

Electric Power Generation by Using Magnetic Repulsive Force

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ABSTRACT: This paper proposes a technology to produce electrical energy using repulsion magnet technique. The proposed technology employs the theory of magnetic repulsion. To utilize a small amount of electrical energy to produce more electrical energy by magnetic repulsion technique. The system uses permanent magnets to produce repulsion and this repulsive force produces a torque which drives a DC generator. The repulsive magnet disc which contains a number of permanent magnets are arranged on a circumferential portion of the disc with regular intervals and same magnetic polarity of permanent magnets are located on the shaft of motor. The rotating disc is coupled with generator through a set of gears. During driving a load, the motor rotates the disc due to magnetic repulsion which drives a DC generator to produce electrical energy. The power output from the DC generator can be boosted by the voltage booster and stored in batteries or used to drive any AC loads through an inverter.

KEYWORDS: Permanent Magnet, DC generator, Magnetic repulsion, Voltage booster.

I. INTRODUCTION

In the present scenario power becomes the major need for human life. The availability and its per capita consumption are regarded as the index of national standard of living in the present day civilization.[1] Energy is an important input in all the sectors of any country's economy.[2] Energy crisis is due to two reasons, firstly the population of the world has been increased rapidly and secondly standard of living of human beings has increased.[3] India is the country, which majorly suffers with lack of sufficient power generation.[4]

The availability of regular conventional fossil fuels will be the main sources for power generation, but there is a fear that they will get exhausted eventually by the next few decades. Therefore, we have to investigate some approximate, alternative, new sources for the power generation, which is not depleted by the very few years.[5] Another major problem, which is becoming the exiting topic for today is the pollution. It suffers all the living organisms of all kinds as on the land, in aqua and in air.[6] Power stations and automobiles are the major pollution producing places. Therefore, we have to investigate other types of renewable sources, which produce electricity without using any commercial fossil fuels, which is not producing any harmful products.[8] There are already existing such systems using renewable energy such as solar wind), OTEC (ocean thermal energy conversions) etc...for power generation. This paper proposes a novel technology to convert the rotational free energy available from rotating machines to electrical energy using repulsion magnet technique. [9]

The repulsive-type magnetic system has been employed so far in bearing and levitation systems alone. Due to the scarcity of power generation, much modern technique must be employed for power production in this world. This proposed work states the new invention of producing energy from repulsive type magnetic system for power generation. The technique is very effective and cost enough. This paper proposes a technology to produce electrical energy using repulsion magnet technique.[10] The proposed technology employs the theory of magnetic repulsion. The system uses permanent magnets to produce repulsion and this repulsive force produces a torque which drives a DC generator. The power output from the DC generator can be boosted by the voltage booster and stored in batteries or used to drive any AC loads through an inverter.

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II. BLOCK DIAGRAM OF PROPOSED SYSTEM

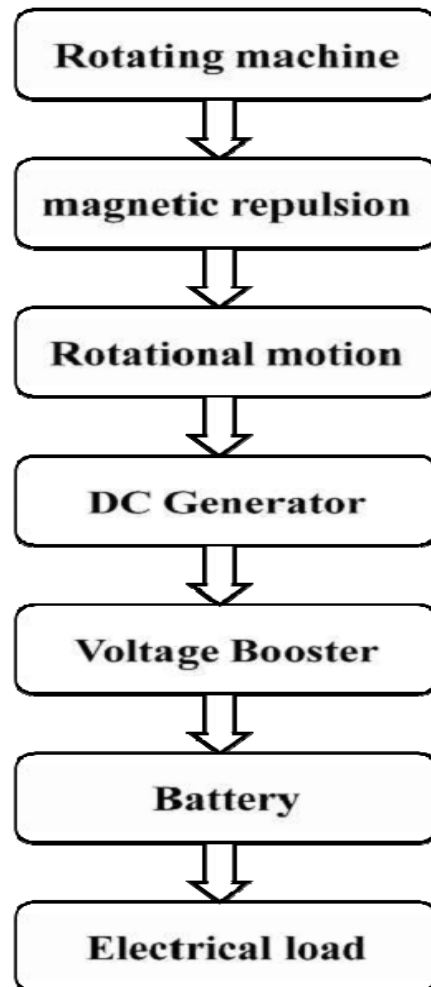


Fig. 1 Block diagram

Rotating apparatus is produce to rotary motion due to magnetic repulsive force. The rotary motion is transmitted to generator through spur gear. Generator is used for convert mechanical energy to electrical energy the converted electrical energy which is booster up by voltage booster and then stored into the battery. The inverter is connected with battery for convert the DC into AC.

