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Electromagnetic Engine

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Abstract: The main objective of this project is to utilize our ideas, innovation, themes, knowledge, design skills, imagination and personal interest in designing, calculation and fabrication of the "ELECTROMAGNETIC ENGINE", an R&D project. *This* engine does not require any kind of fuel. And, hence does not create any kind of pollution including noise pollution. The engine works on magnetic power. Repulsion between two magnets makes the movement of piston and thus the flywheel. No-pollution engine which is a very big step towards global warming.

Key words: This engine does not require % Repulsion between two magnets

INTRODUCTION

The magnetic engine is according to the concept appearsto beaso-called" perpetual motion machine". Magnetic engine, in housing of which are placed the neodyne magnet, the first of which is established with the guarantee of a possibility of the accomplishment of reciprocating motion under the action of the forces of magnetic field, and the housing is also established the shaft, connected with the first magnet with the aid of the means, which makes it possible to convert the reciprocating motion of the first magnet in to the rotation of shaft, that is characterized by the fact that the second magnetis securely fastened on the housing opposition first, both magnets are oriented by poles counter.

The project work is a combination of electrical, electronics and mechanical power.

Electromagnetic Engine: The magnetic engine is according to the concept appears to beaso-called "perpetual motion machine". Magnetic engine, in housing of which are placed the neodyne magnet, the first of which is established with the guarantee of a possibility of the accomplishment of reciprocating motion under the action of the forces of magnetic field, in the housing is also established the shaft, connected with the first magnet with the aid of the means, which makes it possible to convert the reciprocating motion of the first magnet in to the rotation of shaft, that is characterized by the fact that the second magnetis securely fastened on the housing opposition first, both magnets are oriented by poles counter.

Working: The engine consists of a piston, cylinder, connecting rod, shaft, flywheel, bearings, battery, timer, an electromagnet. The piston top is affixed by a neodyne magnet of very high magnetic power. Below the cylinder block, there is an electromagnet placed. The electromagnet receives the charge from battery. As, it gets the charge, the magnetic property activates and hence it repels the piston to move towards TDC. A timer is used to cut and supply the charge from battery, frequently. So, the piston moves from BDC to TDC under the action of repulsion and it moves from TDC to BDC under the action of gravity. Hence, the timer works as a contact beaker. The connecting rod is attached to the piston with gudgeon pin. The other end of the connecting rod is attached with a link which finally is connected to the shaft of flywheel. Hence the flywheel rotates with the movement of piston. The power is produced in every two strokes.

Parts of the Project

Batteries: In isolated systems away from the grid, batteries are used for storage of excess solar energy converted into electrical energy. The only exceptions are

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isolated sunshine load such as irrigation pumps or drinking water supplies for storage. In fact for small units with output less than one kilowatt. Batteries seem to be the only technically and economically available storage means. Since both the photo-voltaic system and batteries are high in capital costs. It is necessary that the overall system be optimized with respect to available energy and local demand pattern [1]. To be economically attractive the storage of solar electricity requires a battery with a particular combination of properties:

- Low cost
- Long life
- High reliability
- High overall efficiency
- Low discharge
- Minimum maintenance
- Ampere hour efficiency
- Watt hour efficiency

We use lead acid battery for storing the electrical energy from the solar panel for lighting the street and so about the lead acid cells are explained below.

Lead-acid Wet Cell: Where high values of load current are necessary, the lead-acid cell is the type most commonly used. The electrolyte is a dilute solution of sulfuric acid (H2SO4). In the application of battery power to start the engine in an auto mobile, for example, the load current to the starter motor is typically 200 to 400 A. One cell has a nominal output of 2.1V, but lead-acid cells are often used in a series combination of three for a 6-V battery and six for a 12-V battery.

The lead acid cell type is a secondary cell or storage cell, which can be recharged. The charge and discharge cycle can be repeated many times to restore the output voltage, as long as the cell is in good physical condition. However, heat with excessive charge and discharge currents shortends the useful life to about 3 to 5 years for an automobile battery. Of the different types of secondary cells, the lead-acid type has the highest output voltage, which allows fewer cells for a specified battery voltage.

Operations: As we know the IC 555 is available in 8-pin and 14-pin dual-in-line packages or in a circular to-99 metal can with eight loads [2].

