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FABRICATION OF ECONOMICAL E-BICYLE

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ABSTRACT:

Increasing demand for non-polluting mechanized transportation has revived the interest in the use of electric power for personal transportation and also reduced reliance on automobiles. A low-cost alternative to an automobile is a bicycle. However, the use of bicycles has been limited to very short trips or as a recreational activity. This report describes the design of an electric assisted bicycle that will extend the range of a typical rider. The rate of improvements in technologies is at an exponential level despite that the electric bicycle is a concept that has been very feasible for years but has not been fully explored. The human electric bicycle is designed to provide electromagnetic propulsive to a bicycle therefore relieving the user of having to produce the energy required to run the bicycle. The system design is based on mechanically coupling a dc motor as the primary power source to drive the bicycle and electrically wiring the motor together with a dc rechargeable battery and efficient transmission from the source to the motor ***and pedal drive. The main objective of the project is to reduce the cost i.e here in this project we have arranged most of the components from scrap. The second objective is recharging issue i.e for recharging purpose we are using free source of energy that is sound which converted into electrical energy by using a device.***

INTRODUCTION

As worldwide population is growing day by day and there is increase in manufacturing and using of fuel powered. This vehicle require fossil fuel to run and it a limited source of energy which will be over after some period and to cop up with this need, the revolution for the eco-friendly cycles were the most depended modes of transportation, along with this the consideration of the As worldwide population is growing day by day and there is increase in manufacturing and using of fuel powered. This vehicle require fossil fuel to run and it a limited source of energy which will be over after some period and to cop up with this need, the revolution for the eco-friendly cycles were the most depended modes of transportation, along with this the consideration of the increase in fuel price and the environmental factors we must admit that it is far more better to use a cycle over a motor vehicle for short distance travelling. Imagine how useful would the cycle be if even the small effort applied by man for riding on rough terrain. This project is based on combination of the standard geared cycle with an electric power motor.

The system is modified in such a way that the rider can make choice of which mode he prefers i.e. he can either choose the cycle to be driven completely with the electric motor or he can choose it to be driven manually by himself. The idea of mounting the motor and it's support assembly onto a geared cycle was to reduce the effort to-be applied for extra little weight that the rider will have to take along with the cycle.

the Bicycle transmission system. The rider have the power to controls the output power from motor i.e. speed using a handlebar mounted throttle and controller.

The term 'E-bicycle' is generic and includes a combination of different electrically powered two-wheelers some of which function by simply turning a throttle. This Bicycle is designed and made in very less cost as compared to original cost, so any one can afford this Bicycle. As we know that due fuel powered vehicles, the emission of toxic gases is increasing day by day, due to this 4.3 million people die or survive from dangerous diseases all over the world. To overcome this problem and to travel from one place to another an eco-friendly Bicycle with

manually and motor power controlled Bicycle is made with all the accessories similar to bicycle. E- Bicycles are difficult to compare directly across different types.

Normally in every electric Bicycles there are two common parts which is consider while making it i.e. motor and manually operated paddle.

At a same time there is another arrangements is made in which battery powered motor is use to drive the Bicycle. For power transmission from motor shaft to the sprocket chain drive is use. This chain is connected is such a way that it can be fixed according to vary in chain cause due to environmental or mechanical problems which creates tension in chain. Apart from all motor & battery arrangement in indicators, tail light, gearing arrangement, horn & front light.

LITERATURE SURVEY

1. In 1999,AVL Company proposed a hybrid system that sed a 50 carbureted lean-burn two-stroke engine with a 0.75 kW electric motor mounted on the engine crankshaft mainly to provide increased torque during acceleration.[1]

2. Su-Hau et al (2004) focused on the highly efficient energy usage of the battery energy and proposed an integrated management system for electric motor.[2]

3. David and Sheng-Chung (2004) proposed new parallel-type hybrid-electric-power system comprises an engine's energy distribution and a torque-integrated mechanism (specifically including an engine, a motor/alternator, a CVT device, and PCM as well as a 3-helical gear set).[3]

4. Wenguang et al (2005) presented an approach to control powertrain of series hybrid electric vehicles. A formulation of the system equations and controller design procedure were proposed by them. They also proposed a new switching algorithm for the power converter for motor torque and motor flux control.[4]

5. Daniel (2007) designed, developed and implemented a series hybrid electric vehicle. Though he proposed the architecture as hybrid electric vehicle architecture, he showed that the vehicle runs well in the electric mode and left the hybrid conversion as future expansion.[5]

6.Lukic et al (2007) tried to develop a driving cycle of the auto rickshaw in a typical large Indian city, in their case, Delhi. First, they considered the existing driving cycles used in India are considered as candidates. Since these data were not applicable, GPS data collected at various times of the day were applied to the analysis. They derived the new driving cycle from the gathered information via GPS data as well as surveys of auto rickshaw drivers in India, which helped to get the entire picture for the driving cycle.[6]

7. 'Investigation of an electric assisted bicycle and determination of performance characteristics" paper examines and realizes an alternative design for a front wheel hub direct drive, which utilizes a three-phase brushless PMdc motor.[7]

