

## UNIVERSAL OPERATED BICYCLE

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**ABSTRACT:** Now days electric bicycle are becoming famous in the market. In the United States, electric bicycle is currently used most shortly for common trip's to grocery stores or for leisurely ride. This innovation of electric bicycle is most advantages to use than that of diesel or petrol i.e., fuel operates bike. Sustainable and personal mobility solutions for our world environment have traditionally revolved around the utilization of bicycles or provision of pedestrian facilities. A universally operated bicycles offer a cleaner various travel short -to- moderate distance instead of fuel operated vehicles automotive. From conventional automobile for transport we experience problems like traffic congestion, parking difficulties and pollution from fossil fuel operated vehicles. It appears that only pedal power has not been sufficient to supplant the usage of petrol and diesel automotive to date, and therefore it is necessary to reduce the use of fuel operated vehicles. The universally operated bicycle is a totally a new invention which operates on the battery system as well as on solar system where solar system is an optional supply to input. This universally operated bicycle is less costly and very easy to use with new operating technologies and special health care technology for driver can be used as a future scope. This paper represents the results from a year-long study into electric bicycle effectively

### INTRODUCTION

In this project, we are using universal motor, batteries, solar panel, DC controller as main components. In this system the bicycle has 2 main power supplies for operation and 1 optional power supply as future scope. The batteries will be charged by electricity as well as by solar panel which is mounted on the carry of bicycle and universal motor is connected to the batteries through the DC controller. We can run the bike at required speed with the help of accelerator while speed. This is the complete plan of working of this new invention namely Universally Operated Bicycle. The future model will look like as shown in the diagram below.

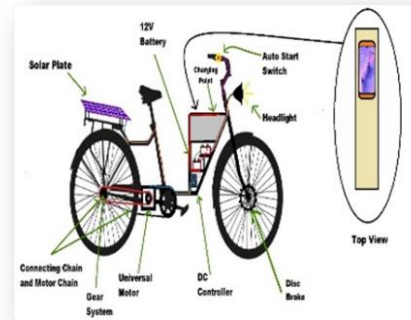


Fig-1 UNIVERSAL MOTOR OPERATED BICYCLE

Will be controlled electrically through DC controller and mechanically through disc brake system. We can also charge our phone in this system as a charging port will be available in this system, while a headlight will be also available to

### 1.1 METHODOLOGY AND PLAN OF WORK

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We can run the bike at required speed with the help of accelerator while speed will be controlled electrically through DC controller and mechanically through disc brake system.

We can also charge our phone in this system as a charging port will be available in this system, while a headlight will be also available to the bicycle.

### LITERATURE SURVEY

(PHILIPPE VIAROUGE-2004) [550] clarified that Universal motor structures used in frictional power

application. Usually have two stator poles & a rotor with 6,12 or 15 slots [1]. The field winding on the stator side is realized with two coils wound around the stator teeth [1]-[3]. The armature winding is usually a lap winding with interlocked coils. The axial length of the stator end winding is also generally more important than the axial active length of the air gap of the magnetic circuit. {fig 9} (2)

(JIYONG LEE-2016) [442] clarified that to reduce the time needed for the analysis only the torque ripple under loading condition to evaluate the cogging torque. (5)

(O. TRESKASES-2003) [16] clarified that the efficiency of the e-bike is unquestionably superior to the automobile; a simple calculation shows that a typical e-bike requires 50 times less energy per km than a standard car. In addition, as solar panel technology becomes more affordable, the net amount of energy required on e-bike can be reduced. For e.g. roof mounted solar panels could be used to charge spare batteries during the workday. (8)]

(ANNETTE MUETZE & YING C. TAN-2007) [18] clarified that with electrical bicycles rated at the maximum power allowed by federal law of 750w, the speed is 8%. It is important to note that unless riding on hilly terrain, city rides usually need high torque only for short periods of time. Therefore, motors designed for city rides can have rated power below the federal law provisions (3)

(N. PAVANKUMAR REDDY-2017) [2285] clarified that Function of controller: - The electrical system comprises of battery of battery, motor, wires, rubber insulation & controller. Controller is a device used to govern the speed of a motor used for connecting many electrical components. Monitors the amount of voltage required for the motor it governs the speed with the amount of throttle given to it. The supply to head light is given through it. (1)

(SAMADHAN S. AVHAD-2017) [16] clarified that Acceleration requirements: the external forces acting on the bicycle include drag due to the wind, the rolling resistance of the tires & the batteries, we neglected the drag forces acting in the system, and focused more on energy relationships, specifically the transfer of electrical energy into kinetic & potential energy. (7).

