IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 2 Issue 4, April 2015.
www.ijiset.com

ISSN 2348 – 7968

Free Energy Bicycle

[1]K.Vignesh, [2]P.Sakthi, [3]A.Pugazhenthi, [4]V.Karthikeyan, [5]C.Vinothkumar
[1]Assistant Professor, [2-5]Scholar, Department of Mechanical Engineering,
Aksheyaa College of Engineering, Puludivakkam, Kanchipuram District, Tamilnadu.

Abstract

There are so many vehicles that came to influence in the existing world. Their operating systems are based on usual fossil fuel system. At the present sense the fossil fuel can exceed only for a certain period. Thus, an attempt is made to design and fabricate an ultimate system (free energy bicycle) which would produce cheaper & effective result than the existing system. This will be very useful to the future needs of the world. An attempt is made in the fabrication of a free energy System for a two-wheeler (bicycle). This works on electric power distributed by the D.C electric motor receiving the current from a battery. Battery is charged by using dynamo. The motor and the various parts are such as sprocket, chain assembly and bicycle with easily available materials.

1. Introduction

All vehicles that are in the market cause pollution and the fuel cost is also increasing day by day. In order to compensate the fluctuating fuel cost and reducing the pollution a good remedy is needed. That is free energy transporting system. The device described in this project integrates a dynamo and a bicycle, allowing the power generation of environment-friendly. This contemplates both personal health and environmental issues. Here the bicycle is run without pedaling.

Motivational reasons for successful implantation of hybrid-electric technology in automotive industry originate from various causes. In recent years, hybrid electric vehicles (HEV) have taken significant role in automotive market. Since the first serial produced hybrid car in 1997 (Toyota Prius) their presence on the roads is rapidly increasing. More than a 5 million vehicles worldwide are sold and their number is exponentially increasing. All major car production companies already have hybrid-electric models, which are in commercial use or will be soon lunched on the market. Bu definition, a hybrid vehicle is a vehicle with two distinct sources of potential energy that can be separately converted into useful motive kinetic energy. This potential energy may be stored in a number of forms

ISSN 2348 – 7968

including super-capacitors (electrical), batteries (electro-chemical), pressurized fluids (mechanical), rotating flywheel (mechanical) and fuel (chemical).

Hybrid electric vehicles (HEVs) represent a technological cross between conventional automobiles and electric vehicles. They combine an electric drive train, including battery or other energy storage device, with a quickly refuelable power source (RPS). RPS can be internal combustion engine (gasoline or diesel), fuel cell or gas turbine. In present commercial HEVs as RPS is used internal combustion engine, which is proved technology. This RPS recharges the electrical storage device (battery or super-capacitor) and may drive the wheels directly together with the electric motor. That can be achieved, either through a direct mechanical drive train or indirectly by providing electric power to the motor.

2. Components

2.1 Gear trains

Gear trains, belt drive and chain drive are the power transmission element. Here, chain drives are used in power transmission. The major components of the chain drives are sprocket and chains.

2.2 Dynamo

The commutator was needed to produce direct current. When a loop of wire rotates in a magnetic field, the potential induced in it reverses with each half turn, generating an alternating current. However, in the early days of electric experimentation, alternating current generally had no known use. The few uses for electricity, such as electroplating, used direct current provided by messy liquid batteries. Dynamos were invented as a replacement for batteries. The commutator is essentially a rotary switch. It consists of a set of contacts mounted on the machine's shaft, combined with graphite-block stationary contacts, called "brushes", because the earliest such fixed contacts were metal brushes. The commutator reverses the connection of the windings to the external circuit when the potential reverses, so instead of alternating current, a pulsing direct current is produced. It would probably be more practical to design a free energy recharger for the batteries that is not attached to the bicycle, and design our bike to operate on a small electric motor that uses the rechargeable batteries. This arrangement would be easy to do, as free energy battery rechargers are commonly

ISSN 2348 – 7968

available. You could use a small motorcycle battery to operate an electric motor, and keep two batteries so one is always recharging.

2.3 D.C Motor

In normal motoring mode, most electric motors operate through the interaction between an electric motor's magnetic field and winding currents to generate force within the motor. In certain applications, such as in the transportation industry with traction motors, electric motors can operate in both motoring and generating or braking modes to also produce electrical energy from mechanical energy.

Found in applications as diverse as industrial fans, blowers and pumps, machine tools, household appliances, power tools, and disk drives, electric motors can be powered by direct current (DC) sources, such as from batteries, motor vehicles or rectifiers, or by alternating current (AC) sources, such as from the power grid, inverters or generators. Small motors may be found in electric watches. General-purpose motors with highly standardized dimensions and characteristics provide convenient mechanical power for industrial use.

