40Ah rechargeable battery.

BALL-BEARING

A Ball Bearing is a type of Rolling Element Bearing that Uses Balls to Maintain the Separation between the Bearing Races. The Purpose of a Ball Bearing is to Reduce Rotational Friction and Support Radial and Axial Loads. It Achieves this by Using at least three Races to Contain the Balls and Transmit the loads through the balls. In Most Applications, One Race is Stationary and the Other is Attached to the Rotating Assembly.

IV. CAD DESIGN

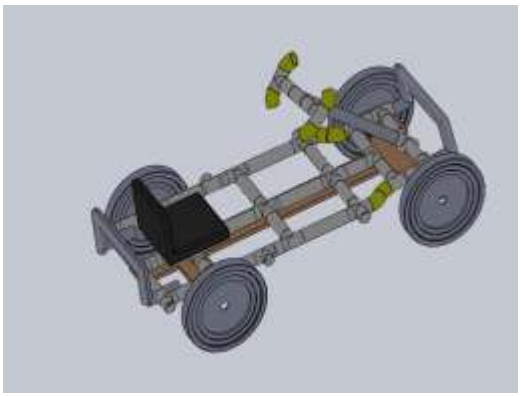

FIG. 3D View of Electric Go-kart

V. WORKING PRINCIPLE

The go-kart Vehicle is an electric vehicle that contains the PVC pipe, wheel, battery, dc motor, ball bearing, etc. the PVC pipe is connected with its joint, elbow, and tees to make a chassis

frame. The whole setup is mounted on a chassis frame made of PVC material. The steering of a vehicle consists of Ackermann's steering mechanism. We have coupled 6201-2RS type ball bearing with rear and front wheel along with steering. Whenever a vehicle is switched on the power will be generated from the battery which will be used to run the dc motor.

VI. CONCLUSION

The team aimed to build a go-kart with minimum cost without compromising the performance of a vehicle. In this paper, our work is carried out by using PVC Pipe. It Carries the low weight and weight of a single person. It is concluded that the vehicle is eco-friendly, non-pollutant, easy to maintain, light in weight & its load-carrying capacity using lightweight material. The aim achieved as a functional portable PVC electric vehicle with ease of assembly was design and fabrication with fifty percent locally sourced materials.

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