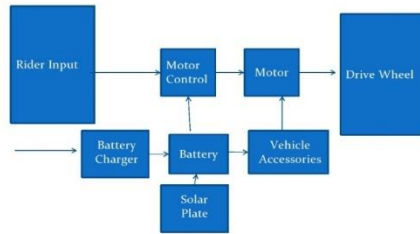
SR.NO	EQUIPMENT	SPECIFICATION/AREA OF USAGE
1	Universal Motor	Powerinst 50-150watt Spring Charging Universal Motor 24-220 Ac/Dc, 50hz, 30000 Rpm, 0.4nm/ Between The Paddle Wheel And Rare Wheel
2	Batteries	(12+12=24volt 42ah-Ups Solar Power Safe Sealed Battery)/ Mounted In The Box Made By Acrylic Sheet In Front Gap
3	Solar Panel	(260 Watt) 24v[8.88a]
4	Dc Controller	(250watt)/ Mounted In The Box Made By Acrylic Sheet In Front Gap
5	Self Start Switch, Accelerator Or Head Light	( )/ Mounted On The Steering Of Bicycle

(YASHVANT SHARMA-2018) [613] clarified that POWER ON DEMAND: Some e-bike have an electric motor that operates on a power - on -demand basis only. In this case, the electric motor is engaged and operated manually using a throttle, which is usually on the hand grip just like the once on a motor bike or scooter. These sorts of ebikes often, but not always, have more powerful motors than pedelless do. With thw power on demand only e-bikes the rider can:

Ride by pedal power alone ie. Fully human powered

Ride by electric motor alone by operating the throttle manually.

**BLOCK DIAGRAM**

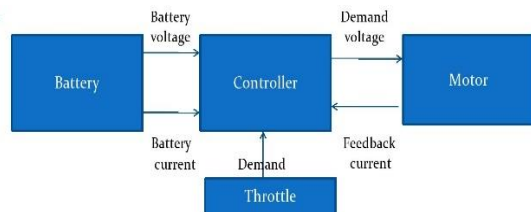


**Fig2.2.1: -Block Diagram of Universal Motor Operated Bicycle**

Sunikshitakatoch, Rahulkumarbindal (2019[966]) clarified that electric bikes are progressively regular in china however are moderately uncommon in the unites states. Pollution with modern technology innovation, transportation & communication have undergone a pattern shif

(RUPESH H PATIL-2019) [2650] clarified that Global warming is a major concern all around and to save mother nature, there are several policies, promises and pledges with the ever increases emission of greenhouse gases, there is an increasing fear of

The most necessary requirements of an electric vehicle are reduced design efforts, lower cost, less depreciation & optimization of the size and weight needed by the tractiondrive system.



**Fig:-2.2.2 SIMPLE BLOCK DIAGRAM**

The meeting uncovered a few conceivable statics markets for e-bicycles that could extend the bicycling populace: ladies, more established grown -ups, and individuals with physical impediments(9

**3. PROPOSED METHODOLOGY**

In this project, we are using universal motor, batteries, solar panel, DC controller as main components. In this system, the bicycle has 2 main power supplies for operation and 1 optional power supply as future scope. The batteries will be charged by electricity as well as by solar panel which is mounted on the carry of bicycle and universal motor is connected to the batteries through the DC controller. we can run the bike at required speed with the help of accelerator while speed will be controlled electrically through DC controller and

mechanically through disc brake system. We can also charge our phone in this system as a charging port will be available in this system, while a headlight will be also available to the bicycle. This is the complete plan of working of this new invention namely Universally Operated Bicycle. The future model will look like as shown in the future model diagram below

**Objective**

1. The main objective of this project is, we are inventing a fuel free, pollution free, and daily maintenance free electric bicycle in minimum cost than any electric bicycle.
2. The main aim of the invention is, we can operate this universally operated bicycle easily and anywhere without any license.
3. This invention is going to be a very huge invention in future of ELECTRICAL PROJECTS of the world.

**5. ADVANTAGES**

1. The Universally Operated Bicycle is much advantageous than any other type of electric bicycle as given below.
2. This system has very high starting starting torque i.e., Speed. This system is less time consuming than any other electrical bicycle
3. This is economical as compared to any other fuel powered vehicle.
4. It can be used by kids as well as old person easily
5. It is small in size due to which the parking problem does not occur.
6. As it does not consume fuel it cannot spread the air pollution as well as noise pollution. It can also be used in traffic as well as in park and collage campuses also

**6. DISADVANTAGE**

1. Regular maintenance is required.
2. Capital cost is quite high

**7. APPLICATION**

With the help of Universally Operated Bicycle which is used for a ride of single person, we can replace our vehicle with it. We can use drill operated bicycle in the parks as well as footpath.

1. This is also can be used to go office, as well as for any other work.
2. This is a totally pollution free bicycle
3. Less maintenance required
4. No fuel required Easy to operate to anyone

**Prafulla.P.Desale**

Completed BE in electrical engineering and M.Tech in Power system. having 6 years of Teaching experience

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