

STUDY OF ELECTRICITY GENERATED BY CEILING FAN & CAR WHEEL

Wakchaure Mahesh¹, Thete Sachin², Gavit Vishal³, Mahendra Pawar⁴

^{1,2,3} *B.E. Scholar BVCOE&RI Nashik, Pune University, (India)*

⁴ *Assistant Professor mechanical Dept. BVCOE&RI Nashik, (India)*

ABSTRACT

Fans, cars, bikes are the most used items in India. Where fan requires more electricity during summer session & for solar system have required more initial cost & maintenances cost also. Since the initial capital cost of solar systems is still truly high, when it comes to generate power for a domestic use and energy save and energy generating is a major issue for humankind. Similarly, our vehicles required fuel & due to using more fuel, pollution is raised. Therefore, This paper presents method of generating power by a ceiling fan, wheel power of a car & other moving system. The generated power either used or can be stored in a battery for powering some other devices.

Keywords: *Alternator, Dynamo ,Electromagnetism.*

I. INTRODUCTION

World is a storehouse of energy. We all know that energy can neither be created nor be destroyed but it can be transformed one form to another. However, we are wasting the resources that can develop energy.

[1]The first wind powered electricity was produced by a machine built by Charles F. Brush in Cleveland, Ohio in 1888. It had a rated power of 12 kW (direct current - DC). Direct current electricity production continued in the form of small-scale, stand-alone (not connected to a grid) systems until the 1930's when the first large scale AC turbine was constructed in the USA. There was then a general lull in interest until the 1970's[1]

If we can renew and Reuse the energy from waste, it would help in saves the resources. By using the concept of wind turbines, we know the Wind-generated electricity can be used for battery charging and for connection along the power grid. Similarly, this technique is used in every moving systems like those that wheels rotate of car, motorbike, etc. These energy used for headlights, starter purpose & we can a drive car by this electric power.

II. ELECTRICITY GENERATION

The motor changes electrical energy into mechanical energy by spinning of the shaft. Some motors can be operated as generators to convert mechanical energy into electrical energy like a dynamo.

1. Dynamo - A device that makes direct current electric power using electromagnetism. It is also called as a generator; however, the term generator normally refers to an "alternator" which develops AC (Alternative Current) power.

2. Generator - normally this term is used to describe an alternator which develops & AC power utilizing electromagnetism.

3. Stator - Fluctuating polarity creates a rotating magnetic field in the stator. The field crosses a 0.3mm gap to activate a current in laminations in the rotor, which spins around the stationary stator.

III. ACTUAL CONCEPT

Wind turbine motor is used to develop electricity. Wind turbine is a clean energy power plant. It is performed positive work done because its fins are rotated by wind power to create electricity and our ceiling fans or vehicles, we can say it's like a negative work done system, because it works when electricity or fuel is supplied respectively. But we can convert its power output into input of an electric device.

[2] More than 90% of the world's power is being generated using electromagnets based on Faraday's law of electro-magnetic induction.[2]

So in this system a permanent magnet motor can be used as a generator for battery charging. The spinning shaft turns the electromagnets that are surrounded by the coils of copper wire inside generators. This creates a magnetic field, which motivates the electrons in the copper wire to move from atom to atom, creating electricity. The voltage made by a generator depends upon the number of turns in its coils, the strength of the magnet, and the rate at which the magnet turns. The more turns in the coils, the more voltage is developed. An AC dynamo which is used to generate current, it will be interconnected along a ceiling fan through a mechanism in which the rotating ceiling fan motor will spin the dynamo's shaft. It will be connected in such a way that as the number of spinnings of the ceiling fan increases the spinning of the shaft of the AC dynamo is raised, by the same time the voltage is also generated. The voltage generated will be given to the charging circuit which will be converted to DC. Then it will be given to the 1-volt battery and by using an inverter circuit and a step up.

It will be connected along a four-wheeled car through a mechanism in which the rotating of the wheel will rotate the dynamo's shaft. It will be connected in such a way that as the number of spins of the wheels is raised the spinning of the shaft of the AC dynamo increases, the voltage is also generated. The voltage generated will be given to the charging circuit which will be converted to DC. Then it will be given to the same voltage battery and by the use of an inverter circuit and a step up transformer this voltage may be converted to more volts and used for other external purposes.

IV. Why Dynamo ?

The dynamo can be used to transform mechanical energy into electrical energy. Alternating current can be developed normally using the dynamo. This current can be used to charge AC/DC devices directly instead of storing it in a battery and using the same. Assume that the devices are not in use, then the power generated can be stored in a battery. The amount of power developed from a dynamo is sufficient to power the devices, which require low power. Most of the electronic gadgets contain mobile phones, iPods can be powered using this.

V. CHARGING CIRCUIT

A dynamo attached to a fan's motor for power generation . [3]The dynamo is attached to the fan's motor in such a way that it results in the rotational motion of the dynamo's shaft. This motion causes the dynamo to produce electrical energy. The dynamo output is given to the rectifier circuit and then to the voltage regulator and hence the DC regulated output is used for charging *3yNiMH (nickel metal hydride) Battery.[3]

5.1 Detailed Description

Assume a ceiling fan motor along a generator winding that mainly consists of a motor axle, a stator, and a rotor. [4]The stator is fixed on the motor axle. In this role, the stator is formed by stacking a predetermined number of metal plates. The stator is enveloped along a plurality of first magnetizing coils, each of which is wound along a second magnetizing coil along a generator winding.

