International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 05 | May 2022 www.irjet.net p-ISSN: 2395-0072

# Electrical bicycle using lead acid battery.

**Mr.P.K.Vinkare[1], Sawant Rajesh[2], Kale Anuj[3] ,Natkar Ganesh[4] , Rankhamb Adinath[5]**

*[1] Prof , Government Polytechnic , Nanded Maharashtra - 431602*
*[2,3,4,5] Students, Government Polytechnic , Nanded Maharashtra - 431602*

---

**Abstract -** The electrical bicycle is a tool which use to transport the goods as well as people. the electrical bicycle made up various equipment like batteries, controller and Breaks and throttle and motor.

The Controller is a heart of the electrical bicycle. All the process of electrical bicycle is done throughout the Controller. controller works on 24 V DC supply. Second important part of electric bicycle is motor. The motor also work on 24 V DC supply.

The rating of Motor is follows:-

1) Voltage rating :- 24 V DC.
2) Speed 360 RPM.

The electrical bicycle is very useful for those peoples who can not by a bike . It is vey easy to handle or ride.

## 1. INTRODUCTION

The evolution of electrical vehicles is growing more and more as the days go by. New tech-nological breakthroughs allied with growing concerns with the environment and physical health had led to huge developments around this concept.Electric motor vehicles are a concept to take into account in the present and even more in the future, as they can open new possibilities or even replace the possibilities given nowadays by the common internal combustion engines. It can provide assis-tance to the rider through tough climbs, to help rapidly achieve higher speeds or just to let the rider rest along the way, allowing him to do longer and tougher routes with less effort. This concept can reveal to be also very beneficial to people with locomotion difficulties, as it can transform and upgrade a common bicycle or similar vehicle to meet people's needs, helping them on transportation and increasing its mobility.A foldable electrically assisted power cycle has many advantages, it doesn't pollute the environment, it's good for the health, allowing to exercise and to manage the effort with the amount of power produced by the motor. In a metropolis environment it represents great mobility, it can be folded up and carry it into public transportation to get near the destiny. Or otherwise, to ride it to the destiny, with the electrical motor assisting through the route. As a bicycle, it is very advantageous in traffic jams, as it allows topass by stopped traffic and reach the destiny possibly even faster than in a car or public transportation. It presents a very small ecological footprint, specially comparing with cars, once that they are less or virtually non-pollutant. Another feature that increases this variation are the considerable different occupation rates. Cars usually present occupation rates around 1 and 2 persons, representing 20 to 40 percent of its total capacity while bicycles employ all its capacity rate, increasing efficiency and reducing the footprint.

One usual problem associated with the use of bicycles in big cities are the robbery's, leaving the bike chained in the outside it's always a risk, even the best locker can be overcome. With a folding bicycle, this problem doesn't exist anymore as it can just be folded and taken inside with the rider, ensuring its safety. Comparing with a moped or motorcycle, it's cheaper to buy in most of the cases and cheaper to maintain. You don't need any kind of documentation or requirements to apply and they have very similar mobility characteristics through traffic and in a metropolis environment in general.

**Keywords :- Electrical , Bicycle , Controller, BLDC motor , Throttle .**

## 2. Objectives of electric bicycle:-

1) Electric bikes provide you with greater freedom in terms of mobility and riding experience.

2) You can ride longer, faster, and further with the battery and charging infrastructure.

3) The best part about riding battery bikes is that you can easily cut the traffic and highly congested roads usually found in the country.

## 3. Literature survey :-

1) Shreya,Deve Life cycle assessment of transportation option for communicatores.

2) Informathine in batteries.

3) E- Bikes rules china's urbon streets.

4) Electric bicycle:- The. green innovative gaining traction a in World export market.

5) Electric bikes Now . constitutes 10 percent of german market.

6) Association of electric cycle tredars : Guide to e- bikes retrieved may - 2020.

7) Electric bicycle.

8) Electric drives for electric bicycle.

9) Power assisted bicycle.

10) Queensland government : bicycle road rules and safety.

11) Article on Speed pedeles in Norway.

12) The fastest Electric bicycles Lintage electric bikes.

13) Electric Cargo bikes guide .

14) Womens dramastic 280- Pound weight loss.

## 4.COMPONENTS :-

List of the components

1) Controller 24 V DC.

2) BLDC Motor 360 RPM

3) Battery 24 V DC.

4) Throttle.

5) Break.

### 1) Controller :-

Controller is used to controller all the working process of electric bicycle . such as Motor, Throttle , break and all the equipment used in this project. The all the process of Electrical bicycle is completed throughout the the controller.

Specifications of controller -

The controller works on 24 V Dc supply.

### 2) BLDC Moter :-

- BLDC means Brush less dc motor.

The motor is used to rotate the wheels of bicycle of running of bicycle. It is operate on 24 V DC supply.
Specifications of Motor :-
Voltage required :- 24 V DC.
Wattage :- 250 watt.
Speed of motor :- 360 RPM.

