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Energy Free Flywheel

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ABSTRACT:

Producing electricity using traditional techniques requires a significant amount of energy, which comes from the fuels that are then transformed into other forms of energy. Using an integrated motor generator, electric energy is used to accelerate the mass. Modern power or electricity production involves this process of transforming many forms of energy. So, a motor can be used to rotate a flywheel, and due to inertia, the flywheel will continue to rotate, which will be used to run the alternator and generate electricity.

The idea of employing flywheels to generate electrical energy is the subject of this essay. Therefore, if we combine the two systems, we will get partial perpetual motion, which has an efficiency of around 320 times the energy or fuel used to generate the electricity.

Keywords: Flywheel, Free Energy, Electrical Energy, alternator, RPM.

I. INTRODUCTION:

Since we all understand how important electricity is, it is vital to develop new methods of producing it. Nikola Tesla once said that all people should have energy sources for free to fulfil their daily needs [1]. There is electricity everywhere present in limitless quantities and can drive the world's equipment without the need of non-renewable sources such as gas, coal, or oil [3]. It is also preferable to avoid using non-renewable resources like coal, oil which we cannot replenish, and which emits hazardous pollutants when burned. To create an environmentally friendly planet, the world must develop new methods of electricity generation. So, it is important to offer highly efficient alternative sources of electricity generation. Just like using the wind's power to propel a windmill, mechanical energy is used. Solar energy, on the other hand, is converted into DC current in solar cells and stored in batteries. Other sources of energy include telluric power, waterpower, and wind power [2]. These kinds of energy are produced using free energy generators.

Energy is produced and used in a variety of ways that are essential to the economics of all nations, including lighting, charging devices, moving bicycles, and many other things. The idea of creating energy using a bike or cycle tyre was born out of the fact that most energy comes from non-renewable sources like nuclear, kerosene, and fossil fuels, which sadly cause pollution [2]-[4]. We may generate enough energy to charge both small and large electronics because cycling contests are held all year long [1]. The issue is that many different energy generation mechanisms or generators already in use produce energy by making physical contact with tyres, however the concept we are working on might produce electricity without any friction with the flywheel.

II. THEORY:

Our project's goal is to use a flywheel to produce free energy. An alternator's shaft rotates more than twice as fast when a gear train made up of a succession of belt and pulley drives is driven by a mains motor with a one and a half horsepower capacity. It's interesting how this system works since more electrical output power may be acquired from the alternator's output than seems to be needed from the input motor. The assistance of Flywheel is used for this. To increase the amount of extra or free energy produced, the gear train is linked with the gravity wheel or flywheel. To get the freest energy out of the system, a thorough analysis of the flywheel's numerous properties is conducted.

III. MATERIALS AND METHODS

A. Materials

- **Flywheel-** A flywheel acts as a reservoir, storing energy when the supply of energy is greater than the demand and releasing it when the demand for energy is greater than the supply. The energy stored in the flywheel is in the form of kinetic energy. Through the belt drives, this accumulated energy is transferred to produce electricity in the alternator.

Fig. 1 a) Automobile flywheel. b) Conventional flywheel

- **Pulley-** A pulley is used to provide motion and direction to the cables. It is a type of wheel that is mounted on a shaft or axel. In the case of a pulley supported by a frame or shell that does not transfer power to a shaft but is used to guide the cable or exert a force, the main function of the pulley is to change the direction and point of application of a pulling force. It allows you greater control and precision when lifting and moving heavy objects. Pulleys are often used in sets, called pulley systems, to reduce the amount of force needed to lift a load. This is known as a mechanical advantage.

1. **Belt-** A belt is a flexible material loop that is used to mechanically connect two or more spinning shafts, most frequently in parallel. Belts can be utilized as a source of motion, an effective power transmitter, or a relative movement tracker. It is not necessary for the shafts to be parallel when a belt is looped over pulleys; there may be a twist between the pulleys. In a two-pulley system, the belt has two options: it may be crossed to reverse the direction of the driven shaft, or it can drive the pulleys regularly in one way. Using different-sized pulleys, the belt drive may also be utilized to adjust the rotational speed up or down.

Fig. 2 Belt and Pully

2. **Shaft-** A shaft is a revolving machine component that transfers power from one component to another utilizing transmission components like pulleys and gears. Two shafts, each measuring 2 feet in length and 2 inches in diameter, are utilized to connect the flywheel to the AC motor.

3. **Bearing-** A bearing is a component of a machine that limits relative motion to only the necessary motion and lessens friction between moving elements. To support shafts 1 and 2, four journal bearings with a diameter of 2 inches are employed.

4. **Motor/ Generator-** Flywheels are complex structures where energy is stored and retrieved by using electrical machinery like a motor or generator. The electrical machinery should work as a motor and generator to deliver electrical energy and store the energy in the flywheel.

- **A.C. motor-**An electric motor that is powered by alternating current is known as an AC motor. The flywheel is rotated using two shafts and a 2 HP AC motor. AC motor specifications are listed in the table below.

5. **Alternator:** An alternator is a type of electrical generator that transforms mechanical energy into alternating electricity. An alternator of 5 kW is used to produce electricity and utilize the energy stored in the flywheel. The alternator's maximum speed is 1500RPM. The table below displays an alternator’s comprehensive specifications.