III. CONSTRUCTION

This system is consists of magnetic disc, bearing, gears, DC generator, voltage booster, DC motor and battery. The magnetic disc made up of plastic which contains a number of permanent magnet (Neodymium Magnets) are arranged on a circumferential portion of the magnetic disc such that same magnetic pole are face outward direction of the magnetic disc. The magnetic disc and large size driver plastic gear are connected by the shaft, rotates freely with the help of bearing which is rigidly fixed with the stand. The same polarity of magnet is placed on the surface of the motor shaft which is placed near the magnetic disc. The small size driving gear is placed on the shaft of the DC generator

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which is meshed with driver gear. The DC generator is fixed in to the stand. The voltage booster is connected in between the DC generator and the battery. When the dynamo rotates the output DC voltage is boosted then stored in the battery and use for their purpose.

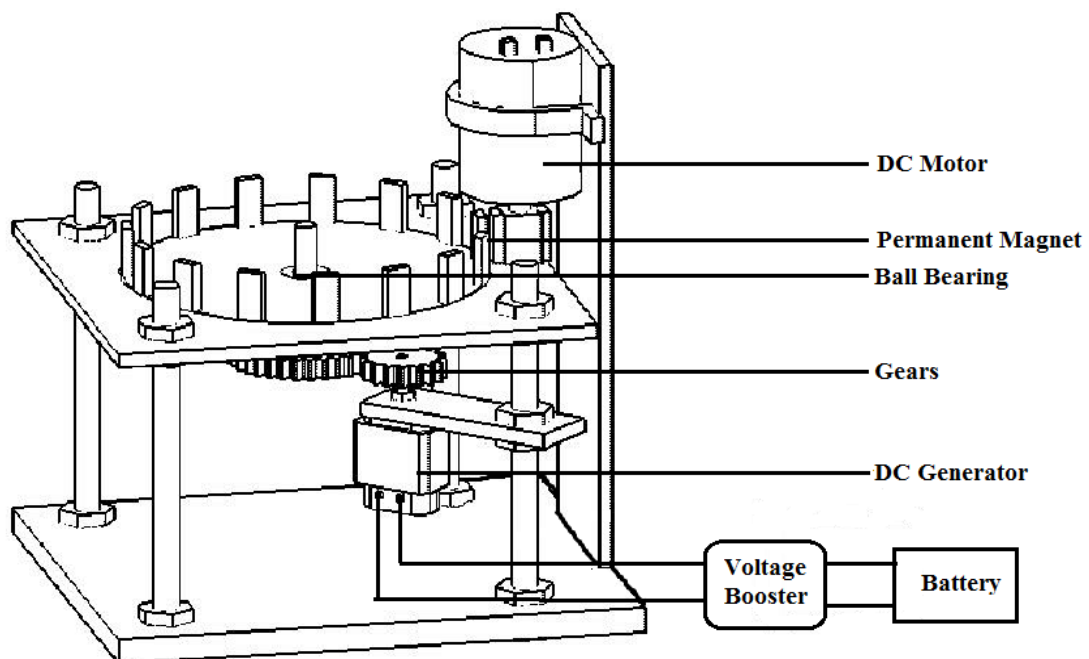


Fig. 2 Experimental setup diagram

IV. WORKING PRINCIPLE

When the small amount of electrical energy is used to run the motor, the motor convert electrical energy into mechanical rotational motion. The permanent magnets placed on the shaft of the motor is also rotates the speed of the motor. The same polarity of magnets which present in the magnetic disc is rotates due to magnetic repulsion. The repulsion between the two magnets makes the rotation continuously in the magnetic disc which is coupled with the larger gear through the shaft. The gear arrangement is made up of two gears. One is larger in size and another one is smaller in size. Both the gears are connected are meshed directly which serves in transmitting power from the larger gear to the smaller gear. As the power is transmitted from the larger gear to the smaller gear, the speed that is available at the smaller gear is relatively high. The smaller gear is meshed directly which serves in transmitting power from the larger gear to the smaller gear. The smaller gear is coupled with the DC generator which produces electrical energy. The power output from the DC generator is little more than the applied electrical energy. Then the output of electrical energy is multiple by the voltage booster and stored in batteries or used to drive any AC loads through an inverter.

