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DESIGN AND IMPLEMENTATION OF LOW COST SELF POWER CHARGABLE E-CYCLE

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ABSTRACT

The bicycle has gone from being an old-fashioned recreational product to a less polluting one which means of transport and a compact, ultra-light personal mobility tool. This is how electrical bicycles will be used as the pillar that could support individual public transport in large cities worldwide. The objective of this manuscript is to detect how worldwide research on the electric bicycle is being developed and, especially, around which scientific domains it is clustered, to finally identify the main trends in the field. The main countries are China and the USA, and it can be inferred that there are two major trend countries with high environmental awareness, which also have a large population, and that the electric bicycle is a suitable and sustainable form of transport. Among the main scientific fields, engineering leads in research. The keyword analysis shows that the central theme is electric, and then battery and motor stand out. A community detection was applied to detect the six main clusters of this research, largely dedicated to the following topics: transportation-environment, electrical engineering, safety, batteries, sporting goods-urban planning, and mechanical

engineering. This manuscript shows that global research trends about the electric bicycle are increasing and that it should be considered a means of sustainable urban transport and will therefore contribute to energy savings and sustainable energy.

Keywords: batteries; electric bicycle; electric vehicle; energy saving; transportation

INTRODUCTION

The e-bike may be a human-electric hybrid vehicle. Basically, associate an e-bike may be a variety of electrical vehicle supported by a conventional bicycle. An electrical motor has been added to assist with its propulsion. It's associate ecological and concrete suggests that of transport and its supply of Energy may be a battery. Within the twentieth century, electrical bicycles began to play a crucial role as a result of their economic and easy possibility for urban transport issues and had environmental benefits, particularly in extremely inhabited countries like China, to focus on this truth, it's enough to point out that over 31 million *e*-bikes were oversubscribed in 2012, the

most benefits of electrical bicycles square measure both economic and environmental. The batteries of the electrical Bicycles are often recharged by connecting them to a plug or once plugged in. some gears. Additionally, a typical e-bike requires 4-6 hours to charge the battery and encompasses a range of travel of 25–35 klicks at a speed of Concerning 30-35 km/hour (depending on the rider's weight), this suggests that with one battery charge, it might be enough to travel, figure out or visit friends and come home on a standard day, since statistics show that concerning half. The journeys and procedures of a standard urban person square measure applied at intervals a distance of fifteen km from his or her house, thus at intervals within the reach of this bicycle.

LITERATURE SURVEY

[1] The rider of an E-bike can choose to rely on the motor completely, pedal and use the motor at the same time or pedal only. Our Aim is to making a Cheapest Rate Electric bicycle from Market Price.

[2] Our main focus is in the automobile industry, where we are converting outdated bicycles to electric bicycles. The Electric Bike, which is powered by a battery and so supplies voltage to the motor.

[3] The main intend of this electric bicycle was mainly for racetrack use. The speeds reached up to 96.5 kmph in 6 seconds, programmable with regenerative braking or on the throttle.

[4] For the propulsion of the wheeled vehicle with which may be provided the straightforward movement of tricycle over an existing vehicle. The assistance of various mechanism and combination of technology which can have larger advantage to the physically disabled persons to propel the vehicle.

SYSTEM OVERVIEW

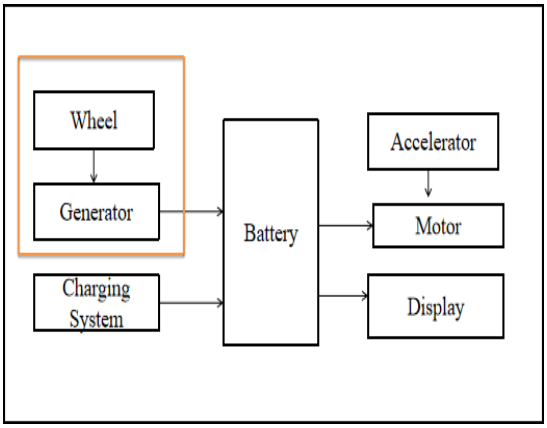

Fig 1 : Block diagram of system Overview

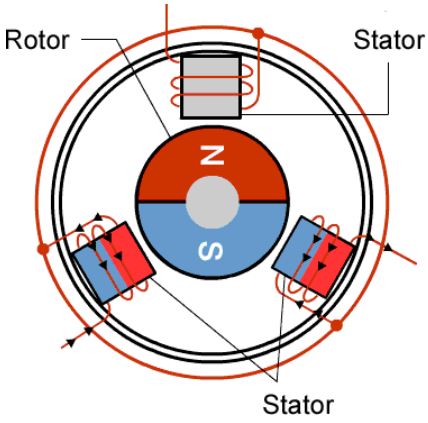

Fig 2 : Brushless DC motor

A Brushless DC Electric Motor (BLDC) is an electric motor powered by a direct current voltage supply and commutated electronically instead of by brushes like in conventional DC motors.

