

Design and Implementation of Solar Based Bicycle

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Abstract: Since the fuel costs in India as well as all through the world is expanding step by step hence there is a colossal need to look for a choice to monitor these characteristic assets. Along these lines a sun based bike is an electric vehicle that gives that option by tackling sun based vitality to charge the battery and therefore give expected voltage to run the engine. Since India is honored with nine months of bright atmosphere in this way idea of sunlight based bike is all around agreeable in India. Half and half bike joins the utilization of sun oriented vitality just as the dynamo that goes through pedal to charge the battery to run the bike. Subsequently sun powered half breed bike can turn into an extremely crucial option in contrast to the energized vehicle in this manner its assembling is basic.

Keywords:

1. INTRODUCTION

Solar based bike are not sold by and large in our regular day to day existence but rather there assembling can be expanded to forestall natural contamination. These are basically utilized as a useful undertakings and are additionally some of the time supported by government organizations[1].

There have been numerous licenses on electrical vehicles in various nations and hence electric vehicles are not an extremely new idea. Using sun based vitality to charge the battery and joining this idea with the idea of power age accelerating is another idea and there have been exceptionally less examine in such manner[2], [3].

Solar based bike utilize photovoltaic cells that convert sunlight based vitality into expected voltage to charge the battery. There are two sorts of sun powered boards that are commonly utilized that is polycrystalline boards and microcrystalline sun based boards. The polycrystalline boards are having less productivity when contrasted with microcrystalline boards. Polycrystalline boards have productivity of around 15 – 20% while microcrystalline boards have proficiency of 50 - 60%[4].

There are various kinds of batteries utilized in electric vehicles like lead corrosive batteries, lithium particle batteries, Nickel cadmium batteries, and so forth. Various batteries they have their various favourable circumstances for various applications. To the extent sun based bikes are concerned lead corrosive and lithium particle batteries are most regularly utilized. Lead corrosive batteries have lower cost, higher current conveying limit however have littler life and are heavier. While lithium particle batteries have lower weight however have greater expense and there are odds of blast[5]–[10].

2. COMPONENTS USED

A. HUB MOTOR:

The lasting magnet DC center engine is a regular Dc engine. The stator is inside the rotor with the lasting magnets set inside. The stator is fixed on the pivot and the center will be made to turn by AC provided by the batteries. It produces high torque at low speed, which is profoundly effective and which needn't bother with sprockets, sections and drive chains. Along these lines they are truly solid and have a long life. The fundamental component of the Brushless DC Machines is that they can be controlled to give wide steady power speed ranges[11].

B. SOLAR CELLS

The sunlight based bike is worked by sun powered 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 powered vitality legitimately into power utilizing photovoltaic impact. Sun powered cells are associated electrically and produced as a module with a sheet of glass on top to enable light to pass and ensure the semiconductor from the climate. To acquire the voltage of 24 V two boards of 12V each are associated in arrangement[12].

C. LEAD ACID BATTERY

This task rotates around charging and releasing vitality inside a high voltage battery. Along these lines this venture requests for a battery with longer running hours, lighter load as for 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 half breed bikes[13].

D. MOTOR CONTROLLING

The engine controller plays out the capacity of transformation of the DC voltage from battery to a rotating voltage with variable abundance and recurrence that drive the centre point engine at various rates. It essentially comprises of MOSFET transistors and little microchip that differ from recognizing any breakdowns with the engine lobby sensors, the throttle, to ensure capacities against over the top present and under-voltage[14].

3. CONCLUSION

Solar oriented helped bike is change of existing bike and driven by sun based vitality. It is reasonable for both city and nation streets, that are made of concrete, black-top, or mud. This bike is less expensive, less difficult in development and can be broadly utilized for short separation voyaging particularly by younger students, undergrads, office goers, townspeople, mailmen and so on. It is particularly reasonable for youthful, matured, handicap individuals and caters the need of financially poor class of society. It tends to be worked during the time free of expense. The most significant element of this bike is that it doesn't expend profitable non-renewable energy sources accordingly sparing crores of remote monetary forms. It is ecofriendly and contamination free, as it doesn't have any discharges. Also it is quiet and can be energized with the AC connector if there should arise an occurrence of crisis and shady climate. The working expense per kilometer is insignificant, around Rs.0.70/km. It tends to be driven by manual accelerating if there should be an occurrence of any issue with the

nearby planetary group. It has less parts, can be effectively mounted or gotten off, in this manner needs less upkeep.

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