Ecofriendly Motorised Solar Bycycle

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Abstract **- The main objective of the project is to use outgoing solar energy as a source to run a two wheeled motor bike. This project aims to create a pollution free solar powered vehicle. The main aim of this project is to make a hardware model of Solar Electric Vehicle, with an intention to reduce total carbon emission created by fossil fuel vehicles. We have tried our best to make the vehicle the symbol of greener surroundings. This project is a way of using the outgoing power and producing from solar panel. This project consists of a rechargeable battery pack which powers a light weighted motor unit over the wheel. The solar electric bicycle approach is different. To overcome the problem and the weakness, this project need to do some research and studying to develop better technology. The main aim of this project is to make a hardware model of Electric Vehicle, with an intention to reduce total carbon emission created by fossil fuel vehicles. We have tried our best to make the vehicle the symbol of greener surroundings. It also aims to showcase This vehicle enhances in rapid growing steps towards a green future. The electric vehicle uses Batteries, Motor, Controller, Speed Control Unit, Battery Charger Unit and throttle. To make it success there are several thing that we need to know such as what will be the prime mover, how to store it and the advantages of this new vehicle.**

I.INTRODUCTION

Since the fuel prices are increasing day by day not only in India but also throughout the world, hence, there is a tremendous need to search for an alternative to conserve these natural resources. Thus, a solar bicycle is an electric vehicle that provides an alternative by harnessing solar energy to charge the battery and thus provide required voltage to run the motor. Since India is blessed with nine months of sunny climate thus concept of solar bicycle is very friendly in India. Hybrid bicycle combines the use of solar energy as well as the dynamo that runs through pedal to charge the battery to run the bicycle. Thus, solar hybrid bicycle can become a very vital alternative to the fuelled automobile, hence, its manufacturing is essential.

Again the pollution due to vehicles in metro cities & urban areas is increasing continuously. To overcome these problems, an effort is being made to search some other alternative sources of energy for the vehicles. Again, it is also not affordable to purchase vehicles (mopeds, scooters or motorcycles) for all the class of society. Keeping this in mind, a search for some way to cater these economically poor people as well as to provide a solution for the environmental pollution was in progress. The solar assisted bicycle developed is driven by DC motor fitted in front or rear axle housing & operated by solar energy. The solar panels mounted on the carriage will charge the battery & which in turn drive the hub motor. When the bicycle is idle, the solar panel will charge the battery. This arrangement will replace the petrol engine, the gear box & the fuel tank in case of a two-wheeler or a chain sprocket, chain & gear shifting arrangement of a conventional bicycle being used by most common man. As a part of dissertation work, the solar assisted bicycle is fitted with a dc hub motor on front axle of a bicycle with power rating of 250W and with a travelling speed of around 25-30 kmph. It is provided with a pair of lead acid batteries of 35 Ah each, a photovoltaic solar panel with capacity of 20 watt, a voltage regulator of 24v 10 Amp, accelerator and motor controller of 24v 25Amp. There is also a provision for charging of the battery with 220-240V, AC wall outlet supply, in case of poor solar supply due to cloudy weather.

II. LITRETURE SURVEY

Battery powered electric bikes are replacing the heavily polluting internal combustion engines nowadays, provided zero emission transportation in many parts of the world. Tremendous economic growth resulting in increased authorization and spatial

expansion of cities are becoming longer and more difficult to make. As a result our electric powered two wheelers tend to be more efficient and produce less air pollution per km than any other modes, hence it will increase mobility and accessibility to opportunities due to increase in speed and range. Battery powered vehicles are nowadays replacing heavily polluting bikes with 4 stroke engine, provide zero emission transportation just because of time required to charge batteries and lack of charging infrastructure it is not accepted by many people till date. Sustainable and practical personal mobility solutions for cities environments have traditionally revolved around the use of bicycles, or provision of pedestrian facilities. However, many cities also experience traffic congestion, parking difficulties and pollution from fossil-fueled vehicles. It appears that pedal power alone has not been sufficient to supplant the use of petrol and diesel vehicles to date, and therefore it is opportune to investigate both the reasons behind the continual use of environmentally unfriendly transport and consider potential solutions.

