

Design and Fabrication of Self-Charging Bi-Cycle with Power Saving Application using Solar Panel

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Abstract

With the increase in fuel prices, pollution content in atmosphere and due to gradual end of the nonrenewable sources of energy we have to alter the source of our energy in our vehicles. Now a day's Bicycles are more commonly used by the youngsters and school students. At the same time demand of electricity is vital problem in these days and that of the humans becoming tired when pedalling the bicycles to reduce all these problems. We are implementing a self-charging bicycle. The model converts mechanical energy into electrical energy without pollution.

Keywords: Self Charging, Bi-cycle, Solar Panel.

OBJECTIVE OF THE PROJECT

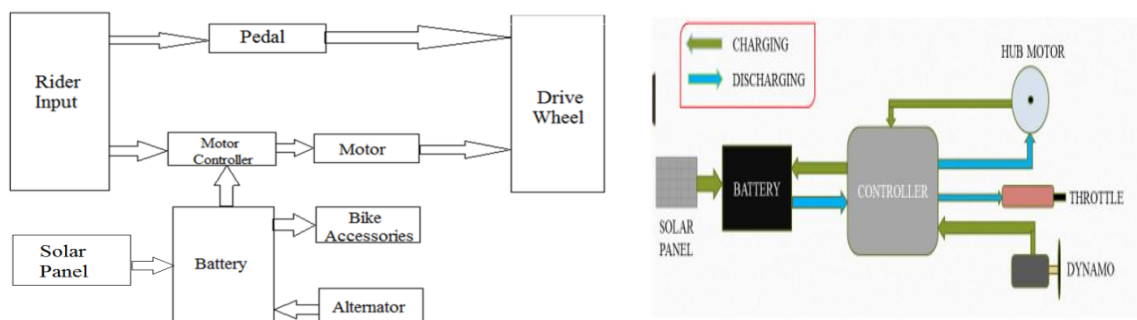
To fabricate dual powered bicycle with self charging capability using dry battery and solar panel

INTRODUCTION

Now a day's more economical, quiet, emission unfastened and uninterested trade source of strength named self-charging bicycle or electric drive bicycle. the electric bicycle gives extra consolation to individual however and additionally provide exact impact of human health. Electric powered bicycle getting interest global-wild or international. The electric bicycle decreases the usage of non-

traditional resources like petrol diesel, gas, and so on. Worldwide warming and resources have become the essential issues inside the international. It additionally reduces the pollution and other automobile use. There may be a massive call for or requirement pollutants unfastened vehicle like electric powered bicycle. The electrical bicycle is use for brief and slight distance instate of the usage of motor cycle or vehicle, which devour gas and convey pollutants. In many nations, the usage of electric powered bicycle is already in use and the people of the country are participating to get pollution free country by using electric bicycle.

Fig 1: SCHEMATIC DIAGRAM OF ELECTRIC BICYCLE



SELECTION OF COMPONENTS

Solar panel

Solar panel refers to a panel designed to absorb the sun's rays as a source of energy for generating electricity or heating.

Alternator

An alternator is an electrical generator that converts mechanical energy to electrical energy in the form of alternating current.

Battery

An electric battery is a device consisting of one or more electrochemical cells with external connections provided to power electrical devices such as flashlights, smart phones, and electric car.

BLDC Motor

Brushless DC electric powered motor (BLDC cars, BL cars) additionally referred to as electronically commutated automobiles (ECMs, EC cars) are synchronous motors powered through DC power via an inverter/switching strength supply which produces an AC/bi-

directional electric powered contemporary to pressure every section of the motor via a closed loop controller.

Controller

An engine control unit (ECU), also commonly called an engine control module (ECM), is a type of electronic control unit that controls a series of actuators on an internal combustion engine to ensure optimal engine performance.

SPECIFICATION

Battery (12V * 4) = (48V, 7ams).

Battery Charging Time = (Battery Ah/ Charging Current). Battery Discharging Time,

Without Load = (Battery Ah * Volt).

With Load = ((Battery Ah * Volt)/Applied Load).

Hub Motor = (240W) (Torque= 12N-m @ 300rpm)

Dynamo = (6V, 3W).

Fig 2: FABRICATED BICYCLE



CONCLUSION

With the growing consumption of natural assets of petrol, diesel it is essential to shift our way toward alternate assets just like the electric bicycle and others because it's miles essential to discover new way of delivery. Electric bicycle is a modification of the present cycle through using electric electricity and also solar energy if solar panels are supplied, that could sum as much as boom in electricity production.

Inview that it's far electricity efficient, electric powered bicycle is less expensive and low-priced to everyone. it could be used for shorter distances via humans of any age. It could be contrived for the duration of the 12 months.

The maximum critical function of the electric bicycle is that it does not devour fossil fuels thereby saving cores of foreign currencies. The second most essential

function is its far pollution loose, eco – friendly and noiseless in operation. For offsetting environmental pollution the use of on – board electric Bicycle is the most viable answer. it may be charged with the help of AC adapter if there may be an emergency. The operating value consistent with/km may be very much less and with the assist of solar panel it can reduce up more. Since it has fewer components it could be without difficulty dismantled to small additives, for this reason requiring less protection.

This mission brought collectively numerous components and thoughts to achieve a not unusual intention to show that it's miles feasible to construct a bicycle with separate charging assets.

REFERENCES

1. Chetan Mahadik, Sumit Mahindraka, Prof.JayashreeDeka ,“An Improved & Efficient Electric Bicycle system with the Power of Real-time Information Sharing” ,2014.
2. Barve, D. S. (2016).Design and Development of Solar Hybrid Bicycle. International Journal of Current Engineering and Technology, 377,378,379,380.
3. ArunEldho Alias¹, Geo Mathew², Manu G³, MelvinThomas⁴, Praveen V Paul⁵, Energy Efficient Hybrid Electric Bicycle with Multi - Transmission System, 2015.
4. Prof. Palak Desai, P. D. (June 2016). Design and Fabrication of Solar Tri Cycle.International Journal of Engineering Sciences & Research, 664.
5. T.Bhavani. (April 2015). Novel Design of Solar Electric Bicycle with Pedal. International Journal & Magazine of Engineering, 108.[6] Muhsin Abdur-Rahman, Bo Hu,2007.