

A REVIEW ON MAGNETIC REPULSION ENGINE

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ABSTRACT

In the absence of feasible alternative, until now, turn to new technology by changing from traditional Internal Combustion engines has been a challenge. So, "Magnetic repulsion engine" will solve the problem. In the present energy scenario the fossil fuel sources are fast evacuating and their combustion products are causing global environmental problems. The piston contains permanent magnet moves from TDC to BDC and BDC to TDC which will result, convert reciprocating motion into rotary motion of crank shaft. This paper is reports on the review of magnetic repulsion engine for the design and development of engine which can be run by magnetic force of repulsion

Keyword : - Crank Shaft, Electromagnet, Mechanism, Permanent Magnet, Reciprocating

1. INTRODUCTION

The prototype model namely 'magnetic repulsion engine' is the engine works on the repulsion principle of magnets. This engine is similar in construction as that of typical IC engine. It consists of magnet fixed at the top of the piston and another magnet fixed at the piston head. Both the magnets are facing each other with like poles. These engine does not require any input source and works on the magnet force itself, thus it is eco-friendly and can be applied in running automobiles, machines, power generation, and many other applications. Coal, petroleum, natural gas, water and nuclear energy are the five main energy sources that have played important roles and have been widely used by human beings. Magnetic repulsion engines are defined as 2-phases engine which has no exhaust emission, higher efficiency such characters are seen in these kinds of engines. In future the field of application of the engine will widen. Due to the rising fuel costs, environmental issues and evacuating natural fuel reserves, magnetic engine can become a workable alternative to many existing engines.

This principle is being used in the magnetic repulsion engine. In this engine, the permanent magnet is attached to the piston head. When the motion is given to the flywheel, it attracts or repels the magnet, thus pushing then piston downwards or upwards thereby rotating the crankshaft. This is how power is generated in the magnetic repulsion engine. It utilizes only repulsive force that allows the field to spread completely, and have no restrictive effects on the rising piston. The permanent magnetic engine should ideally perform exactly the same as the internal combustion engine.

Author Ramanan.M. Balasubramanian.M, Ilaiyaraja.S.^[1] done the work on Experimental Investigation on Magnetized Piston Powered Engine, according his study, in the present energy scenario the fossil fuel sources are fast evacuating and their combustion products are causing global environmental problems. The Magnetic Powered Engine technology is cheaper in cost and maintenance, can be easily adapted by the masses and it doesn't cause any kind of harm to the environment. Instead, its widespread use will help mankind in controlling the serious problem of global warming and produce a green environment in the world.

Author Abil Joseph Eapen, Aby Eshow Varughese, Arun T.P, Athul T.N.^[2] done the work on Electromagnetic Engine, according his study, Increasing fuel prices and pollution are the major demerits of Internal Combustion (IC) engines. Also presently the demand for fuel has increased and in the nearby future, shortage of fossil fuels is being expected due to the ever growing consumption. So need of alternative energy has become necessary. The main aim of the project is the zero point fuel consumption. The working principle of the engine is the

magnetic force principle, i.e. magnetic repulsion between the same poles of two different magnets. When similar poles of two different magnets come in contact with each other they repel each other. This phenomenon of repulsion is used in this engine to create motion.

Author Sumit Dhangar, Ajinkya Korane, Durgesh Barve ^[3] done the work on Magnetic Piston Operated Engine according his study, In modern science and technology there is a requirement in fossil fuels. The piston contains permanent magnet moves from TDC to BDC and BDC to TDC which will result, convert reciprocating motion into rotary motion of crank shaft. Power supply from battery to the electro magnets are controlled by micro controller with help of power splitter, timer and relay switch arrangement .Design and working of magnetic piston engine is different from other engine. The Principle of Operation of Electromagnetic Engine is Different than that of Internal Combustion Engine. The electromagnetic engine has various advantages over the internal combustion engines. The main advantage is, no fuel is being used in the engine. This results in no pollution which is very desirable in the present day situation. As there is no combustion taking place inside the cylinder there is only very little heat generation it is more economic and free from air pollution. Magnet is one of the prime power source used for many application. By the demand of fossil fuels expecting that electro magnet is main alternative fuel and it is very much useful for coming generation. Power to be produced at shaft of the engine is much more than the power to be consumed by electromagnet to repel permanent magnet. Thus electromagnetic engine gives Green energy, as no harmful by-product is emitted in Surrounding Atmosphere. Thus is the future of Automobile Industries.

