



# Design of Electric Bike

M.Raghavendra, T.Raja Sekhar Reddy, A Harsha Vardhan, G.K.P.Sai Kumar, K.Ravi Teja

Department of Automobile Engineering, Godavari Institute of Engineering and Technology(A), JNTUK, Kakinada.

## To Cite this Article

M.Raghavendra, T.Raja Sekhar Reddy, A Harsha Vardhan, G.K.P.Sai Kumar and K.Ravi Teja. Design of Electric Bike. International Journal for Modern Trends in Science and Technology 2022, 8(S06), pp. 89-92. <https://doi.org/10.46501/IJMTST08S0618>

## Article Info

Received: 26 April 2022; Accepted: 24 May 2022; Published: 30 May 2022.

## ABSTRACT

*various varieties in size, speed, shape, and so forth. Later on there won't be Gasoline motors on account of shortage of accessibility. The conservativeness in driving is likewise troublesome contrasted and the Electrical Vehicles. In this manner, the people groups are keen on Electrical Vehicles with appraised Speeds and Size. The Motto of this task is to assemble a 'ELECTRIC BIKE' works really, requires less support, having more life and furthermore with low price contrasted with some other item on the lookout. The title of this Project is to Electric Bike'. It contains initial one is planning the bike and the subsequent one is manufacturing the vital parts. At first planning of the normal perspective on Bike is finished. Then, at that point, the assortment of the parts and been worked. After fulfillment of the work, investigation is finished by test driving it and had prevailed with regards to accomplishing the aphorism of the undertaking In the market of Electric Vehicles, there are enormous number of models of*

*Keywords: Electric Bike, Battery Electric Vehicle (BEV), Catia.*

## 1. INTRODUCTION

In India, bike assumes an indispensable part in satisfying individual transportation particularly in metropolitan regions because of their moving and moderateness. They contribute almost two-third of the vehicle populace in India. The high fuel utilization and emanation commitment of bike in metropolitan regions needs to get more consideration to further develop the close term manageability of energy and metropolitan air quality later on. Hence, the execution of module crossover innovation for bike will bring about decrease of ozone harming substance outflow and petrol oil in-reliance generally. The module idea is carried out in specific idea vehicle and bike in the market in a restricted way.

### 1.1 Battery Electric Vehicle (BEV)

A Battery electric vehicle (BEV) is a kind of electric vehicle (EV) that utilizes compound energy put away in battery-powered battery packs. BEVs utilize electric

engines and engine regulators rather than gas powered motors (ICEs) for impetus.

Electric vehicles get all its power from its battery packs and have no gas powered motor, energy component or gas tank. BEVs incorporate bikes, rail vehicles, forklifts, transports, trucks and vehicles.

Starting from the presentation of the all-electric Nissan Leaf in December 2010, north of 6,00000 interstate legitimate module electric vehicles have been sold overall by September 2014, of which more than 3,56,000 are all-electric traveler vehicles and light-obligation trucks. The top of the line all-electric vehicle ever, the Nissan Leaf, has sold north of 150,000 units overall by November 2014. Vehicles utilizing both electric engines and gas powered motors are instances of 'Half breed Electric Vehicles' and are not viewed as unadulterated or all-electric vehicles since they can't be remotely charged (work in control supporting mode) and on second

thought they are persistently re-energized with power from the gas powered motor and regenerative slowing down. Half breed vehicles with batteries that can be charged remotely to dislodge some, or all their gas powered motor power and gas fuel are called 'Module Hybrid Electric Vehicles' (PHEV) and run as BEVs during their charge-exhausting mode. PHEVs with a series power train are additionally called 'Reach Extended Electric Vehicles' (REEVs), like the Chevrolet Volt and Frisker Karma. Module electric vehicles (PEVs) are a subcategory of electric vehicles that incorporates battery electric vehicles (BEVs), module mixture vehicles, (PHEVs), and electric vehicle changes of half breed electric vehicles and ordinary gas powered motor vehicles. In China, module electric vehicles, along with crossover electric vehicles are called New Energy Vehicles (NEVs). In any case, in the United States, Neighborhood Electric Vehicles (NEVs) are battery electric vehicles that are legitimately restricted to streets with posted speed restricts no higher than 45 miles each hour (72 km/h), are typically worked to have a maximum velocity of 30 miles each hour (48 km/h), and have a greatest stacked load of 3,000 lbs.

