An Innovative way for Power Generation by using Magnet Mill

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Abstract— It has been found that by using Neodymium magnet mill can generate electrical power. Now a day power generation is the main consideration to meet the future load demand. Commonly wind mill, thermal, hydel and solar power plant and so on was used for generating power. In this research work, single input electric power was used to generate multiple output electric power. Neodymium Magnets was used to produce the electricity. 12 Neodymium magnet setup was produced 8V DC supply. By increasing the magnet setup we can increase the power output.

Index Terms— Neodymium Magnet, Battery, Dynamo

I. INTRODUCTION

Highlight Magnets are objects that generate a magnetic field, a force-field that either pulls or repels certain materials, such as nickel and iron. Of course, not all magnets are composed of the same elements, and thus can be broken down into categories based on their composition and source of magnetism. Permanent magnets are magnets retain their magnetism once magnetized. Temporary magnets are materials magnets that perform like permanent magnets when in the presence of a magnetic field, but lose magnetism when not in a magnetic field. Electromagnets are wound coils of wire that function as magnets when an electrical current is passed through. By adjusting the strength and direction of the current, the strength of the magnet is also altered. There are various types of magnets depending on their properties. Some of the most well known are listed below.

A. Permanent Magnets

These are the most common type of magnets that we know and interact with in our daily lives. E.g.; The magnets on our refrigerators. These magnets are permanent in the sense that once they have been magnetized they retain a certain degree of magnetism. Permanent magnets are generally made of ferromagnetic material. Such material consists of atoms and molecules that each have a magnetic field and are positioned to reinforce each other.

B. Classification

Permanent Magnets can further be classified into four types based on their composition: 1. Neodymium Iron Boron (NdFeB or NIB) 2. Samarium Cobalt (SmCo) 3. Alnico 4. Ceramic or Ferrite.

NIB and SmCo are the strongest types of magnets and are very difficult to demagnetize. They are also known as rare earth magnets since their compounds come from the rare earth or Lathanoid series of elements in the periodic table. The 1970s and 80s saw the development of these magnets.

Alnico is a compound made of ALuminium, Nickel and Cobalt. Alnico magnets are commonly used magnets and first became popular around the 1940s. Alnico magnets are not as strong as NIB and SmCo and can be easily demagnetized. This magnet is however, least affected by temperature. This is also the reason why bar magnets and horseshoes have to be taken care of to prevent them from losing their magnetic properties.

The last type of permanent magnets, Ceramic or Ferrite magnets are the most popular today. They were first developed in the 1960s. These are fairly strong magnets but their magnetic strength varies greatly with variations in temperature.

C. Shape & Configuration

Permanent magnets can be made into any shape imaginable. They can be made into round bars, rectangles, horseshoes, donuts, rings, disks and other custom shapes. While the shape of the magnet is important aesthetically and sometimes for experimentation, how the magnet is magnetized is equally important. For example: A ring magnet can be magnetized S on the inside and N on the outside, or N on one edge and S on the other, or N on the top side and S on the bottom. Depending on the end usage, the shape and configuration vary.

D. Demagnetization

Permanent magnets can be demagnetized in the following ways: - Heat - Heating a magnet until it is red hot makes it looses its magnetic properties. - Contact with another magnet - Stroking one magnet with another in a random fashion, will demagnetize the magnet being stroked. - Hammering or jarring will loosen the magnet's atoms from their magnetic attraction.

E. Temporary Magnets

Temporary magnets are those that simply act like permanent magnets when they are within a strong magnetic field. Unlike permanent magnets however, they lose their magnetism when the field disappears. Paperclips, iron nails and other similar items are examples of temporary magnets. Temporary magnets are used in telephones and electric motors amongst other things.

II. PROPOSED WORK

A. Magnet Mill

In this research work one magnet assembly was used to provide torque to another assembly. The assembly of magnets same dimension was fixed in the opposite side. Then another assembly was fixed in 0.5cm gap, the assembly of magnet was continuously fixed. 12mm magnets were used to one assembly. The stepper motor was fixed in the initial assembly and the motor was connected to a 12V motor. The opposite assemblies are connected to a 12v dynamo to produce the power. When supply was given in the initial assembly it will rotates, then another assembly rotates automatically because of pulling and pushing force of the magnets, then another assembly was automatically rotates after it will continuous the rotation.