The second magnetic coil detects the accept EMF around it. The stator has a predetermined number of same spaced coil arms in the perpendicular direction near the motor axle. any of the coil arms has a concave section for the interrelated first magnetizing coil to Wind around. The second magnetic coil detects the received EMF around it. The stator has a predetermined number of same spaced coil arms in the perpendicular direction toward the motor axle. Each of the coil arms has a concave section for the interrelated first magnetizing coil to Wind around. The second magnetizing coil more Winds around the like first magnetizing coil. In particular, each of the first magnetizing coils is electrically connected along an energy-saving driver governing the circuit. The energy-saving driver governing circuit receives an input voltage and governs the electrical current phases of the first magnetizing coils.

The second magnetizing coil is electrically connected along a power distribution governing circuit for converting the back EMF detected and accepted by the second magnetizing coil to electrical power for output. The rotor is pivotally mounted on the motor axle through a bearing .In this role, the rotor has particular magnetic objects around the stator. The magnetic phenomenon can be permanent magnets. The rotor is surrounded along particular connecting parts for fixing a blade frame. The blade frame has particular blades. The bottom of the blade frame is pivotally installed along a fluorescent unit. In practice, any of the first magnetizing coils is driven by the input voltage to developed an induced magnetic field. The rotor is driven to rotate along appreciation the stator and build up inertia. When the rotor rotates along appreciation the stator, the rotor rotates and cuts through the magnetic lines. A back EMF is thus generated in the motivates the magnetic field. In this case, the second magnetizing coil on the stator detects the accepted EMF. The accepted EMF is transformed from the power delivering the governing circuit into electrical power for output. In this embodiment, the power delivering the governing circuit is electrically connected along the illuminating unit at the downward of the blade frame. The electrical power output from the power delivers to the governing circuit can drive the illuminating unit at the downward of the blade frame. Therefore, the illuminating unit can developed light along out additional electrical power. However, it should be described that the energy saving driver-governing circuit can convert external AC power into DC power, and neglect the power supply noise interference.

When the circuit is handling the energy-saving driver governing circuit can find the position of the rotor in spinning, and therefore calculate the electrical current aspect of individual first magnetizing coils. the energy-

International Conference On Emerging Trends in Engineering and Management Research

NGSPM's Brahma Valley College of Engineering & Research Institute, Anjaneri, Nashik(MS)

(ICETEMR-16)

23rd March 2016, www.conferenceworld.in

ISBN: 978-81-932074-7-5

compensating driver governing circuit has a predetermined number of Hall elements. every of the Hall elements can find the polarity of the rotor in spinning. The energy saving driver-governing circuit can thus determine and governs the electrical current phases of the first magnetizing coils for them to construct the inertia. The rotor can thus continue its spinning Along appreciation to the stator. Moreover, the energy-saving driver governing circuit provides an energy saving governs means, which uses the input voltage in an periodic Way to start the energy saving driver governing circuit. When the energy-saving driver governing circuit accepted the input voltage, it controls the ON time of the first magnetizing coils. The rotor is driven to rotate Along appreciation to the stator and maintain its inertia. When the energy-saving driver governs ling circuit does not receive the input voltage, the rotor continues to rotate Along respect to the stator due to inertia. In this case, the rotor cuts through the magnetic lines and develops a back EMF. Therefore, even when the energy-saving driver governing circuit does not accepted the input voltage, the power delivering governing circuit uses the back EMF find and accepted by the second magnetic coil to generate electrical power. This can effectively raised the power generating efficiency. In the above-mentioned energy, saving governs means, the power delivering circuit and the energy-saving driver governing circuits have to cooperate closely in their signals. It differs from the previous role in that the power distribution governing circuit is electrically connected along a chargeable battery. The electrical power output from the power delivering governing circuit charges the chargeable battery. The chargeable battery is particular electrically connected along the energy-saving driver governing the circuit. When the external power supply stops supplying power, the chargeable battery can still supply power to the energy-saving driver governing circuit. The power delivering governing circuit is further electrically connected along an fluorescent unit and a chargeable battery. The chargeable battery is electrically connected to the energy-saving driver governing circuit. Therefore, the electrical power output from the power delivering governing circuit can be used to drive the fluorescent unit at the bottom of the blade frame and developed light. When the electrical power develops by the power delivers governing circuit is greater than the power consumed by the fluorescent unit, the extra power can be used to charge the chargeable battery. When the external power supply stops supplying power, the energy-saving driver governing circuit can still operate normally under the power supply of the chargeable battery. The governing the circuit. When the external power supply stops supplying power, the chargeable battery can still supply power to the energy-saving driver governing circuit. The power delivering governing circuit is further electrically connected along an fluorescent unit and a chargeable battery. The chargeable battery is electrically connected to the energy-saving driver governing circuit. Therefore, the electrical power output from the power delivering governing circuit can be used to drive the fluorescent unit at the bottom of the blade frame and developed light. When the electrical power develops by the power delivers governing circuit is greater than the power consumed by the fluorescent unit, the extra power can be used to charge the chargeable battery. When the external power supply stops supplying power, the energy-saving driver governing circuit can still operate normally under the power supply of the chargeable battery. This technology as disclosed above has the following advantages: The first magnetizing coil of the stator in the research is directly Winded along a second magnetizing coil along a generator Winding. Therefore, it Achieves the effect of generating power without increasing too much of the motor load. According to the research, the volume and cost of the invention can be greatly reduced. The first magnetizing coil and the second magnetizing coil share

