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Re-Generative Electrical Power Bicycle

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ABSTRACT:

Designing of electrical cycles is one of the passionate things. In this article, the term ―electrical Bicycle‖ is used to describe ―electric-motor-powered bicycle‖, including both fully and partially motor-powered bicycles. Here, the electrical bicycle market would benefit from further research both on the battery and on the drive technology and their use with electrical bicycles. In the united states , electrical bicycles are currently used most commonly for short trips to grocery stores or for leisurely rides. This article provides a systematic, comprehensive, classification of electric bicycles that includes an overview of the state of the art of today‘s commercially available electrical bicycles. The power requirements in different typical riding situations are also identified.

II.INTRODUCTION:

A bicycle, often called a bike or cycle, is a human-powered, pedal-driven, single- track vehicle, having two wheels attached to a frame, one behind the other. A bicycle rider is called a cyclist, or bicyclist. Bicycles were introduced in the 19th century in Europe and as of 2003, more than 1 billion have beenproduced worldwide, twice as many as the number of automobiles that have been produced. They are the principal means of transportation in many regions. They also provide a popular form of recreation, and have been adapted for use as children's toys, general fitness, military and police applications, courier services, and bicycle racing.

III. TYPES OF BICYCLE:

Bicycles can be categorized in many different ways: by function, by number of riders, by general construction, by gearing or by means of propulsion. The more common types include utility bicycles, mountain bicycles, racing bicycles, touring bicycles, hybrid bicycles, cruiser bicycles, and BMX bikes. Less common are tandems, low riders, tall bikes, fixed gear, folding models, amphibious bicycles. Unicycles, tricycles and Quadra cycles are not strictly bicycles, as they have respectively one, three and four wheels, but are often referred to informally as "bikes".

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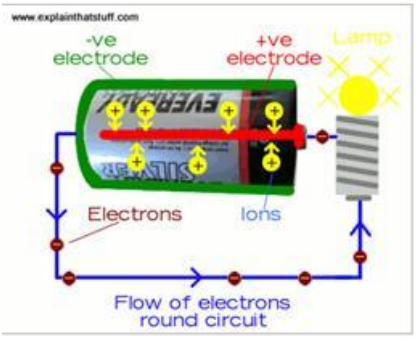
The bicycle is extraordinarily efficient in both biological and mechanical terms. The bicycle is the most efficient human-powered means of transportation in terms of energy a person must expend to travel a given distance. From a mechanical viewpoint, up to 99% of the energy delivered by the rider into the pedals is transmitted to the wheels, although the use of gearing mechanisms may reduce this by 10–15%. In terms of the ratio of cargo weight a bicycle can carry to total weight, it is also an efficient means of cargo transportation.

IV. BATTERY INTRODUCTION:

The battery is an essential component of almost all aircraft electrical systems. Batteries are used to start engines and auxiliary power units, to provide emergency backup power for essential avionics equipment, to assure no-break power for navigation units and fly-by-wire computers, and to provide ground power capability for maintenance and pr+++eflight checkouts. Many of these functions are mission critical, so the performance and reliability of an aircraft battery is of considerable importance. Other important requirements include environmental ruggedness, a wide operating temperature range, ease of maintenance, rapid recharge capability, and tolerance to abuse. Historically, only a few types of batteries have been found to be suitable for aircraft applications. Until the 1950s, vented lead-acid (VLA) batteries were used exclusively [Earwicker, 1956]



TYPES OF BATTERY

* Disposable batteries (primary cells):

*Zinc-chloride batteries:

*Rechargeablebatteries (secondary cells):

4.4.1 Nickel cadmium (NiCd) and nickel metal hydride (NiMH) batteries:

4.4.2 Lithium ion batteries

V. GENERATOR:

OIL may be the world's favorite fuel, but not for much longer. Modern homes are powered mostly by electricity and it won't be long before most of us are driving electric cars as well. Electricity is superbly convenient. You can produce it in all kinds of different ways using everything from coal and oil to wind and waves. You can make it in one place and use it on the other side of the world if you want to. And, once you've produced it, you can store it in batteries and use it days, weeks, months, or even years later. What makes electric power possible—and indeed practical—is a superb electromagnetic device called anelectricity generator: a kind of electric motor working in reverse that converts ordinary energy into electricity. Let's take a closer look at generators and find out how they work! This temporary magnetic field pushes against the magnetic field that the permanent magnet creates and forces the coil to rotate. By a bit of clever design, the coil can be made to rotate continuously in the same direction, spinning round and round and powering anything from an electric toothbrush to an electric train.