This figure 1 shows first drawing model of the magnet mill. In this 12mm diameter magnet and 25mm diameter magnet was to make the rotation and produced 8 V DC power.

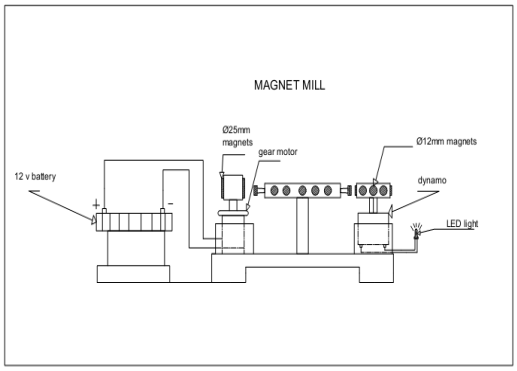

Figure 1 drawing model of the magnet mill

III. CONSTRUCTION AND DEVELOPMENT OF NEODYMIUM MAGNET MILL

A. Neodymium Magnet

The following figure 2 shows the neodymium magnets. It was used in our project to produce the power. It is one of the permanent magnet it is highly power full and small size. So we are using this magnets but its cost is minimum high. But it was suitable for our project. These small 0.5"-diameter neodymium disc magnets have a required pull force. The Neodymium 40 rare earth magnets are nickel-plated for years of use.

Figure 2 Structures of Neodymium Magnet

B. Stepper Motor and Neodymium Magnet Arrangement

The figure 3 shows the gear motor (or) stepper motor. It was also called as 12v gear motor, it was fixed at in front of the magnet mill assembly. Gear motor was the input of magnet mill it gives the rotation of the magnet it will attract another poles of the magnets and rotates these assemblies. Only the 12v input it rotates the gear motor. Another one option of gear motor is it also working at dynamo. So it was also used as power production.

Figure 3 Stepper Motor connected with Neodymium Magnet

C. Dynamo

The following figure 4 shows 12v dynamo and it was used to produce the electric power to the use of rotations of the wood pieces, the wood pieces are inserted on the dynamo .Its minimum power production speed was 100rpm.The dynamo output was connected to the LED lights. Maximum four assemblies we are fixed in this type of dynamos.

Figure 4 12V Dynamo

D. Regulator circuit for controlling the speed of Stepper Motor

The figure 5 shows the regulator circuit. And it was used to control the gear motor speed. It was known as 12v regulator. Used to vary the motor speed at constant rpm. It was fixed in front of the magnets assembly; it's connected to battery and the gear motor in series connection. The regulator conducts the 12v input into 12v output. The whole assembly of the system was 12v assembly.

Figure 5 Regulator circuit for controlling the speed of Stepper Motor

IV. FUTURE SCOPE OF WORK

The following figure 6 shows the future drawing of research work. It can generate mass power production and would suitable for industrial purpose.

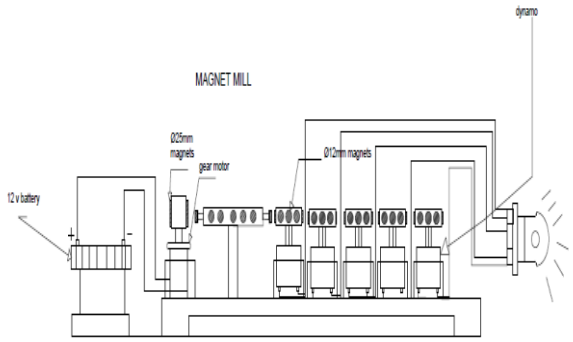

Figure 6 drawing model of the magnet mill for continuous power production

Advantages

1. It gives continuous amount of output electricity with small amount of input.
2. It will reduce the electricity shortage.
3. We can multiple the single inputs in number of output required.

Disadvantages

1. The system is to be maintain without attain the critical speed.
2. To produce large amount of current, more number of magnets are required.

V. CONCLUSIONS

In this paper, a new concept of power generation by using Neodymium Magnet was discussed. The advantages and disadvantages of this process were also discussed. This paper would be useful to young engineers to study new concept of power generation.

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