

Mechanical power generated by developing magnetic flux

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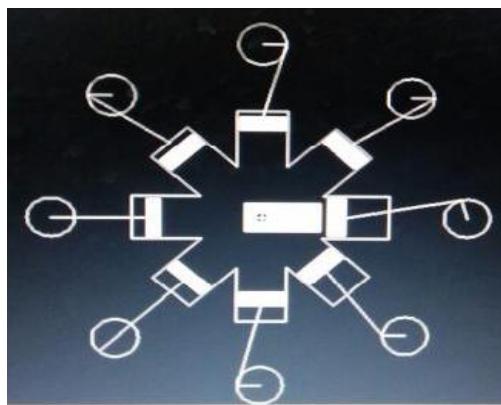
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GRAPHICAL ABSTRACT



ABSTRACT

Nowadays, the most critical issues concerning internal combustion engines are the reduction of the pollutant emissions and the replacement of fossil fuels with renewable sources. In this regard, many are trying to modify the existing one as dual fuel mode so as to reduce emission levels. Apart from these, hybrid engines also came into existence yet to commercially viable. In the present work, an interesting attempt is to make use of magnetic flux into an output power. Therefore, proto type magnet engine is designed and fabricated to increase the output as compared to counterpart engines. This technology in cycling vehicles also helps to increase the work output. The present Magnet engine comprises nine magnets. Among these, a highly strength magnet is placed at the center of circumference of eight magnets connecting with crank shaft. The design concept and mechanism have been discussed in detail and illustrated to increase the output tremendously by giving a small input to engine and motor. This magnet engine is economically viable, derived to decrease the pollution created by fuel consumption engines and helps to save electricity, human work load in cycling vehicles.

Keywords: Strength magnets, Aluminum chamber, copper rods, cranks.

1. INTRODUCTION

Smart materials are demarcated as materials with properties engineered to change in a precise manner under the impact of external. With the diminishing fossil fuel resources and unabated increase in energy costs and environmental concerns, engines use alternate energy sources such as bio-fuel, solar power, wind power, electric power, stored power, etc. However, such engines have many limitations. Productions of bio-fuel take enormous resources and are still polluting the environment. They do not meet the ever increasing energy demand as well. Similarly, the solar power is not efficient. Added to all, the initial capital and subsequent maintenance costs of machines that use alternate energy sources are very high. Hence, in the absence of a viable alternative, until now, switching to new technology by changing from traditional Internal Combustion engines has been a challenge.

Like radial engines this system also has cylinders, pistons (without piston rings, pistons are also magnets) connecting rod, crank shaft. There is no inlet & exhaust valve no ports & no spark-plug. The Magnetic Flux Based e Power Generator works based upon the principle of Magnetism. The general property of magnet (i.e. attraction and repulsion forces) is converted into mechanical work. A magnet has two poles, north and south poles. When like poles are brought near each other they repel and attract when unlike poles are brought together. This principle is being used in the Development of a Magnetic Flux Based Mechanical Power Generator.

The main advantages of Development of a Magnetic Flux Based Mechanical Power Generator are it is pollution free, it is easy to design, The general engine consists of many parts such as combustion, valves, water cooling system, fuel pump, fuel lines, air fuel filters, inlet, exhaust manifolds and many more, which this specially designed engine does not possess which is of greater advantage. The main challenge faced in

designing Development of a Magnetic Flux Based Mechanical Power Generator is that it has to be as efficient as an internal combustion engine.






Experimental Circumstance

Development of a magnetic flux based mechanical power generator consists of nine magnets, non-magnetic chamber (i.e. aluminum chamber), connecting rods and crank shafts. Out of these nine magnets one magnet is greater in size than other eight magnets, all the magnets have the same magnetic properties and these eight magnets act like pistons. Chamber is made with aluminum as aluminum is a non-magnetic material so that the magnetic pistons can move freely. Crank shaft and connecting rods are also made with aluminum. Connecting rods are connected to the magnetic pistons. When compared with the normal I.C engines the crank shaft rotates horizontally whereas the piston moves vertically. But in this the mechanism it works the opposite.

