

DESIGN AND IMPLEMENTATION OF ELECTRIC GO KART VEICLE

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ABSTRACT

The aim of this project is the fabrication of an electric GO kart vehicle. The main aim of this project is to reduce the usage of organic fuel powered vehicles and to design a vehicle which works efficiently in the emerging electric vehicle sector. Each and every day the prices of petrol and diesel keeps on fluctuating. They increase with higher rate but rarely falls down. This is tremendously depleting the fuel reserves. So basically it is important to design such vehicle that could work on electric energy rather than fuels. Main objective behind designing and fabricating the electric go -kart is to make it available in cheap price, making it simple in working for even nonprofessional drivers, increasing its strength so that it can sustain more weight and providing it with all the best available facilities in lower cost. This project mainly focuses on designing of cheaper electric system compared to other electric go-karts vehicle. The project includes design of ideas, imaginary concept, designing, analysis, teamwork, project management and development, costing and budgeting. The main objective of car is to make that car within a time, without any loss of time.

Keyword – Electric Vehicle, go kart.

1. INTRODUCTION

Electric vehicle technology has been around since the late 1800s. Electric vehicles were very popular and a number of EVs were sold until about 1918. Once the EV technology declined due to gasoline prices falling, but the technology was resumed by General Motors (GM) because of environmental concerns in 1980s. Afterwards, this technology was further improved in mid-90s which was commercialized by GM as EV1 vehicle. During 1990s, other automotive companies were also developing EVs. For example, Toyota developed a pure electric vehicle called RAV4 in 1996. However, with the announcement of development of Prius hybrid vehicle by Toyota in 1997, the focus of electric technology has again declined.

1.1 Components of Go kart vehicle

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 bearing about which the wheel rotates when a moment is applied by gravity or torque to the wheel about its axis, thereby making together one of the six simple machines. When placed vertically under a load-bearing platform or case, the wheel turning on the horizontal axle makes it possible to transport heavy loads; when placed horizontally, the wheel turning on its vertical axle makes it possible to control the spinning motion used to shape materials.

DC MOTOR

A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. The direction and magnitude of the magnetic field produced by the coil can be changed with the direction and magnitude of the current flowing through it.

A simple DC motor has a stationary set of magnets in the stator and an armature with one or more windings of insulated wire wrapped around a soft iron core that concentrates the magnetic field. The windings usually have multiple turns around the core, and in large motors there can be several parallel current paths.



Fig 1: DC Motor

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

BATTERY

An electric battery is a device consisting of one or more electrochemical cells with external connections provided to power electrical devices such as flashlights, smartphones, and 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 battery of 12V power of 26A rechargeable battery.



Fig -2: 12V Rechargeable Battery

CHAIN & SPROCKET

A chain is a serial assembly of connected pieces, called links, typically made of metal, with an overall character similar to that of a rope in that it is flexible and curved in compression but linear, rigid, and load-bearing in tension. A chain may consist of two or more links

A sprocket or sprocket-wheel is a profiled wheel with teeth, or cogs, that mesh with a chain, track or other perforated or indented material. The name 'sprocket' applies generally to any wheel upon which radial projections engage a chain passing over it.

2. WORKING PRINCIPLE :

- The GO Kart vehicle is an electric vehicle which contains the battery, DC motor, shock absorbers, wheel.
- The whole set up is mounted on the chassis frame which is made up of mild steel material.
- The steering geometry of the vehicle consists of Ackermann steering mechanism.
- Also, we have coupled a ball bearing with the rear and front wheel along with steering.
- Whenever the vehicle is switched ON the power will be generated from the battery which will be used to run the dc motor. The motion of dc motor is transmitted to rear wheel using chain and sprocket.
- When personal vehicle (cars, bikes) is not available, use this technology as an urban mobility vehicle, thus eliminating all kinds of pollution.

3. CONCLUSION :

Manufacturing of electric go kart is done successfully, according to planned schedule. According to calculations, it is able to sustain weight and speed achieved around 20-25 kmph. It was successfully built without compromising in its strength or other components quality. The biggest obstacle to the widespread adoption of electric-powered transportation is cost related, as gasoline and the vehicles that run on it are readily available, convenient, and less costly. As is demonstrated in our timeline, we hope that over the course of the next decade technological advancements and policy changes will help ease the transition from traditional fuel-powered vehicles. Additionally, the realization and success of this industry relies heavily on the global population, and it is our hope that through mass marketing and environmental education programs people will feel incentivized and empowered to drive an electric-powered vehicle.

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