

SOLAR HYBRID BICYCLE

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ABSTRACT

Due to the increased cost of fuel in not only our country but also considering the whole world is increasing bit by bit and hence there is large need to scan for a choice to ration these regular assets. Along these lines a sun fueled bicycle is an electric vehicle that gives that elective by harnessing sun based imperativeness to charge the battery and thusly give anticipated that voltage should run the motor. Since India is regarded with nine months of brilliant climate therefore thought of sun based bicycle is pleasing in India. Creamer bicycle joins the usage of daylight based imperativeness similarly as the dynamo that experiences pedal to charge the battery to run the bicycle. In like manner sun fueled crossbreed bicycle can transform into an amazingly basic choice as opposed to the filled vehicle thusly its gathering is essential.

KEYWORDS: Solar Panel, Bicycle, Hub motor, motor controller, Accelerator, Dynamo, Lead Acid battery, etc.

I. INTRODUCTION

A sun vitality based bicycle is a bicycle which runs using the electrical essentialness of battery to run the inside point motor which finally runs the bicycle. Sun based essentialness is used to charge the battery. In any event two Photovoltaic cells may be used to harness sun controlled essentialness to create voltage to charge the battery. Battery gives the vital voltage to the middle point motor mounted on the front wheel to run the bicycle. Sun fueled bicycle are not sold all things considered in our normal everyday presence anyway there gathering can be extended to prevent common defilement. These are mainly used as a good judgment adventures and are furthermore every so often upheld by government workplaces. There have been various licenses on electrical vehicles in different countries and along these lines electric vehicles are not another thought. Utilizing daylight based essentialness to charge the battery and getting this thought together with power age quickening is another thought and there have been incredibly less research in such way. Sun arranged bicycle use photovoltaic cells that convert sun controlled imperativeness into anticipated that voltage should charge the battery. There are two sorts of sun arranged sheets that are normally used that is polycrystalline sheets and microcrystalline sun controlled sheets. The polycrystalline sheets are having fewer adequacies when appeared differently in relation to microcrystalline sheets. Polycrystalline sheets have viability of around 15 – 20% while microcrystalline sheets have capability of 50 - 60%. There are different sorts of batteries used in electric vehicles like lead destructive batteries, lithium molecule batteries, Nickel cadmium batteries, etc. Different batteries they have their different focal points for different applications. Without a doubt lead destructive and lithium molecule batteries are most normally used. Lead destructive batteries have lower cost, higher current passing on constrain anyway have tinier life and are heavier. While lithium molecule batteries have lower weight yet have more noteworthy cost and there are chances of impact.

II. MOTIVATION OF THE PROJECT

In our everyday life modern automation is significant. This task shows the modern temperature, stickiness and smoke on the showcase. This venture of modern computerization is utilized for the individuals who work in industry. Because of this individuals works in the ocean for their work. They need to information about the floods, substantial downpours and to make sure about themselves. In light of that reason Government needs to allow playing out this undertaking in all over India.

III. OBJECTIVES

- To construct an electric bicycle that everybody can repeat with negligible expense, without electrical ability, yet be incredible and dependable simultaneously.
- To update an ordinary electric fueled bike to Solar-Powered Electrical Bicycle that can be utilized for restful rides.
- To structure and create Solar-Powered Electrical Bicycle which gets its stock by utilizing sun oriented vitality from photovoltaic boards.
- To study the association between sun based cells, battery-powered battery and DC electric engine. E. To build up an ease application for provincial and remote regions where powers are not accessible to drive 2 wheelers so they can run this bike on inexhaustible sun oriented vitality.

IV. NECESSITY OF THE PROPOSED WORK

- Developing a substitute method of transport, which has preferences of low running and long range.
- Developing earth sustainable zero discharge vehicle.
- Effective usage of sun oriented force

V. METHODOLOGY

Method and analysis which is performed in our research work is written in this section.

a) Block Diagram

The block diagram of the proposed strategy is as shown in the below diagram:

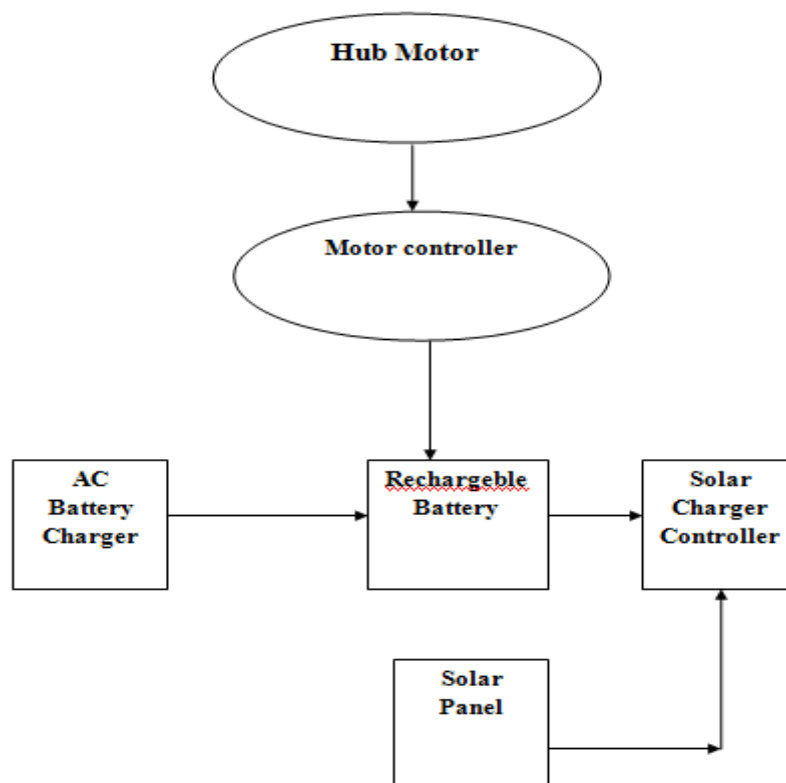


Fig-1: Block Diagram of Solar Hybrid Bicycle

b) Block Diagram Description

The solar hybrid bicycle consists of following components - hub motor, solar panel, lead acid battery, motor controller, accelerator, bicycle, dynamo.

A. Hub Motor:

The permanent magnet DC hub motor is a conventional Dc motor. The stator is inside the rotor with the permanent magnets placed inside. The stator is fixed on the axle and the hub will be made to rotate by AC supplied by the batteries. It generates high torque at low speed, which is highly efficient and which doesn't need sprockets, brackets and drive chains. Thus they are very reliable and have a long life. The main feature of the Brushless DC Machines is that they can be controlled to give wide constant power speed ranges.

B. Solar Panel/ cells:

The sun oriented bike is worked by sun oriented vitality. The lead corrosive battery is accused of voltage produced because of sun based vitality with the assistance of a photovoltaic cell. Sun oriented cells convert the sun based vitality straightforwardly into power utilizing photovoltaic impact. The photovoltaic impact includes transformation of electromagnetic radiation into electrical vitality. The photoelectric and photovoltaic impacts are identified with daylight, yet are distinctive in that electrons are launched out from a material's surface upon presentation to electromagnetic radiation of adequate vitality in photoelectric, and subsequently the electrons that are produced are moved to various groups of valence to conduction inside the material consequently this outcomes into develop of voltage between two terminals in photovoltaic. Sun based cells are associated electrically and fabricated as a module with a sheet of glass on top to permit light to pass and shield the semiconductor from the climate. To acquire the voltage of 24 V two boards of 12V each are associated in series.

C. Lead Acid Battery:

Lead corrosive batteries are regular in our everyday life. It is the most much of the time utilized battery in gadgets. In spite of the fact that it has lower vitality thickness than the lithium particle batteries however since is protected to utilize lead corrosive battery with legitimate precautionary measures taken. It has numerous points of interest like minimal effort, much of the time accessible, and is likewise blast free along these lines is the most as often as possible utilized battery in sun based half breed bikes. Current provided from battery it shows the progression of vitality from the battery and is estimated in amperes (or Amps). The higher the present rating the more slow the battery will release. A battery is appraised in ampere-hours (condensed Ah) and this is known as the present rating. This task spins around charging and releasing vitality inside a high voltage battery. Therefore this venture requests for a battery with longer running hours, lighter load regarding its high yield voltage and higher vitality thickness. Among all the accessible battery types the lead corrosive batteries are the most reasonable ones to be utilized in sun powered cross breed bikes.

D. Motor Controller:

An engine controller is a significant component of the sun powered cross breed bike or can be called as the mind of the vehicle. It controls the measure of intensity provided to the center point engine and furthermore to the lights and horn whenever required. The engine controller plays out the capacity of transformation of the DC voltage from battery to a rotating voltage with variable sufficiency and recurrence that drive the center point engine at various paces. It fundamentally comprises of MOSFET transistors and little chip that differ from recognizing any breakdowns with the engine corridor sensors, the throttle, to secure capacities against over the top present and under-voltage.

VI. ADVANTAGES

1. Easy to commute with low fatigue.
2. Less maintenance cost.
3. Normal Drag/Pedal is possible when power is not in use.
4. Deployable batteries – can be taken inside house.
5. Cost of the unit is very low.
6. It is portable.
7. Consumption of energy is less.
8. The increase in efficiency can be achieved with use of an inverter.
9. If using solar panel, free utilization of energy can be done.

VII. RESULT

We have designed an electric hybrid bike with a minimal amount of additional weight, an integrated control system, based on the decision-making of the rider and microcontroller, and that is capable of greater efficiency than typical hybrid bikes through its use of regenerative motor control and various other feedback control mechanisms.

VIII. CONCLUSION

Hence from the overall project work we concluded that when the solar electric bicycle is kept under sunlight then the solar rays charge the battery through the solar panel. The battery powers an electric motor in the motor of wheel. It also lowers the resistance in pedaling to make it easier to go up hills. When there is no sunlight, the bicycle can be charged by mains electricity. The hybrid bicycle approach is different. It works in normal day as well as in cloudy day.

ACKNOWLEDGEMENT

We would like to express our regards to Prof. Salunkhe S.H. for guiding us through the entire research work. We would also like to thank Prof. Godase A.N. (Head of Department), and for giving his valuable time to guide through the project.

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