The operation of this engine can be arranged by placing the bigger magnet at the center which is connected to the shaft, thereby this shaft will take the input from either of the motor or I.C Engine etc. to rotate the magnet.

The engine consists of eight Aluminum chambers with magnetic pistons; the pistons are connected by the connecting rods. These connecting rods are then connected to the crank shaft. The eight Aluminum chambers are brought in the form of a circular shape which looks like a radial engine. When the center magnet rotates the magnet which is in the opposite side of the center magnet repels against it thus the piston is moved forward by crank. The crank shafts those are present outside helps in rotating the different moving components of the machine.

Table 1: individual component of the engine

S. No.	Name of the Components	Component	Material	Dimensions
1	Chamber		Aluminum	Total volume of the aluminum chamber is 115200mm ³
2	Central Magnet		Rare earth materials	Volume of the magnet is 6000mm ³
3	Piston		Rare earth materials	Total volume of the pistons is 16000mm ³
4	Connecting rod		Copper rods	Total Volume of the pistons is 2000mm ³
5	Crank		Mild steel	Total volume of the cranks is 12000mm ³

Description

This engine consists of motor on head of the engine which rotates the center magnet; the center magnet repels the magnetic pistons with which the crank shaft will rotate in vertical direction. All crank shafts are connected to different moving parts of the machine. By using this machine only a small amount of input is given to the engine the same output is obtained at the eight shafts. Out of these the input will be equal to two outputs of the crank shafts then the remaining six will be free outputs from the engine which is more efficient, pollution less no need of maintenance cost to run the machine. It is more useful in agricultural engines because it has so many moving parts to work.

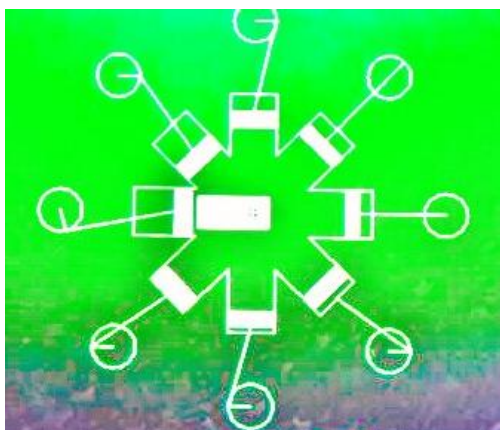


Fig. 1: Working of engine

Mechanism

The engine consists of a magnet at the center along with the other eight magnets aligned in a radial fashion such that the like poles repel against each other. The piston repels along with the magnetic field and finally it comes along to its position by the crank shaft mechanism. This process will continue till the engine comes to halt.

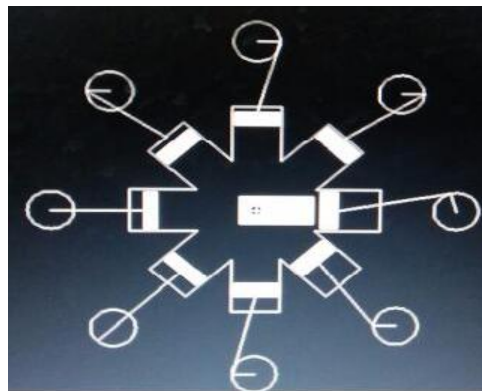


Fig. 2: Mechanism of the engine

Conclusion

This engine has various advantages over the internal combustion engines. The main advantage is that there is no fuel is being used in the engine. This results in no pollution which is necessary in the present day situation. As there is no combustion taking place inside the cylinder there is only very little heat generation. This eliminates the need for a cooling system. As magnetic energy is being used the need for air filter, fuel tank, supply system, fuel filter, fuel injector, fuel pump, valves etc. are eliminated and the design of the engine is made simple. Also by the use of materials like Aluminum, titanium etc. we can reduce the weight of the engine. Also existing transmission systems can be used in this engine. Less noise is produce during working.

Power of the permanent magnet will decrease during time and the permanent magnet has to be replaced during regular intervals. The engine is not as flexible as the internal combustion engine. Consume a lot of space.

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