



FRICITIONLESS FLYWHEEL ELECTRICITY GENERATION FORELECTRIC VEHICLE

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Abstract— The production and use of energy are vital to the economies of all countries and it is needed for many activities such as lighting and phone charging and driving the bike and lot of other stuff, Energy is usually produced by non-renewable sources such as petrol, Kerosene and nuclear which unfortunately create pollution, this is the main reason the idea of producing energy using a bike or Cycle Tyre. Since there are cycling competition that are conducted throughout the year we could Generates sufficient energy to charge small and large devices. But The problem is lots of other existing energy generation mechanism or generators generates energy by taking some physical contact with Tyre but we are developing This idea that couldgenerates electricity without any friction with flywheel.

Keywords— Flywheel, mechanism

I. INTRODUCTION

Combining This is a mechanical device which uses the flywheel to store energy in the form of inertia. Let us explain all the system. In this system we apply extra energy source to start the main motor like electricity or by applying the mechanical energy. In this system a main motor is used to drive a series of pulley and belt arrangement which forms a gear train arrangement which produce a twice/ thrice speed at the shaft of generator.

The intriguing thing about this system is that grater electrical can be drawn from the output generator than appears to be drawn from the input drive to the motor. The inertia of flywheel can be increase by increasingthe radius of flywheel, weight of flywheel.

Firstly, the requirement for an effective system needs to be a suitable flywheel with as large a diameter as is practical, and vast majority of the weight needs to be close to rim. The construction needs to be robust and secure as ideally, the rate of rotation will be high as possible, and of course,

the wheel increases if the flywheel weight is concentrated as far out toward the rim of the flywheel as is possible. needs to be exactly at right angles to the axle on which it rotates and exactly centered on the axle. The main motor is low speed and low voltage input motor and the generator is high speed and high voltageoutput generator. So,

when we apply an extra energy to the main motor it starts running, which causes to rotate the flywheel. When the motor is reaches the highest speed (constant speed) we switch the power by applying the electrical energy generated by the generator.

II. LITERATURE REVIEW

K. Ghedamsi- “The flywheel energy storage systems (FESSs) are suitable for improving the quality of theelectric power delivered by electric motor.

Jamie Patterson, 2004, “The broad goal of this project was the development and demonstration of a complete prototype Flywheel Power System (FPS) and successful proof of the feasibility of this energy storage technology. The next step in development will be final system modifications for the transition from laboratory to field testing, and interface engineering for a field experiment.”

Michael Mathew, 2009, “Flywheels serve as kinetic energy storage and retrieval devices with the ability to deliver high output power at high rotational speeds as being one of the emerging energy storage technologies available today in various stages of development, especially in advanced technological areas, i.e., spacecraft’s. Today, most of the research efforts are being spent on improving energy storage capability of flywheels to deliver high power at transfer times, lasting longer than conventional battery powered technologies. Mainly, the performance of a flywheel can be attributed to three factors, i.e., material Strength, geometry (cross-section) and rotational speed. While material Strength directly determines kinetic energy level that could be produced safely Combined (coupled) with rotor speed, this study solely focuses on exploring the effects of flywheel geometry on its energy storage/deliver capability per unit mass, further defined as Specific Energy”.

B.Sneha , Dr.M.Damodar Reddy, October 2015 “Generation of Power from Bicycle Pedal” It is known that the supply of fossil fuels are scarce and their usage as energy source cause environmental degradation

,in addition to this as the world population increases the energy demand is also increasing day by day, so we are in a search of new renewable energy sources. In this paper an easy way of generating power at small levels by using bicycle pedal was analyzed. Dynamo attached to the cycle pedal can serve as a mechanism for converting mechanical energy from pedal to electrical energy. For running of appliances we need to convert this dc power to ac power by using inverter. Output of the dynamo or generator depends on the pedaling speed. A hardware prototype of this model is developed and tested for various loads.

PROBLEM STATEMENT

Loss of power:

In other system there are the various losses. Which include heat loss, friction loss etc. which causes major loss of energy for this frictionless energy must be needed

More friction:

due to the friction more amount of heat is generated in the system and also it causes wear and tear of the material, also this heat cause the deflection of material. due to the friction we have to exert more power to the machine it opposes the motion due to friction noise also produce in the machine. Due to friction engine consumed more fuel so there is a wastage of energy. so we cannot convert all input power to the output energy. **Wastage of energy:**

when energy is transfer between two bodies this total energy usually results in maximum kinetic energy loss of the system

Less quantity of fuel on earth:

There is a limited amount of fossil fuel. which found in rare places Each of those regions contains less than 15 percent of the world's proven reserves Worldwide, there is still quite a bit left, enough so that supply can exponentially increase to cope with demand at least up until 2020. In 2020, it is anticipated that non- OPEC and OPEC nations will produce about 120 million barrels of oil per day. Compare that to today where about 75 million barrels of oil are produced today. Demand for oil is accelerating rapidly worldwide while supplies remain finite..