Author Elton Ashok Raju, Arindam Kumar Sarkar, Ashish V Rai, Bijay Thapa ^[4] done the work on Magnetic Piston Operated Engine, according his study, in the recent science and technology there is an increase in use of fossil fuels. Recently scientists are searching for the alternative fuels. This project is an answer to replace fossil fuel and reduce pollution by providing main power sources for the automobile engines. This project is to describe the construction and design of a magnetic piston engine, which operate with the help of electromagnetic force. This mechanism is completely different from a normal IC engine mechanism. It works with the principle electromagnetic effect and attraction of magnetic force instead of using fossil fuels. It consists of, two permanent magnet and two electromagnets. Electromagnets are mounted on the cylinder head and the permanent magnets are mounted on the piston head. Here, the use of spark plug and valves are eliminated. Electromagnet contains copper windings. These electromagnets are work on the basis of current supplied to them. The current is supplied from a battery with a required voltage. The piston contains permanent magnet which moves from TDC to BDC and vice versa which will result in converting reciprocating into rotary motion.

Author Kala Butler ^[5] done the work on Electromagnetic Reciprocating Engine according his study, Business has been looking to end its dependency on Oil. Oil supplies are dwindling, the demand is increasing along with the cost. The Electromagnetic Reciprocating Engine, for which Sekou holds the patent, can replace the Combustion Engine; it does not use any fossil fuels. The Electromagnetic Reciprocating Engine can replace the Combustion Engine in any vehicle, eliminating the fuel cost. The Electromagnetic Reciprocating Engine can replace the Combustion Engine in an engine-generator, creating green renewable electricity. The Electromagnetic Reciprocating Engine has a low operating cost with an 110,000 hour or 12 year maintenance cycle. The Electromagnetic Reciprocating Engine can end the need for fossil fuels in transportation and electricity production for homes and businesses. The Electromagnetic Reciprocating Engine will end businesses dependence on Oil, reducing their operating cost. The Electromagnetic Reciprocating Engine will replace the Combustion Engine in electricity production and transportation.

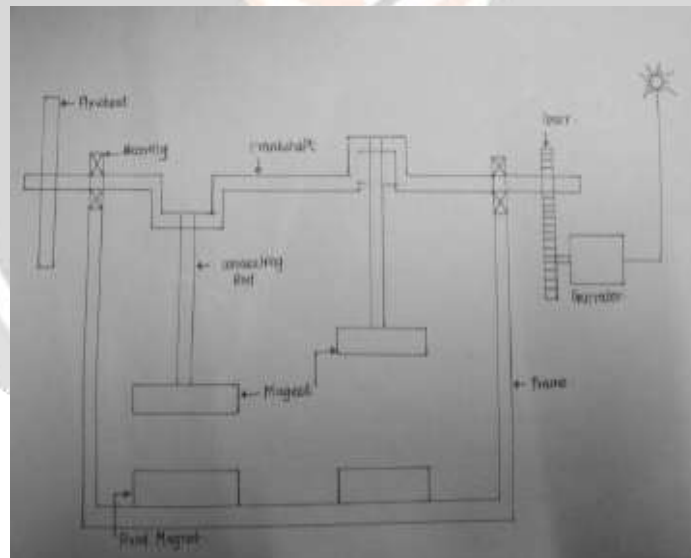
Author Ashwin Mathew John, Mathew George, Reenu Saji, Shamith Kumar, Prof. PC Thomas, Asst.Prof Midhu Das ^[6] done the work on Prototype Implementation of Electromagnetic Piston according his study, the presented paper is an electromagnetic piston that works on the basis of magnetic attraction and repulsion. The piston consists of an electromagnet placed between two permanent magnets of same polarity. The permanent magnets, being of same polarity, are held apart due to repulsive forces. When the electromagnet is energized, the magnets are attracted and hence move towards each other. When the excitation is removed, the electromagnet reverts to its original state, and hence the permanent magnets repel and move away from each other. When the electromagnet is energized and de-energized alternatively, the magnets move towards and away from each other, contributing to the reciprocating movement of the piston. The prototype of an electromagnetic engine which works on the principle of magnetism was successfully designed and fabricated. Experimental analysis was successfully performed on the prototype. The results obtained from the experiment are as follows. Prototype of an engine which works on the principle of magnetism was successfully manufactured. It uses electricity as its input. No fuel is consumed, which was the primary goal. The prototype creates no pollution and is eco-friendly. The prototype is a two stroke engine.