Table.1 Specification of D.C. Motor

Voltage	12V		24V	
Testing Voltage	13.5V		27V	
Braking Torque	26 Nm		26 Nm	
Working Torque	5 Nm		5 Nm	
	Low	High	Low	High
No-load speed	35 rpm	52 rpm	35 rpm	45 rpm
No-load current	1.4 A	2.2 A	1 A	1.5 A
Working speed	30 rpm	45 rpm	30 rpm	45 rpm
Working current	4.3 A	6 A	2.3 A	3.2 A

ISSN 2348 – 7968

Noise	50 dB	55 dB	50 dB	55 dB

3. Construction and Working Principle

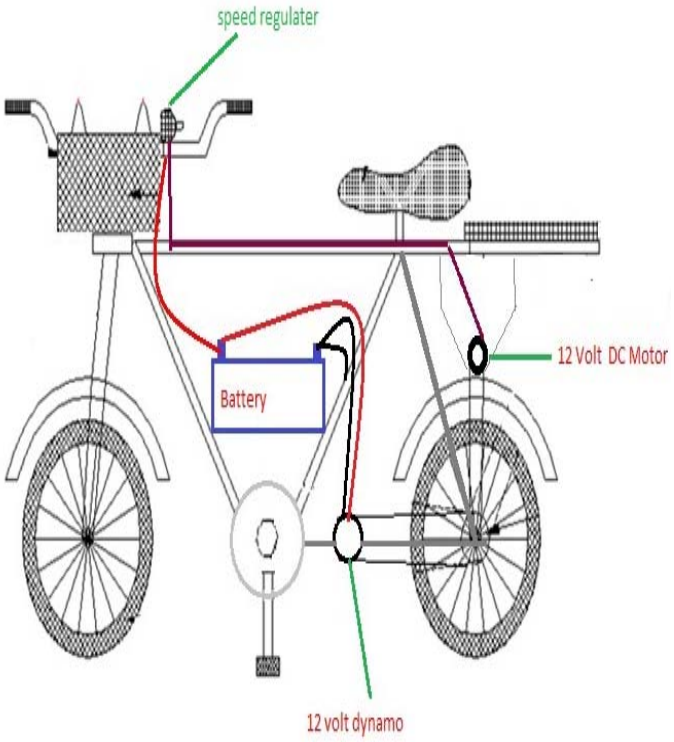

Fig.1 2D Diagram of Free Energy Bicycle

The function of the dynamo is convert the mechanical energy into electrical energy. Dynamo is fitted in the bicycle. It is contact with the wheel. When the wheel rotates, dynamo is functioning. Dynamo is connected with the battery. The battery is charged by means of dynamo. The battery contains two terminals. One is the positive terminal and another one is the negative terminal. The wire connections were made for the flow of electrons from one part to another part. When the motor energies through the current, the stator field coil get magnetized and induces the rotor shaft to rotate in the counter clockwise direction.

Motor shaft is connected with the shaft of rear wheel. At the time power is transmitted to the wheel. So the bicycle moves in forward direction. Whenever bicycle is running, the above mentioned processes are continuously going on. A bicycle, often called a bike, 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

ISSN 2348 – 7968

in the 19th century in Europe and now number more than a billion worldwide, twice as many as automobiles. 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. The basic shape and configuration of a typical upright, or safety bicycle, has changed little since the first chain-driven model was developed around 1885. But many details have been improved, especially since the advent of modern materials and computer-aided design.

These have allowed for a proliferation of specialized designs for many types of cycling.The bicycle's invention has had an enormous effect on society, both in terms of culture and of advancing modern industrial methods. Several components that eventually played a key role in the development of the automobile were initially invented for use in the bicycle, including ball bearings, pneumatic tires, chain-driven sprockets, and wheels.

DC motors are used extensively in adjustable-speed drives and position control applications. Their speeds below the base speed can be controlled by armature-voltage control. Speeds above the base speed are obtained by field-flux control. As speed control method for DC motors are simpler and less expensive than those for the AC motors, DC motors are preferred where wide speed range control is required. DC choppers also provide variable dc output voltage from a fixed dc input voltage.

The Chopper circuit used can operate in all the four quadrants of the V-I plane. The output voltage and current can be controlled both in magnitude as well as in direction so the power flow can be in either direction. The four-quadrant chopper is widely used in reversible dc motor drives. By applying chopper it is possible to implement regeneration and dynamic braking for dc motors.