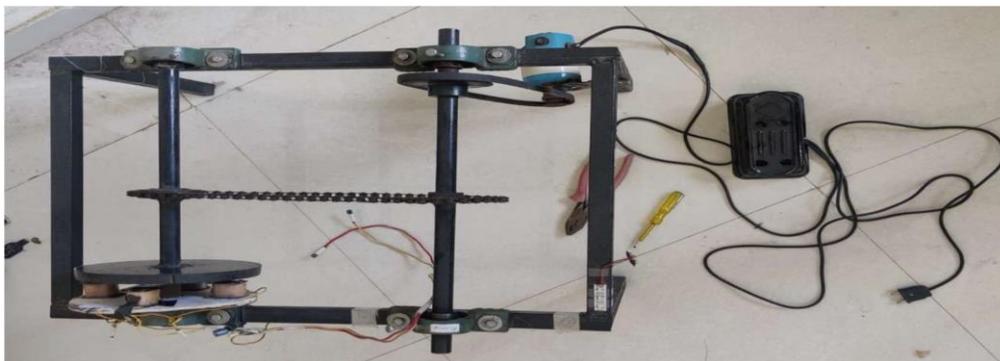
OBJECTIVES

- 1. Save energy:** Flywheel is used in this project due to which kinetic energy is saved while normal & breaking the vehicle.
- 2. Reduce friction:** Dynamo mechanism or regenerative braking system not used in this project coils & magnet concept to generate electricity frictionlessly
- 3. No air & environment pollution:** No fuel is required to run this project due to which no exhaust of pollutants take place.
- 4. Easy power generation:** As the vehicle is running the power generation takes place by itself and no need of extra efforts to generate power.
- 5. low cost:** Main constrain a Low cost device middle class or small scale industries or society can use it with the vehicles .

METHODOLOGY

We have used the flywheel which is connected to the bicycle rear wheel sprocket by chain. When the driver pedals the bicycle front chain wheel or sprocket rotates which is connected to pedal and crank. Rear sprocket is mounted on right side of the rear wheel and it is connected with front sprocket by means of chain and another big sprocket is mounted on left side of the rear wheel. Flywheel and axial flux generator setup are placed above the rear wheel. The coil arrangement is stator, magnets are attached on flywheel surface which is known as rotor. The motion is transfers from pedal to rear wheel and flywheel. The kinetic energy stores in the flywheel while vehicle is in running condition and it release the kinetic energy back to the system or coil and magnet arrangement when apply break on the wheel. The coil is in fixed position and rotor rotates here electromotive force is produced. The electric power is generated and stored, later it will be utilized for many applications.

VI. EXPERIMENTAL SETUP



VII. COMPONENTS

- Neodymium Magnet
- Flywheel
- Chain drive
- Free Wheel
- Sprocket
- Coil
- Battery
- Capacitor
- Diode

VIII. FUTURE SCOPE

We are primarily developing the project for charging electric vehicles battery while travelling in remote place and it can be expanded by increasing the magnets and coils in quantity and reducing the space in between the disks on which magnets and coils are placed, by this maximum line of force is cut by the coil and flux will generate more and induced voltage will be maximum. Using this project on motor cycle we can charge which takes 1 to 1:30 hour to get full charge. By using this project we are going to remove the disadvantage of conventional power generator which make use of dynamo as a power generator which produces friction and decrease the speed of bicycle. In this project we have overcome this friction and produces clean energy.

IX. Conclusion

We can conclude that, the system arrangement generates electricity without any friction with flywheel and it can be utilized in the maximum amount. We have successfully designed the project and implemented on frame, the generated power is utilized to charge the mobile phones and mobile devices; we also understand the concept of electromagnetism and how to generate power by just placing the magnet and coil of equal quantity on different disks without making any contact. The voltage output taken from the assembly is totally dependent on the rpm of the wheels so voltage is fluctuating so a battery is used to provide a constant power supply to our cell phone. A battery connected to the generator assembly is continuously charged when shaft moves at 80- 90 rpm which is normal speed of bicycle. By this assembly battery is continuously charging.

X. References

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