2. MATERIAL AND WORKING

A MAGNETIC REPULSION ENGINE consists of a non-magnetic cylinder, piston with connecting rod, flywheel and crank shaft arrangement, and a pair of permanent magnets. The construction of these engines is similar as that of typical IC engine. Here, the spark plug and valves at the cylinder head is replaced by a permanent magnet. Another permanent magnet is placed at the top of the piston which can freely reciprocate along with the piston. Both the magnets are arranged in such a way that their surfaces are facing each other with like poles. Small openings are provided at the cylinder for natural air circulation.

As the name represent, the MAGNETIC REPULSION ENGINE will work on the principle of magnetism of repulsion. When the piston at the BDC is provided with initial cranking effort, it will move from BDC to TDC causing 180° rotation of crank shaft. As the magnet placed at the top of the piston and magnet fix at cylinder head are facing each other with like poles, the repulsion force will start acting on both the magnets. Minimum the distance between the magnets will affect higher repulsion force. Therefore when piston reaches at TDC, the repulsion force will repel the magnets and thus the magnetic piston will move downward from TDC to BDC causing further 180° rotation of crank shaft and thus one complete rotation of crank shaft is obtained. After piston reaches BDC the flywheel will pull the piston back towards TDC and thus cycle repeats. The engine will work on two stroke i.e. compression and power stroke. In this system, a permanent neodymium iron-boron magnet was adhered to the top surface of the piston. Hence the magnet travelled along with the piston with reciprocating motion. So there were two magnets stuck to each piston which reciprocated within the cylinder. The magnets were fixed in such a way that the pole orientation was in the same direction. For e.g. if the south poles of both the magnets were fixed to piston surface, then the north poles were exposed to the atmosphere.

3. WORKING DIAGRAM



Working Diagram-: Magnetic Repulsion Engine

4. DISCUSSION

The material used as a permanent magnet is 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 Lanthanide series of elements in the periodic table. The 1970s and 80s saw the development of these magnets. Alnico is a compound made of Aluminum, 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. Ceramic or Ferrite magnets are the most popular today.

5. FUTURE SCOPE

As in present condition humans are heading toward the use of sources of energy which are pollution free and eco-friendly. Thus the magnetic piston engine can be used as a better alternatives. It can be used to perform various tasks and function that involve application of force or displacement of objects. This engine is highly efficient as it does not uses any input source and it works on its own power. It has the possibility of reaching unity-over operation mode. It has the capability to replace the electric motors and any engine which requires fuel burning to operate. As these prototype model consists of only one piston and only one pole of magnet is used for running the engine, in future modification can be made to it by using two magnetic piston on both side of the fixed magnet to make use of both the poles of magnet and to achieve high power and more effective use of magnets.

6. CONCLUSIONS

- i. Use of various types of magnets, their grades, power, availability, operating condition, factors affecting magnet power and many more.
- ii. Learned about the difference between theoretical concept (i.e. design and working) and actual concept of the engine.
- iii. Also, learned about various difficulties arising during actual construction of engine.
- iv. Due to these project we got very important information related to magnets and various magnetic alloy operating engines and various efforts being made all over the world for developing an engine which are highly efficient, ecofriendly and will run indefinitely.

7. ACKNOWLEDGEMENT

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