The main objective of the project is to use outgoing solar energy as a source to run a two wheeled motor bike. This project aims to create a pollution free solar powered vehicle. The main aim of this project is to make a hardware model of Solar Electric Vehicle, with an intention to reduce total carbon emission created by fossil fuel vehicles. We have tried our best to make the vehicle the symbol of greener surroundings. This project is a way of using the outgoing power and producing from solar panel. This project consists of a rechargeable battery pack which powers a light weighted motor unit over the wheel. The solar electric bicycle approach is different. To overcome the problem and the weakness, this project need to do some research and studying to develop better technology. . The main aim of this project is to make a hardware model of Electric Vehicle, with an intention to reduce total carbon emission created by fossil fuel vehicles. We have tried our best to make the vehicle the symbol of greener surroundings. It also aims to showcase This vehicle enhances in rapid growing steps towards a green future. The electric vehicle uses Batteries, Motor, Controller, Speed Control Unit, Battery Charger Unit and throttle. To make it success there are several thing that we need to know such as what will be the prime mover, how to store it and the advantages of this new vehicle.

III. COMPONENT DESCREPTION

This the different components use in this project as given below

1. BYCYCLE
2. DC MOTOR
3. SOLAR PANNEL
4. DC DRY BATTERY
5. CHAIN SPROCKET

1) BYCYCLE

A **bicycle**, also called a **bike** or **cycle**, is a human-powered or motor-powered, pedal-driven, single-track vehicle, having two wheels attached to a frame, one behind the other. A bicycle rider is called a cyclist, or bicyclist.

Bicycles were introduced in the 19th century in Europe, and by the early 21st century, more than 1 billion were in existence. These numbers far exceed the number of cars, both in total and ranked by the number of individual models produced. They are the principal means of transportation in many regions. They also provide a popular form of recreation, and have been adapted for use as children's toys, general fitness, military and police applications, courier services, bicycle racing, and bicycle stunts.

The basic shape and configuration of a typical upright or "safety bicycle", has changed little since the first chain-driven model was developed around 1885. However, many details have been improved, especially since the advent of modern materials and computer-aided design. These have allowed for a proliferation of specialized designs for many types of cycling.

The bicycle's invention has had an enormous effect on society, both in terms of culture and of advancing modern industrial methods. Several components that eventually played a key role in the development of the automobile were initially invented for use in the bicycle,

2) DC MOTOR

This type of motor very large amount of running force called torque, from a stand still because of this characteristic the DC motor can be used to operate small electric appliances, portable electric tools, cranes winches & like another characteristic is that the speed varies widely between number load & full loaded. Series motor cannot be used where a relatively constant speed required under conditions of varying load.

The manor disadvantage of dc series motor is related to the speed characteristic of mention in last paragraph. The speed of series motor with number of load connected. To it increase to point, where becomes the motor will be damaged. Usually either the bearings are damaged or the winding fly out of the slots in armature. There is danger to both equipment & personal some load must always be connected to a series motor before it turn on. This precaution is primarily for large motor, small motor such as these used in electric hands drills, have enough internal frictional to load than selves. A final advantage of series is that the can be operated by using either an AC or DC power source.

Motor details--Voltage = 24VDC, Rated current = 2AMP, N =1000, P= (24×2) =48W, P= 2πNT / 60, Torque (T) =0.45 N.M For motor is calculated But, the Rpm of gear box output= Rpm of motor/ final gear ratio = 1000 / 6.75 = 148.14 = 150, Put N =150 to calculate gear box torque = 3.05 N-M

3) SOLAR PANNEL

Solar panel refers either to a photovoltaic module, a solar hot water panel, or to a set of solar photovoltaic (PV) modules electrically connected and mounted on a supporting structure. A PV module is a packaged, connected assembly of solar cells. Solar panels can be used as a component of a larger photovoltaic system to generate and supply electricity in commercial and residential applications. Each module is rated by its DC output power under standard test conditions (STC), and typically ranges from 100 to 320 watts. The efficiency of a module determines the area of a module given the same rated output – an 8% efficient 230 watt module will have twice the area of a 16% efficient 230 watt module. There are a few solar panels available that are exceeding 19% efficiency. A single solar module can produce only a limited amount of power; most installations contain multiple modules.