WORKING PRINCIPLE

simple, convenient, cheap, and economical—bicycles are one of the world's favorite forms of transportation. But they're not for everyone. They can be hard to pedal up and down hills or with heavy loads, and elderly or disabled people may find them impossible to manage. In the last few years, a new generation of **electric bicycles** has begun to revolutionize our idea of environmentally friendly transportation range of about 30–55 km (17–35 miles) and a top speed of around 20-25km/h (15 mph). Note the 250-watt Pmdc motor on the rear wheel and the 24v 10Ah lithium-ion battery. Sound vibrations can become electrical energy through the principle of electromagnetic induction. Electromagnetic induction generates electrical current using a magnetic field. When a magnetic field and a conductor, such as a wire coil, move in relationship to one another, electromagnetic induction occurs.

SOUND TO ELECTRICAL ENERGY WORKING PRINCIPAL (LAYOUT DIAGRAM)

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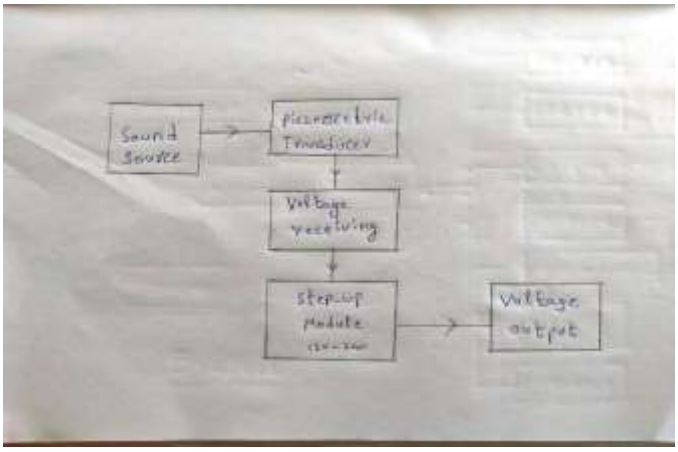

COMPONENTS

1.MOTOR

Fig1-Motor

In this motor, the permanent magnets attach to the rotor. The current-carrying conductors or armature windings are located on the stator. They use electrical commutation to convert electrical energy into mechanical energy.

E-CYCLE WORKING PRINCIPAL LAYOUT DIAGRAM

2. CONTROLLER

Fig2 -Controller

An E-bike controller is a component that connects all electrical parts on the bike together. It connects the things like the battery, motor, throttle, display,

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pedal-assist, and various sensors. It is a small computer that acts as the heart of the e-bike. It can manage the overall functioning of the bike

3.BATTERY

Fig3- Battery

So for a 24V 10Ah battery, you can ride up to 12 miles, more or less. If you're going on a longer ride, you will need to replace your existing battery with one that has a higher energy capacity.

4.CHARGER

Fig4-Charger

A charging sends electromagnetic energy stores the energy in the batteries. This is achieved without the need for metal contacts between the charger and the battery.

5. FRONT LIGHT AND HORN

fig5-FRONT LIGHT AND HORN

The use of flashing lights when cycling at night can enable the rider to be seen, while also saving battery power, horns are sound-producing devices used to alert drivers of approaching vehicles or warn them of a potential hazard. It is particularly effective in passing through heavy Indian traffic.

6 .FRONT LIGHT AND HORN

fig6 FRONT LIGHT AND HORN

The throttle mode on an electric bike is similar to a motorcycle or electric scooter, as when it is engaged the motor provides power and propels the bike forward.

7. CHAIN AND SPROCKET

Fig7- CHAIN AND SPROCKET

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sprockets are sturdy wheels with teeth that lock onto a chain. as the sprocket spins, the teeth grab onto the chain and move other parts sprockets are sturdy wheels with teeth that lock onto a chain. as the sprocket spins, the teeth grab onto the chain and move other parts that interlock with the chain. this sequential series of operations allows for simple and controlled rotational movement of larger equipment and machinery that interlock with the chain. this

8. STEP UP MODULE

Fig8.-Step-Up Module

The MT3608 2A Max DC-DC Step Up Power Module Booster Power Module is a low-cost module that can step-up a 2 to 24V input voltage up to a 5 to 28V output at up to 2A.

9. SHELL ROUND EXTERNAL MAGNET

Fig9 9. SHELL ROUND EXTERNAL MAGNET

Sound energy can be converted into a viable source of electric power using a suitable transducer. This can be done by using a transducer by converting vibrations caused by noise into electrical energy.

CONCLUSION

The electric powered bicycle has been developed, with features required for a common driver. The basic objectives which were recorded on the basis of frequent problems faced by a common person has been successfully fulfilled by this project. The following problems have been addressed i.e the overall cost of the project/electric bicycle has been reduced by using some reusable components which are available from scrap/other not-working devices. The second problem of charging issue has been addressed by using a sound to electric energy generator device which consumes free sound energy produced all around the bicycle from all means 24/7 and stores the energy in form of electricity in the battery.

FINAL MODEL

(A)

(B)

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