Fig 3 : 775 DC motor

A dynamo is a type of electrical generator that is used to create a conducting current with the help of a commutator. A dynamo used the laws of electromagnetism to create a direct conducting current or electric power from the rotation of the coil.

Fig 4 : Throttle

In a modern motorcycle accelerator will directly control the butterfly valves in throttle bodies. This can be done through a cable or ride by wire. On older bikes accelerator / throttle controls a pin/valve in carburettor.

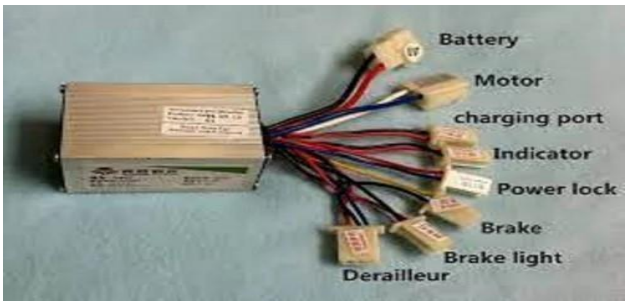

Fig 5 : Controller

This Motor Controller 24V for MY1016 250W includes attachments for the motor, accelerator, brake, battery, battery charging, brake light, power lock. This motor brush controller for Electric bicycle & scooter is compatible with MY1016 250W DC motor. Rated voltage: 24 v DC. Current limit: 33A.

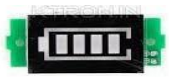

Fig 6 : Battery level detector

Battery level indicator is the project that indicates status of battery by use of LED and LCD. This project can know the status of battery left. This is can give easier to people and can be more alert then about status of battery level. The battery level indicator is shown in dot or bar form in mobile phones.

RESULT

Bicycle that utilizes renewable energy from various sources. Mechanical energy of bicycle is converted to electrical energy using dynamo. These energy is used to run the bicycle. The motor gets power by a combination of 2 battery 24 volt 10 amps connected in series combination. Electric bike is quite eco friendly and item bring a huge development to the society in the future here in our project.

CASE STUDY - 1

Wheel speed	Vehicle speed for given wheel diameter				
	16" Wheel	20" Wheel	24" Wheel	26" Wheel	29" Wheel
100 RPM	8 Kph	10 Kph	11 Kph	12 Kph	14 Kph
150 RPM	11 Kph	14 Kph	17 Kph	19 Kph	21 Kph
200 RPM	15 Kph	19 Kph	23 Kph	25 Kph	28 Kph
250 RPM	19 Kph	24 Kph	29 Kph	31 Kph	35 Kph
300 RPM	23 Kph	29 Kph	34 Kph	37 Kph	42 Kph
350 RPM	27 Kph	34 Kph	40 Kph	44 Kph	49 Kph
400 RPM	31 Kph	38 Kph	46 Kph	50 Kph	56 Kph

Fig 7 : Vehicle speed for given wheel diameter

This case study represents the wheel dimension and wheel speed. This is the design parameters of

our project. To determine the wheel diameters to know about the wheel speed in rpm.

CASE STUDY - 2

Fig 8 : OUTPUT VOLTAGE OF 2 DYNAMO MOTOR

Fig 9 : OUTPUT VOLTAGE OF 4 DYNAMO MOTOR

CONCLUSION

Our project is designed to improve the normal bicycle and make it extra efficient. With the technology advances and breakthroughs, electrical bicycles are a concept that is meant to grow increasingly more and tend to extend its range of applications. With this work it was possible to conclude that bicycles, and even more, electrically assisted bicycles, not only have played an important role as a mean of transportation but its importance tends to keep on growing, as they are continuously improving. New and more efficient motors are also starting to appear, as well as retroactive systems which allow to recharge the battery while the bicycle is being ridden.

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