Light striking a silicon semiconductor causes electrons to flow, creating electricity. Solar power generating systems take advantage of this property to convert sunlight directly into electrical energy.Solar cells convert the energy of sunlight directly into electricity through the use of the photovoltaic effect. The photovoltaic effect involves the creation of a voltage into an electro-magnetic radiation. • There are two types of solar power generating systems: grid-connected systems, which are connected to the commercial power infrastructure; and stand-alone systems, which feed electricity to a facility for immediate use, or to a battery for storage. • Grid-connected systems are used for homes, public facilities such as schools and hospitals, and commercial facilities such as offices and shopping centers. • Stand-alone systems are used in a variety of applications, including emergency power supply and remote power where traditional infrastructure is unavailable

4) DC DRY BATTERY

- A battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anod. The terminal marked negative is the source of electrons that will flow through an external electric circuit to the positive terminal.

When a battery is connected to an external electric load, a redox reaction converts high-energy reactants to lower-energy products, and the free-energy difference is delivered to the external circuit as electrical energy.Historically the term "battery" specifically referred to a device composed of multiple cells, however the usage has evolved to include devices composed of a single cell

5) CHAIN SPROCKET

- Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles. It is also used in a wide variety of machines besides vehicles.

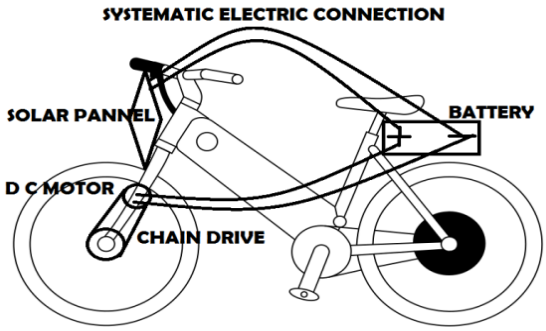
- Most often, the power is conveyed by a roller chain, known as the drive chain or transmission chain,passing over a sprocket gear, with the teeth of the gear meshing with the holes in the links of the chain. The gear is turned, and this pulls the chain putting mechanical force into the system. Another type of drive chain is the Morse chain, invented by the Morse Chain Company of Ithaca, New York, United States. This has inverted teeth.

IV. METHODOLOGY

1. Collecting research paper:- Collecting research paper on the fabricated system of plastic turning into fuel and fabrication of pyrolysis system.
2. Project proposal :- Making a project proposal for the selection of the project and experiencing our ideas with a project guide and getting suggestion with submitting the project proposal to the guide.
3. Selecting area of work :- After project finalization we have to decide and area of the work for fabrication of scarp fuel from plastic and solar energy. Making CAD model animation of system for explain all concept related to the system for explaining the working.
4. Finding resource :- Resources should be find for fabrication it required some pre-fabricate part which available in a market operated works. Fabrication work is done from workshop.
5. Collecting different component:- After fabrication and purchase component should be collected at a various location of workplace. Assemble all components according to Cad and animation make sure that process done by system.

V. WORKING

Solar battery chargers are an inexpensive, environmentally friendly, and convenient way to make sure your batteries are always fully charged and ready to go all the time. The problem with charging a battery from a solar panel is the SUN.



It does not shine all the time and clouds get in the way. Our eyes adjust to the variations in the strength of the sun but a solar panel behaves differently. As soon as the sun loses its intensity, the output from a solar panel drops enormously. Not only does the output current fall, but the output voltage also decreases. Many of the solar panels drop to below the 13.6v needed to charge a 12v battery and as soon as this occurs, the charging current drops to ZERO. This means they become useless as soon as the brightness of the sun goes away

VI. CONCLUSION

It is very much suitable for young, aged, handicap people and caters the need of economically poor class of society. Its cleaner and you never have to buy gas

or change the oil. Thus leading to a pollution free environment. This bicycle is cheaper, simpler in construction & can be widely used for short distance travelling. The most important feature of this bicycle is that it does not consume valuable fossil fuels thereby saving crores of foreign currencies. It is eco-friendly & pollution free, as it does not have any emissions.

It's going to be a cheap alternative for the commuter. Most people, on their drive to work, go less than 40km. Its cleaner and you never have to buy gas or change the oil. Thus leading to a pollution free environment. • This bicycle is cheaper, simpler in construction & can be widely used for short distance travelling especially by school children, college students, office goers, villagers, postmen etc. It is very much suitable for young, aged, handicap people and caters the need of economically poor class of society. • The most important feature of this bicycle is that it does not consume valuable fossil fuels thereby saving crores of foreign currencies. • It is eco-friendly & pollution free, as it does not have any emissions.

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