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V. ANALYSIS OF FORCE CALCULATION

Repulsive force is calculated by using repelling magnet calculator, the results of repelling curve and also size of magnet force is shown in below figure. The distance between the magnets is inversely proportional to the repulsive force.

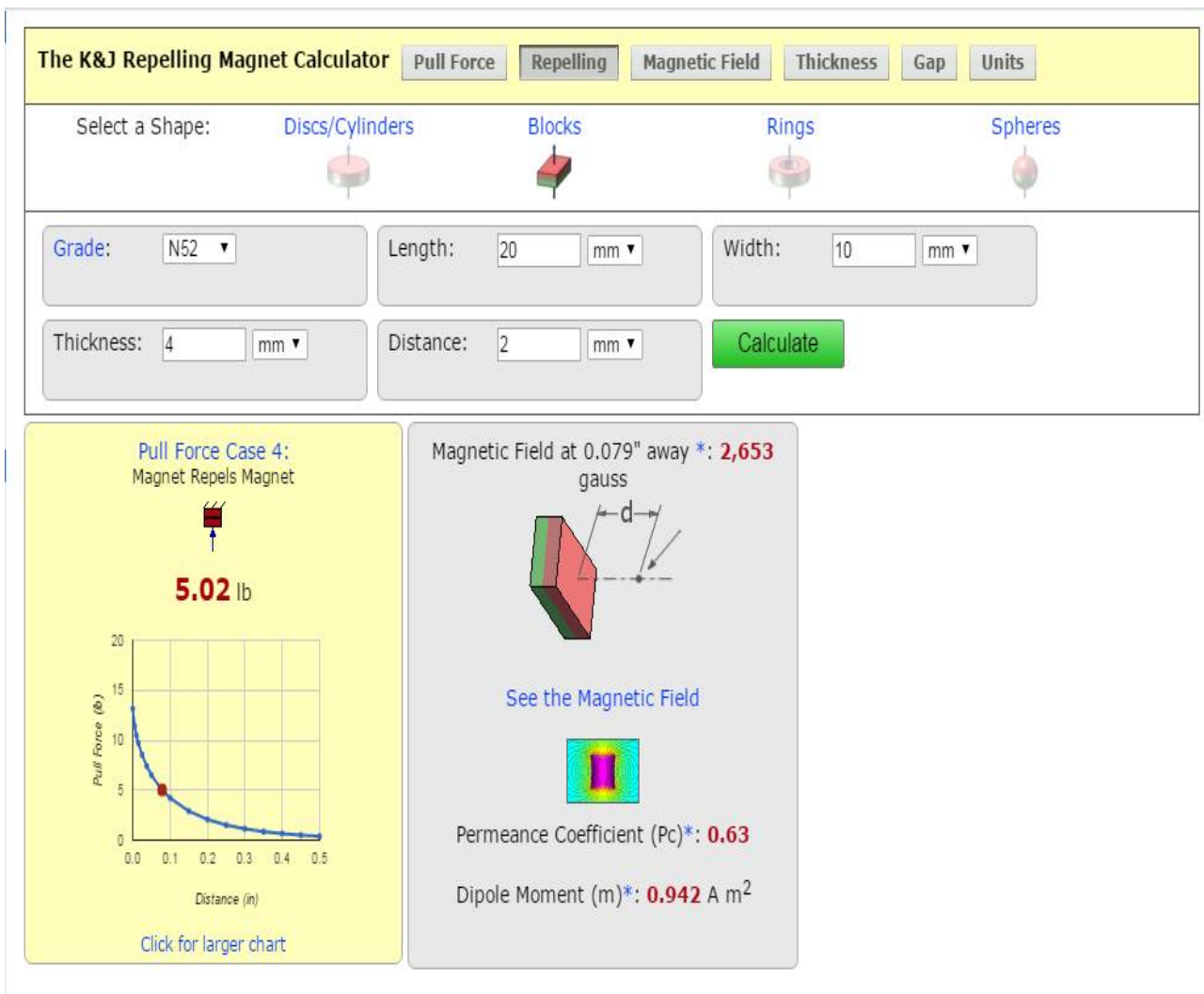


Fig. 3 Force Analysis of magnet

Power is the rate of work done per unit time. The expression of mechanical work done derived in below,

$$\text{Power} = \text{Work}/\text{Time}$$

$$\text{Torque} = \text{Force} \times \text{distance}$$

$$\text{Power} = \text{Torque} \times \text{Angular velocity}$$

$$\text{Power} = (2 \times \pi \times \text{Speed} \times \text{Torque}) / 60$$

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This mechanical power is applied to the generator. The magnetic disc coupled with DC generator its generated electricity. The power output from the DC generator is boosted by the voltage booster and stored in batteries or used to drive any AC loads through an inverter. This modelling repulsive magnetic technique generated 600 watts power. Our experimental photo graph is given below.