## 1.2. HISTORY OF ELECTRIC VEHICLES

Electric vehicles first appeared in the mid-19th century. An electric vehicle held the vehicular land speed record until around 1900. The high cost, low top speed, and short range of battery electric vehicles, compared to later internal combustion engine vehicles, led to a worldwide decline in their use; although electric vehicles have continued to be used in the form of electric trains and another niche uses.

## 2. DESIGN OF ELECTRIC BIKE:

### 2.1 Rough Sketches:

Initially rough sketches were prepared and a model is finalized which is as shown in the fig

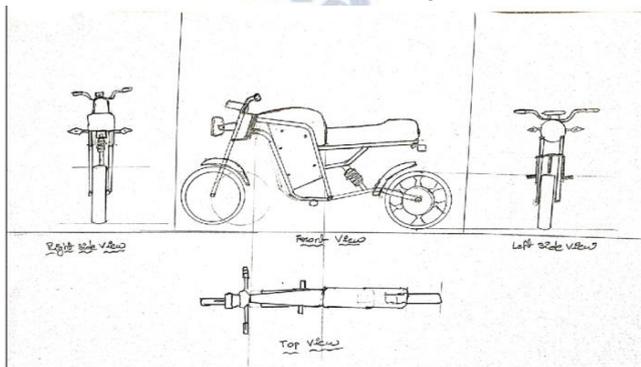


Figure 1. Rough Sketches of Electric Bike

### Dimensions:

Height: 1200mm  
 Width: 750mm  
 Length: 1950mm  
 Wheel Base: 1260mm  
 Ground Clearance: 250mm

### Suspension:

Front: Leading link with coil springs  
 Rear: Spring loaded Hydraulic shock absorber (Mono tube)

### Tyres:

Front: 2.75 R18 INCH  
 Rear: 2.75 R18 INCH

### Brakes:

Front: Drum type internal expanding brakes (130mm)  
 Rear: Disc Brake

### Signal lights:

Left: Handle bar signal lights - Capacity 12v  
 Right: Handle bar signal lights - Capacity 12v

### Horn:

Auto-fit Horn 12 v

### Mudguards:

Front: TVS XL50 (customized)  
 Back: TVS XL50 (customized)

### GI sheet:

Thickness: 2mm

### T-Fork, Handle bar:

Taken from Yamaha CruX

### Batteries:

12v 14A Lead acid battery

### Hub Motor:

Capacity: 48v 1000 watts

R.P.M: 600

Mileage: 20km

Charging time: 5 Hours

Load Capacity: 300kg

### Frame Structure:

MS Round Pipes

MS Flat Bars (3/4inch, 1 inch)

DC Controller,

Throttle,

Charge-In,

Electric cables

### 3. ELECTRIC DRIVE:

The absence of electronic control innovation restricted the speed so electric vehicles to 60milesperhour. Alongside a poor re-energizing foundation, the accommodation of gas controlled vehicles incited vehicle proprietors to forsake the electric vehicle. Notwithstanding, mechanical advances, for example, the brushless DC engine (BLDC Motor) have made the energy proficient cars more feasible. The parts of electric drive are Hub Motor, Motor Controller, Battery

