



# PERFORMANCE ANALYSIS OF ELECTRO MAGNETIC ENGINE BY TWO STROKE MODIFICATION PETROL ENGINE

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## ABSTRACT

In modern science and technology there is a demand in fossil fuels. Nowadays scientists are searching for an alternative fuels. This project is one of the main power sources for the automobile engines. This project is to describe the construction and design of a two stroke magnetic piston engine, which operate with the help of electromagnetic force. This mechanism is entirely different from normal IC engine mechanism. It works with electromagnetic effect and repulsion of magnetic force instead of fossil fuels. It consists of, two permanent magnet and two electro magnet. Electro magnets are mounted on the cylinder head and the permanent magnets are mounted on the piston head. Here not using spark plug and valve arrangement. Electro magnet contains copper windings. Electro magnets are getting power supply from the battery by suitable voltage. 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.

## INTRODUCTION

The enginewith diminishing fossil fuel resources and unabated increase in energy costs and environmental concerns, engines using alternate energy sources such as bio-fuel, solar power, wind power, electric power, stored power, etc. are being developed around the world. However, such engines have many limitations. Production of bio-fuel takes enormous resources and they still pollute 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 for machines that use alternate energy sources are very

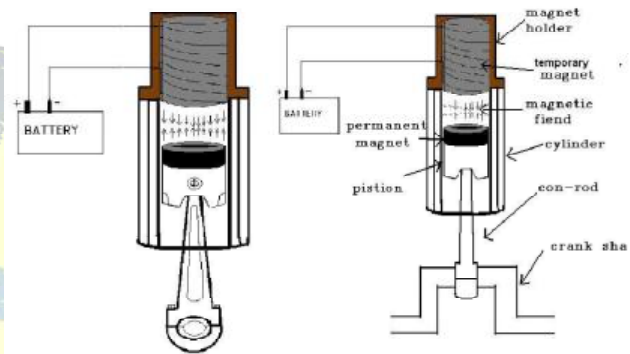


high. Hence, in the absence of a viable alternative, until now, switching to new technology by changing from traditional Internal Combustion engines has been a challenge. Magnetism is the basic principle of working for an electromagnetic engine. The general property of magnet i.e. attraction and repulsion forces is converted into mechanical work. A magnet has two poles. A north pole and a south pole. When like poles are brought near each other they repel and attract when like poles are brought together. This principle is being used in the electromagnetic engine.

In this engine, the cylinder head is an electromagnet and a permanent magnet is attached to the piston head. When the electromagnet is charged, 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 electromagnetic engine. It utilizes only repulsive force that allows the field to dissipate completely, and have no restrictive effects on the rising piston. The electromagnetic engine should ideally perform exactly the same as the internal combustion engine. The power of the engine is controlled by the strength of the field and the strength of the field is controlled by the amount of windings and the current that is being passed through it. If the current is increased the power generated by the engine also increases accordingly. The current that is used to charge the electromagnet is taken from a DC source like a lead acid battery. [5] proposed a system, this fully automatic vehicle is equipped by micro controller, motor driving mechanism and battery. The power stored in the battery is used to drive the DC motor that causes the movement to AGV.

## EXPERIMENTAL PROCEDURE

The main objective of our project to design and construct an electrically operated engine i.e. Electromagnetic Engine. Our engine is totally different from ordinary IC Engine, because of the inventory advancement in operating principles. We have changed the operating principle of IC Engine by



using electromagnetic effect instead of combustion of fossil fuels. This engine works on the principle of magnetic repulsion between two magnets. This electromagnetic engine consists of two magnets, one of them is an Electromagnet and other one is a Permanent Magnet. Permanent Magnet acts as piston and Electromagnet is located at the top of the cylinder instead of spark plug and valve arrangement in IC Engines. In this way this engine does not contain any spark plug and fuel injection system. The Electromagnet is energized by a battery source of suitable voltage and the polarities of electromagnet are set in such a way that it will repel the permanent magnet i.e. piston from TDC to BDC, which will result in the rotary motion of crank shaft. When the piston is at BDC the supply of Electromagnet is discontinued, the permanent magnet which was repelled to BDC will come back to its initial position i.e. TDC. This procedure



completes one revolution of crank shaft i.e. our output work. The total power supplied by battery will be just to fulfill the copper losses of winding and power required to magnetize the windings.



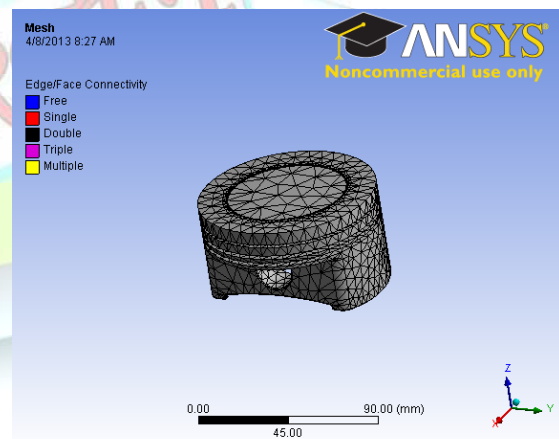
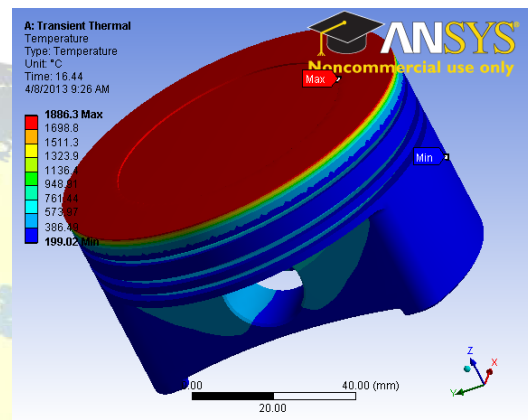
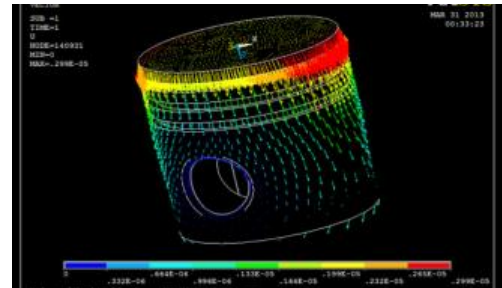
**ELECTROMAGNET & PERMANENT  
MAGNET**



**TWO STROKE PETROL ENGINE**



## ANALYSIS OF THE PISTON



## CONCLUSION

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.. Less noise is produce during working. The disadvantage of the electromagnetic engine is its high initial cost. The electromagnet and permanent magnet can be very costly.

Also, by inserting more permanent magnets in series on the piston will enhance the output of the engine. By slight modification in design and by the use of better hands the engine can be modified to generate more power, thereby increasing its efficiency, so that it can be used in commercial vehicles and other applications.

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