### 3) Battery :-

-The battery is used to supply electric power for the Circuit. Battery provide 24 V DC supply for all working of electrical bicycle.

Two 12 V Batteries are connected in series.
Specifications of battery :-
Bettery type :- Lead acid.
Voltage rating of battery :- 24 V DC
Ampere rating of battery :- 12 Ah.

### 4) Electric Throttle :-

The electrical throttle works on hall effect. when we rotate the throttle then the hall effect is work and bicycle is run.

### 5) Electric break :-

The electric break is works on the magnetic sensor .when we press the break the magnetic sensor sense the breaing action and Break is applied.

## 5. Circuit Diagram of electric bicycle:-

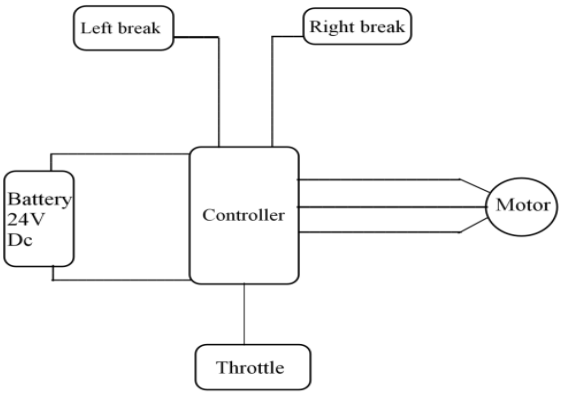


Fig:- Circuit diagram of Electric bicycle.

## 6. Working of Electric bicycle :-

When we can switch on the supply, means we can turn ON the key switch then the battery supplies the power which is required for wrking of electric bicycle.

So when qe turn on the switch then battery supplies power and controller control all the Circuit . Controller is a heart of the electric bicycle means all the process of electric bicycle is complete throughout the main part that is controller.

There for when we apply voltage to circuit the controller works and then we can accelerate the throttle then the motor can rotates its rated speed. The throttle is works on hall sensors, when we accelerate it the sensors sense and rotate the motor.

Motor ratates the wheel and the electric bicycle is run.

When if we won't to stop the bicycle , we can just press the break and then finally the bicycle is stop.

### 7. Advantages of electric bicycle:-

1) Improve physical health.

2) Easier to ride .

3) Pedal assist gives riders a boosts .

4) Better mental health.

5 ) Faster and safe .

### 8. Flow Diagram of Electric bicycle:-

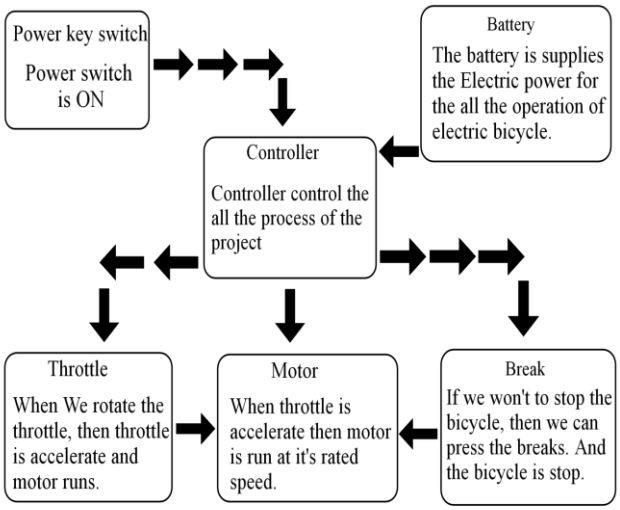


Figure:- Flow diagram of electric bicycle.

### 9. Actual Photo of electric Bicycle:-

### 10. Result :-

From the working of electric bicycle the result found in front of the Me and group members is the electric bicycle is the best choise of my group. We can create an electric bicycle . the electric bicycle the good transportation equipment.

### 11. Conclusion

Over-standard electric bike provides an low-cost and convenient form of private mobility and is thus an attractive alternative to public transit or regular bicycling. 70% users had switched from public transport and bicycle.

### 12. REFERENCES

1) Shreya , Deve . Life cycle assessment of transportation option for communicatores.

2) Informathine in batteries.

3) E- Bikes rules china's urbon streets.

4) Electric bicycle:- The. green innovative gaining traction a in World export market.

5) Electric bikes Now . constitutes 10 percent of german market.

6) Association of electric cycle tredars : Guide to e- bikes retrieved may - 2020.

7) Electric bicycle.

8) Electric drives for electric bicycle.

9) Power assisted bicycle.

10) Queensland government : bicycle road rules and safety.
11) Article on Speed pedeles in Norway.

12) The fastest Electric bicycles Lintage electric bikes.

13) Electric Cargo bikes guide .

14) Womens dramastic 280- Pound weight loss.