The device consists of two comparators to control the transistor. The circuit consists of flip flop and a buffered output stage. The reference voltage for the two comparators inside the 555 is developed across a voltage divider consisting of S3 equal resistor of 5 K ohms each. The threshold comparators is referenced at 1/3 Vcc. The two comparators control the stages of internal transistor T1 is conducting that represent a sort circuit across timing capacitors Cr the level of the terminal is low.In most practically circuit the voltage on pin 2 is held by above Triggering point by a resistor connected to Vcc. The negative going trigger pulse is applied to pin 2. Potential at this point to fall below ½ Vcc, the trigger comparator switches the flip flop cutting of T1 and forcing the output level high to a value slightly below Vcc. Capacitor now starts to charge and the voltage across it rises exponentially until it reaches the flip flop and the output returns to its low state just slightly above ground. Now transistor T1 is turned ON discharged Cr so that it can read for its next timing period. Once the triggered the circuit responds to additional triggering until the time interval is elapsed.

The delay periods is 1.1 Re Cr. The important features of IC555 can be summarized as follows [3].

- Timing range from microseconds to hours.
- Mono-stable and Astable operation is possible through IC555.
- The duty cycle can be adjusted according to our necessity.
- It has the ability to operate from a wide range of supply Voltage.

The output of 555 is compatible with CMOS, DTL and TTL, logic. But when used with a 5V supply.

- Triggering and reset inputs are logically compatible.
- Output can be operated as normal ON and normal OFF.
- High temperature stability.

Unlike RC timers, 555 provide a time intervals that is virtually independence of supply voltage Vcc. This because that, the charge rate of CT and the reference voltage to the threshold comparator are all directly proportional to the supply voltage.

Electromagnet Coil: An electromagnet is a type of magnet whose magnetic field is produced by the flow of electric current. The magnetic field disappears when the current ceases. Electromagnets are very widely used as components of other electrical devices, such as motors, generators, relays, loudspeakers, hard disks, MRI machines, scientific instruments and magnetic

separation equipment, as well as being employed as industrial lifting electromagnets for picking up and moving heavy iron objects like scrap iron.Electromagnets attract paper clips when current is applied creating a magnetic field. The electromagnet loses them when current and magnetic field are removed [4].

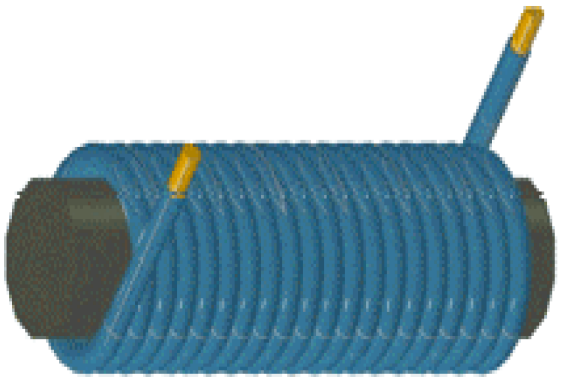

Fig. 3.3.1: A COIL

A simple electromagnet consisting of a coil of insulated wire wrapped around an iron core. The strength of magnetic field generated is proportional to the amount of current.

Current (I) through a wire produces a magnetic field (B). The field is oriented according to the right-hand rule. An electric current flowing in a wire creates a magnetic field around the wire. To concentrate the magnetic field of a wire, in an electromagnet the wire is wound into a coil, with many turns of wire lying side by side.

The magnetic field of all the turns of wire passes through the center of the coil, creating a strong magnetic field there. A coil forming the shape of a straight tube (a helix) is called a solenoid; a solenoid that is bent into a donut shape so that the ends meet is called a toroid. Much stronger magnetic fields can be produced if a "core" of ferromagnetic material, such as soft iron, is placed inside the coil. The ferromagnetic core magnifies the magnetic field to thousands of times the strength of the field of the coil alone, due to the high magnetic permeability ì of the ferromagnetic material. This is called a ferromagnetic-core or iron-core electromagnet [5].

The direction of the magnetic field through a coil of wire can be found from a form of the right-hand rule.If the fingers of the right hand are curled around the coil in the direction of current flow (conventional current, flow of positive charge) through the windings, the thumb points in the direction of the field inside the coil. The side of the magnet that the field lines emerge from is defined to be the north pole.

The main advantage of an electromagnet over a permanent magnet is that the magnetic field can be rapidly manipulated over a wide range by controlling the amount of electric current. However, a continuous supply of electrical energy is required to maintain the field.

CONCLUSION

The R&D project was completed successfully. A concept model on design, calculation and fabrication of " ELECTROMAGNETIC ENGINE" was made. The main theme of our project is to produce an engine which does not require any fuel at all [6]. And, hence it does not emits any emissions. This engine helps to conserve our natural resources. Also, practical use of this engine will exclude automobiles from the causes of global warming.

The engine can be used anywhere where rotary motion is required.

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