### 4. CAD DESIGNS:

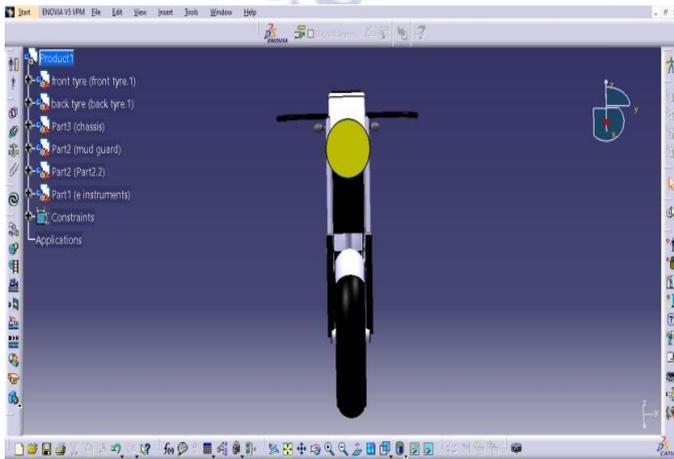


Figure 2. left Side View

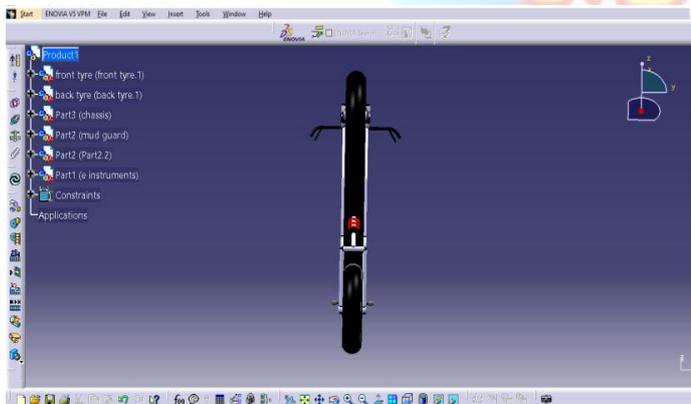


Figure 3. Bottom View

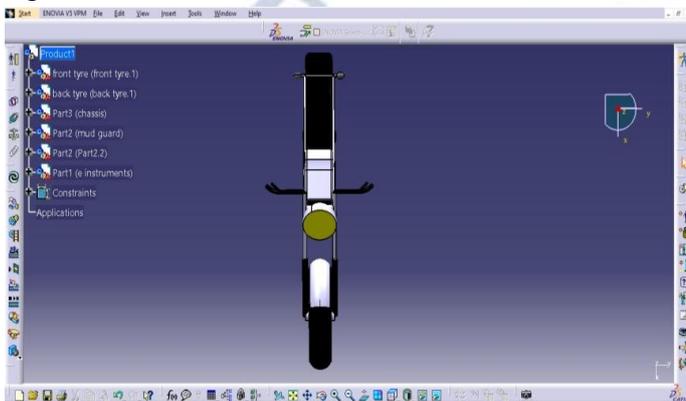


Figure 4. Top View

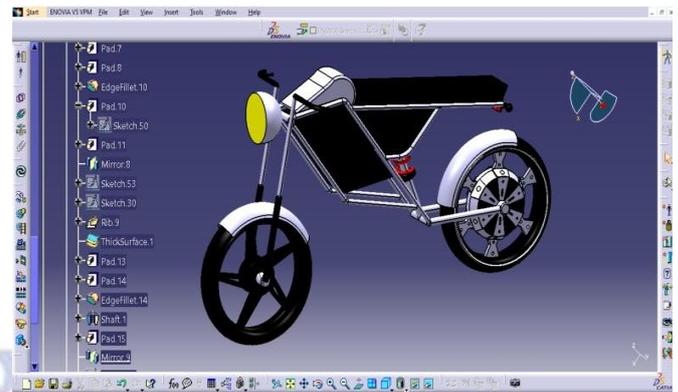


Figure 5. Isometric View

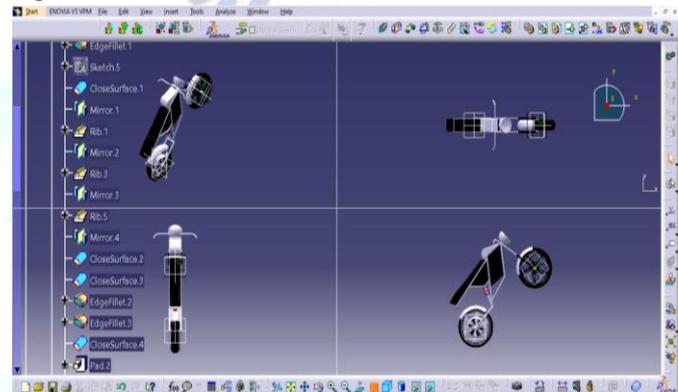


Figure6. Multi View

### 5. RESULT AND DISCUSSION:

Hence, the Complete Product is obtained after doing all the above processes. The following are the different views of the project arranged in a Gallery.

A battery electric vehicle (BEV), pure electric vehicle, only-electric vehicle, fully electric vehicle or all-electric vehicle is a type of Electric Vehicle(EV) that exclusively uses chemical energy stored in rechargeable battery packs.

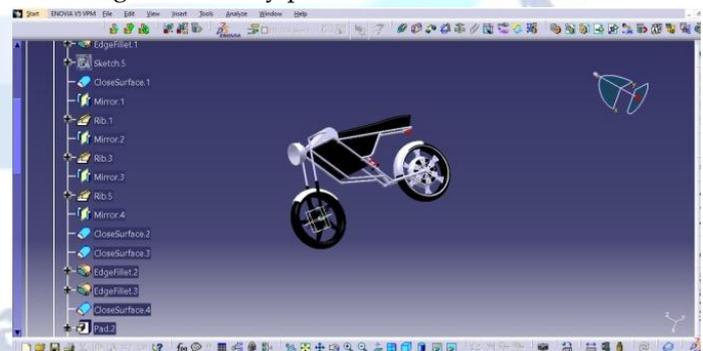


Figure 7. complete view of project

### Conflict of interest statement

Authors declare that they do not have any conflict of interest.

### REFERENCES

- [1] Electric Motors and Drives, Author: Austin Hughes and bell Drury
- [2] Practical Electric Motor Hand Book Author: Irving M Gottlieb

- [3] Manufacturing Technology Author: R.K. RAJPUT  
Articles:
- [4] India's Electric Vehicle, THE HINDU
- [5] Car and Bike, AN NDTV venture
- [6] Electric Vehicles in India, AN NDTV Venture
- [7] Two-wheelers, not cars, a better bet to meet India's Electric Vehicle goal, businessstandard.com
- [8] In the two-wheeler sharing market, Electric Scooters are getting hot,  
m.timesofindia.com
- Websites:
- [9] MOVEO scooter  
<http://www.moveoscooter.com/en/index.html>
- [10] UJET scooter  
<https://ujet.com/?lang=en>
- [11] Electric vehicle  
[https://en.m.wikipedia.org/wiki/Electric\\_vehicle](https://en.m.wikipedia.org/wiki/Electric_vehicle)
- [12] Hub motor  
[https://en.m.wikipedia.org/wiki/Wheel\\_hub\\_motor](https://en.m.wikipedia.org/wiki/Wheel_hub_motor)
- [13] Battery  
[https://en.m.wikipedia.org/wiki/Electric\\_battery](https://en.m.wikipedia.org/wiki/Electric_battery)
- [14] Suspension  
[https://en.m.wikipedia.org/wiki/Suspension\\_\(motorcycle\)](https://en.m.wikipedia.org/wiki/Suspension_(motorcycle))
- [15] Bajaj sunny  
[https://en.m.wikipedia.org/wiki/Bajaj\\_Sunny](https://en.m.wikipedia.org/wiki/Bajaj_Sunny)
- [16] Tyres  
<https://www.amazon.com/SET-TWO-Electric-Scooters-Bikes/dp/B01D5AR2O8>