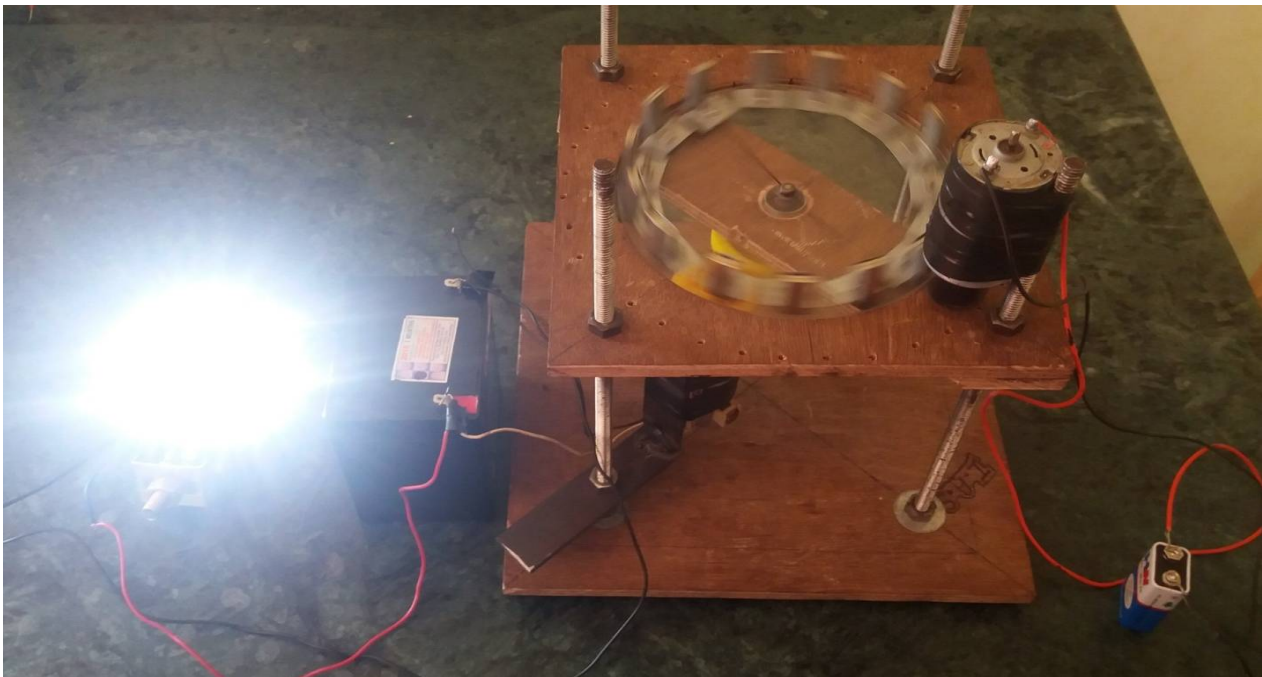


Fig. 3 experimental photo graph

VI. CONCLUSION

In this paper we have discussed about technology employs the theory of magnetic repulsion. The system uses permanent magnets to produce repulsion and this repulsive force produces a torque which drives a DC generator to produce electrical energy. It is a nonconventional type of producing the energy. The existing source of energy such as coal, oil etc may not be adequate to meet the ever increasing energy demands. Since the model has only few modifications and more advantages. Future scope of this work is to implement in industry to generated electricity by the rotational free energy available from rotating machines to electrical energy using repulsion magnet technique. The significant conclusions that may be drawn based on the present work may be summarized as follows:

- ❖ Model study is done and it is found to give a satisfactory results.
- ❖ The mechanism proposed is much simpler and continuously produces the electrical power.
- ❖ The produced electrical energy is renewable energy which is pollution free.
- ❖ Model calculation is done and observed results.

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