VI. MOTORS:

A motor is a machine which converts energy into rotating motion. The dictionary definition of motor is broader than that but when engineers and mechanics talk about motors they are almost always talking about rotating motion. There are different names for devices which convert energy into other types of of motion. A DC motor is a motor that uses direct electrical current (DC) as the source of its energy.

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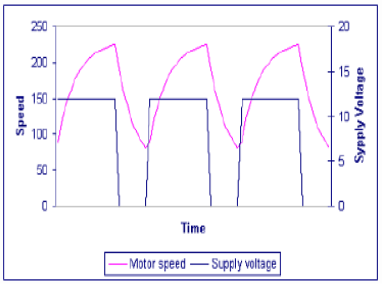
An AC motor is a motor that uses alternating electrical current (AC) as the source of its energy. AC current is the type of electricity provided by household wall outlets. DC current is the type of electricity provided by batteries.

MY1016Z Geared United 350W, 24V DC Brushed Motor, 2750 RPM

Motors convert electrical energy (from a battery or voltage source) into mechanical energy (used to cause rotation). This is accomplished by forcing current through a coil and producing a magnetic field that spins the motor. DC motors are fairly simple to understand. They are also simple to make and only require a battery or dc supply to make them run. When a wire that carries current is placed in a region of space that has a magnetic field, the wire experiences a force. The size of the force, which determines how fast the motor spins, depends on,

-The amount of current in the wire
-The length of the wire
-The strength of the magnetic field
The direction of the force, which determines the direction of the motor spin, depends on:



VII. FABRICATION

1. Choose a bicycle in good working condition:

Make sure it is comfortable and has good breaks. Any problems the bicycle has when you start or going to be magnified once it has 20kg of electric stuff added to it and an extra hp(horse power) pushing it around. It will be harder to stop and the ride will be rougher. Full suspension department store bicycle actually work well.

2. Re-modification of cycle:

From normal cycle, we have to add some parts to modify as normal cycle to electric cycle. In normal cycle a chain linked with pedal crank to rear wheel spur gear due to this, the rider will pedal then cycle will move forward. We are eliminating the pedaling effect by removing the chain. Now we are placing this chain to motor and to the rear wheel of spur gear. Motor is placed above the rear wheel. We have mounted a spur gear to the motor sprocket, from this we have connected a chain drive to the rear wheel of spur fear. The chain mechanism works on the principle of conversion of electric energy to mechanical energy. Here the electrical energy is motor, when motor will rotate, the chain will also rotate. Due to this bicycle will move forward in the form of mechanical energy.

VIII .COMPONENTS

1. Generator:
2. Switch
3. Chain
4. Washer and Bolt
5. Clamps

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6. Cables
7. Iron plate
8. Motor
9. Battery

IX ADVANTAGES:

- Running and Maintenance costs are low
- Eco friendly as it has zero emissions.
- Low accidental risk.
- Save of fuel resources.
- Easy handling.
- More efficient.
- Noise level is very low.
- No need of external energy supply.

X .CONCLUSION:

The issues associated with electric bicycles may be addressed by custom-designed drives that are should effect over a given operating cycle. They include city bicycles, hill bicycle, distances bicycle and speed Bicycle. The results of this electrical bicycle listed below can serve as a platform to improve electrical bicycle performance if new drive systems are designed according to the key parameters that will result in improvement of the system performance. Furthermore they can be used for comparison of existing drives in a systematical, comprehensive and technical way.

The following conclusions can be drawn from the present study

• When the battery is fully charged a speed of 10-15km/hr is obtained.

• When coming down the hill the charging can be achieved in 1hr.

• Because of friction driven mechanism wheel wear takes place at a faster rate

XI. Scope for further Improvement:

• We can mount the alternator on back wheel so that it can reduce the effort when the alternator is engaged.

• The design of the cycle should be aerodynamic to reduce the air drag to increase the speed.

• Battery of higher volts can be used according to the requirement.

• Stress analysis can be done for proper balancing of the electric bicycle.

• Use of gear shifter to reduce further effort.

• Electronic Display system can be used to know the amount of battery left.

• It should be made ergonomically.

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