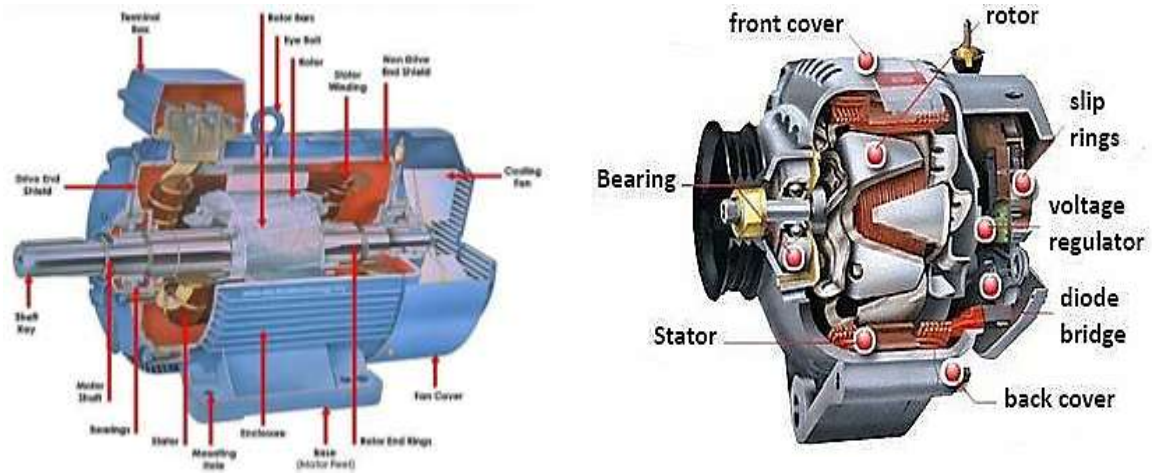

Fig. 3 Construction of a) Motor & b) Generator

B. Methods

- The use of flywheels dates back thousands of years. In recent years, internal combustion engines have seen the highest usage. A straightforward mechanical energy storage device is a flywheel. A revolving disc that spins around its axis stores energy. This energy is inversely related to the rotational speed squared and mass of the object.
- Introduction to Kinetic Storage (also known as FES), kinetic storage is a term used in a variety of technical domains. The integrated motor-generator located inside the housing is connected to the flywheel rotors. The revolving flywheel's energy is captured and then stored by the motor generator. The use of a flywheel power system can extend battery life, eliminate the need for batteries, provide energy sustainability, and control the frequency of power.

IV. Calculating the output and efficiency of the system-

A. Calculation for Motor

Voltage (Output): 220 V

Voltage (Rated): 240 V

RPM (Rated): 1500 rpm

Input Current at 240 V= 19.28 A

$$\text{At } 220\text{V} = \frac{220 \times 19.28}{240}$$

= 17.67 A

Input Power = P = VIcosθ

P = 220 × 17.67 × 0.8

P = 3109.92 W

P = 3.12 kW

Motor Input = 3.12 kW

A. Calculations for Generator

Voltage (Output): 240 V

Voltage (Rated): 300 V

RPM (Rated): 1500 rpm.

Output Voltage = 300 V

Power at 300 V = 300 × 17.67 × 0.8

= 4240.8 W

= 4.24 kW

$$\text{Power at 240 V} = \frac{4.25 \times 240}{300}$$

= 3.392 kW

Output of alternator/generator= 4.167 kW

Rpm of shaft = 750 rpm

$$\omega = \frac{2\pi N}{60} = \frac{2\pi \times 750}{60}$$

= 78.54 rad/sec

Torque,

$$T = \frac{P}{\omega} = \frac{3.392}{78.54}$$

T = 0.04318 × 100

T = 43.18 N-m

Total Efficiency (η) = $\dfrac{\text{Total alternator output obtained}}{\text{Total motor input given (KW)}}$ $\eta = \dfrac{3392}{3109.92} \times 100$

η = 1.090 × 100

η ≈ 100 %

∴ system gives extra (100%) output.

B. Calculating Kinetic Energy in Flywheel:

$$\text{K.E.} = \frac{1}{2} mv^2$$

v = πDN/60

N = Angular speed of flywheel (N-m)

v = Velocity of flywheel (m/sec)

K.E. = Kinetic energy of flywheel (J)

D = Diameter of flywheel (cm)

For this system

D = 65.26 cm

D = 65.26 × 10^{-2} m

D = 0.6526 m

m = 85 kg

$$v = \frac{\pi DN}{60} = \frac{\pi \times 0.6526 \times 750}{60}$$

v = 25.62 m/sec

$$\text{K.E.} = \frac{1}{2}mv^2 = \frac{1 \times 85 \times (25.62)^2}{2}$$

K.E. = 27,896.337 J

K.E. ≈ 27.9 KJ

V. CONCLUSION

Flywheel technologies are the optimistic technology for replacing conventional acid-type batteries that are used for energy storage systems. In accordance with our project, the energy can be stored by using the inertia of the spinning wheel.

According to this, free energy is obtained from the electrical output, i.e., the extra output. As we have used a flywheel weighing 85 kg, the AC generator has produced 3.12 kW of electrical energy. It can be used in various applications like in workshops and to run other electrical equipment.

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