the magnetic objects on the rotor. Therefore, the production cost of the technology can be reduced. The invention uses the second magnetizing coil to detect and receive the back EMF develops because the rotor rotates and cuts through the magnetic lines. The back EMF is used by the power delivering governing circuit to generate electrical power. Therefore, without additional power supply, the research can light up an fluorescent unit or charge a chargeable battery. Therefore, the research can save energy and reduce the utility cost. The research along uses an energy saving means on the energy-saving driver governing circuit to supply the input voltage in an intermittent Way to the energy-saving driver governing circuit. This helps reducing the electrical power. When the energy-saving driver governing circuit does not receive the input voltage, the rotor still rotates Along respect to the stator due to inertia and develops a back EMF. In this case, the power delivering governing circuit can still use the back EMF detected and received by the second magnetizing coil to generate electrical power. This effectively increases the power generating efficiency of the technology.[4]

5.2 Alternative use of this technique.

These technique is used in every moving systems like wheels of car, bicycle, motorbike etc.

If wheels shaft take as a rotor then we have only providing rotor winding and stator winding and charging circuit. this construction working like as dynamowhen the wheel shaft rotated that time electricity generated . This circuit is connected to the battery circuit. So that time battery will charge. when the battery is fully charge that time, we can drive our car after fuel because due to these electricity car will run using electric power.

Suppose in car used these technique then it stored 4times more electricity, because it has 4wheels which are rotated. Hence, Our car gives the more mileage, because electricity is generated by rotating speed of wheel by which of fuel energy. Then our new generation car will become semi-electric car.

VI. CONCLUSION

Alternative use of this technique.

At a time when there is crisis, casting its shadows all over the world one has to look into alternate feasible sources. One such alternate way to generate power is presented in this paper .The spinning energy of the dynamo, can be used to operate several small powered devices like a air conditioning compressor Both dynamo and alternator can be used. The various applications where this power can be used are charging of laptops, magnetic braking system, cell phones, semi-electric cars etc.

this system used in car to increased the efficiency of engine more than today cars.

Applications

- 1) Colleges, hospitals, hostels are equipped along at least 50 fans where this energy generating mechanism may be used to light up the tube lights or charge a battery and power up other devices like computers ,laptops etc.
- 2) In order to charge cell phone we need a mobile charging circuit which would give the appropriate voltage and current required for charging the mobile and will be helpful to middle class people to save energy and money.
- 3) similarly in car storage electric power.
- 4) Used run compressor in a air conditioning of car.
- 5) magnetic breaking system.

Advantages

International Conference On Emerging Trends in Engineering and Management Research

NGSPM's Brahma Valley College of Engineering & Research Institute, Anjaneri, Nashik(MS)

(ICETEMR-16)

23rd March 2016, www.conferenceworld.in

ISBN: 978-81-932074-7-5

- 1) Low initial cost: - The initial cost of an electric motor is considerably lower than solar photovoltaic (PV) panels along the same Output.
- 2) No emissions of carbon dioxide (Co₂), mercury(Ag), nitrogen oxide (N₂), sculpture dioxide (Sio₂) or particulate matter into the air, water or soil and helps preserve and protect the environment for future generations.
- 3) Minimum maintenance cost once generators are constructed, they can operate efficiently along out any problems for long period. Additionally, one need not have to check them on a regular basis and extra cost of generator maintenance could be avoided.
- 4) Reduces the cost of transmit electricity along the power lines.

DISADVANTAGES

- 1) The incorporation of dynamo's mechanism may reduce speed of the fan & car
- 2) The electricity generated by the mechanism will be lesser than the electricity consumed by fan.
- 3) the design of the car becomes complicated (center gravity, space required)
- 4) the production cost of the car will increased.

REFERENCES

- [1] Amit Roy Rajshahi University of Engineering & Techn..20 PUBLICATIONS Md. Rokunuzzaman Rajshahi University of Engineering & Techn...
20 PUBLICATIONS
- [2] Mayank Grover, B. Lohith Kumar, Isaac Ramalla, International Journal of Scientific and Research Publications, Volume 4, Issue 12, December 2014 1 1 ISSN 2250-3153
- [3] MD Squib Gadara et al, / (IJCSIT) International magazine of Computer Science and Information Technologies, Vol. 5 (3) , 2014, 3294 – 3297
- [4] http://www.appropedia.org/Rowan%27s_portable_pedal_power_generator