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# Wooden Hover board

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**ABSTRACT:** The emission caused by internal combustion vehicle is increasing day to day and also the traffic due to automobiles in urban areas has risen tremendously over the years. Traffic congestion increases the vehicle emissions and decreases the ambient air quality. There can be no immediate solution to this issue but an alternate solution for the conventional personnel transport is Personal Electrical Vehicle. The transition from the conventional to fully electrical vehicles will be a slow process but it is possible. This project is focused on developing a Personal Electrical Vehicle which will be useful for short distance travel. Most people use the vehicle for shorter distance (i.e. 10kms), this Electrical Vehicle will widen the means of travel for such short distances. This will also have a direct impact on the fuel scarcity, which has led to the raise in the fuel prices over the decade.

**KEYWORDS:** Electric Hover Board.

## I. INTRODUCTION

Due to increase in pollution and fuel rates there is need of a vehicle which is eco-friendly as well as cheap. Hover board are the best vehicles for this purpose as they are eco-friendly as well as cheap. The transition from oil to electricity for personal transportation is what every automaker is now seeking, to produce an electrical automobile. It will take many years for more advanced technologies, to result in significant overall reductions in fuel consumption, due to their higher cost and slower development. The move to full electrical vehicles may progress in stages from hybrid electric vehicles (HEVs), to plug-in hybrid electric vehicles (PHEVs), and finally to full electric vehicles. The safety, durability, and performance depend on the batteries. Improper use of a battery can significantly reduce its life and can be dangerous.

## II. LITERATURE SURVEY

The available methods of personal mobility such as electric bicycle, Segway hoverboard, Unicycle etc. A.Dinesh Kumar (2017) [1]. The design and fabrication of wooden hoverboard wheeler. The Self balancing two wheeler is based on the principle of Segway. Reilly R., and Andrie (2016) [2].

Factors Influencing- It describes the way to balance a hoverboard using a small supporting wheels an eco-friendly mode of transport which causes zero pollution. Cervero, R. Walk-and-Ride (2001) [3]. This project was implemented with an idea to find an effective solution to the transportation problem. The main objective is to achieve space utilization and minimize the fuel consumption especially for short distances. It focuses on parts that can be minimized so that weight can be minimized. Koopman, John, (2002) [4].

## III. METHOD USED TO DESIGN THIS PROJECT

**Electric Chassis & Material Properties-** Chassis is made up of aluminum section and four aluminum bars is used to make the frame. To make the chassis to balanced, four aluminum bars of equal weight are used. It is engaged firmly with the help of aluminum welding. Aluminum welding is used to connect all the bars. Wheels are attached to the middle of frame in order to withstand the load capacity. Handle is also made up of same aluminum material to which DPDT switch is fixed.

Motor is fixing with the chassis through screwed bolt and it is the main source of power with is to drive the vehicle. There are two motors, each for one wheel. Each motor is driven by a separate 12v battery.

### Motor Specification



- DC gear motor (Wheel chair motor).
- Voltage- 12V.
- Current- 2-5 Amp.
- Gear ratio- 1:50
- Power- 150Watt
- Motor RPM- 100-3200 RPM

DC Gear Motor Battery: Battery is a main power source. Two 12V DC batteries are used in Mechanical Electric. Each battery connected with each motor. Battery supplies power to each motor to run the wheels. Battery is rechargeable in both ways electric socket and solar plates.

#### **Battery**



- Voltage range- 12V-24V DC
- Current – 2-5Amp.
- Battery weights- 1.9kg

#### **Double Pole Double Throw (DPDT) switch**



It is used to guide the direction of rotation of motor shaft. By operating the switch the direction of vehicle can be controlled. Connecting wires are used to connect switch with motor.

DPDT Switch Specifications:

- Circuit- DPDT
- Switch Function- On-off-on
- Actuator type- concave (curved)

**Tyre**



In Mechanical Electric two tyres is used in both the sides. Scooter wheels are used in Electric reason behind that cost is less, easily available and friction property is also less. Also higher amount of weight gaining capacity and movements is also very smooth.

Tyre Specifications:

- Wheel diameter- 250mm
- Material- Combination of rubber and leather.
- Casing material – combination of fiber and plastic.

#### **IV. RESULT AND DISCUSSION**

When testing the vehicle for the first time the controller gains were significantly lower as a precaution. This test was mainly performed to see that the system functioned as intended, spinning the wheels in the right and left direction etc. after this was confirmed the first riding test was conducted, and already with this controller the vehicle was drivable. The control strategy with the remaining error serving as a source for speed turned out to be a success and speed control by using DPDT switch forward and backward worked well.

#### **V. CONCLUSION**

Basically, this investigation has successfully achieved the objective with the acceptable outcome. The main goal of this project was to build a functional two wheels and two supporting wheels transporter and this goal has been fulfilled. The overall functionality and performance of the vehicle has been evaluated thoroughly by a number of test drives. The vehicle has been tested by a number of different weights. This project is implementing with an idea to find an effective solution to transportation problem.

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