Rear wheel chain sprocket is connecting with the dynamo. Dynamo is connected with chain sprocket and battery. When running the bicycle, dynamo is rotates with the help of chain sprocket then the battery gets charged by the dynamo. D.C motor is connected with the rear chain sprocket. D.C motor runs by battery. When motor runs, the rear wheel chain sprocket is also rotates. So the bicycle moves forward. At the time, battery energized by free energy from sprocket to battery through dynamo with the help of chain

ISSN 2348 – 7968

drives. This process is continuously going on. Fig.1 shows the 2D Diagram of free energy bicycle. Fig.2 shows circuit diagram and Fig.3 shows schematic view of free energy bicycle.

Calculation

$P=2\pi NT/60$

P-Power in W

N-Speed in rpm

T-Torque in N-m

$T= \pi\tau D^3/16$

D-Diameter of the wheel in m.

τ-Shear stress= $20N/mm^{2.}$

D=548mm

$T=3.14*20*(548)^3/16$

$T=645.92*10^{-3}$ N-m.

Power $=2*3.14*200*645.92*10^{-3}/60$

$P=13.5*10^6$ W.

ISSN 2348 – 7968

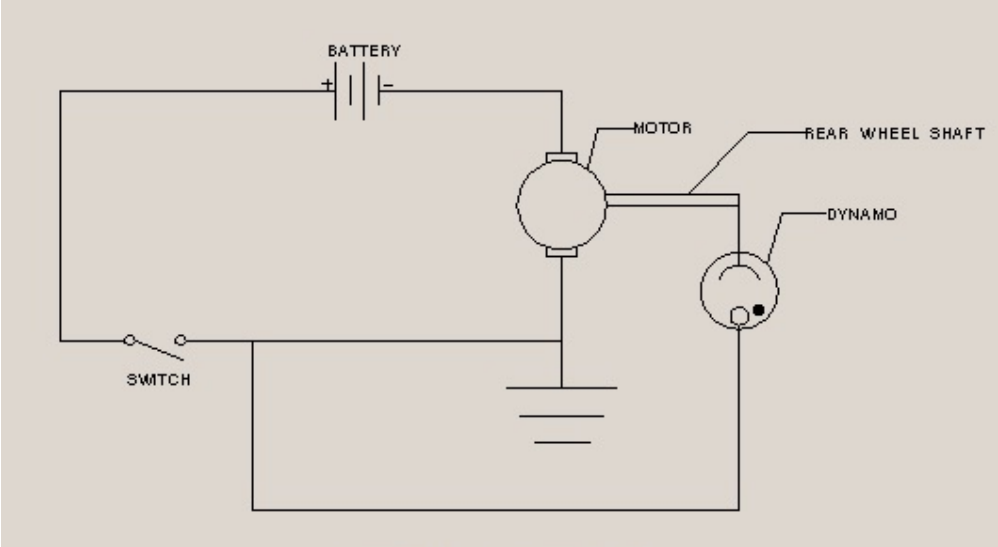

Fig.2 Circuit Diagram

Fig.3 Schematic View of Free Energy Bicycle

4. Conclusion

This project is made with preplanning, that is provides flexibility in operation and noise less operation by the medium of free energy bicycle. This free energy bicycle is very useful to the transportation for children and old people. Because no need to pedal the bicycle. By using this vehicle, no fuel is needed to run the vehicle and it is pollution free vehicle. It is designed with the hope that is very much economical vehicle.

ISSN 2348 – 7968

References

[1] Emadi, A; Rajashekara, K; Williamson, S.S; Lukic, S.M.; " Topological overview of hybrid electric and fuel cell vehicular power system architectures and configurations", Transactions on Vehicular Technology, IEEE, Volume: 54 Issue:3, 2005.

[2] D. Cundev, Z. Cerovsky, P. Mindl: "Modeling of the Hybrid Electric Drive with an Electric Power Splitter and Simulation of the Fuel Efficiency", EPE2009 13th European Conference on Power Electronics and Applications, Barcelona, Spain, Sep. 2009.

[3] Z.Cerovsky, P.Mindl, "Hybrid drive with super capacitor energy storage", FISITA World Automotive Congress, May 2004, Barcelona.

[4] P.L.Theraja., A Text Book of Electrical Technology, S.Chand & Co.Ltd., New Delhi, 1993.

[5] www.howstuffworks.com

[6] http://www.mecanicavirtual.org/dynamo-funcionam.htm

[7] http://www.mecanicavirtual.org/dynamo -reg.htm