

# V4 Solenoid Engine

**Khaleel Ahmed, Mujtaba Razi Ahmed, Mohd Aijaz, Assistant Prof. & Supervision Attalique Rabbani**

Department of Mechanical Engineering,  
ISL Engineering College, Hyderabad, India

**Abstract** –The main objective of our project is to overcome the drawbacks of an ordinary IC engine by replacing it with "SOLENOID ENGINE". The solenoid engine works on the solenoid, It is a cylinder type case on which the copper coil is wrapped into number of turns, when we passes the current through it, it reciprocates the piston inside the cylinder back and forth and works like an ordinary reciprocating engine. In this engine we are using very less movable parts,hence turbulence is low when compared to an IC Engine. Also due to less components and no fuel is used for power generation it is very economical than other engines. In solenoid we are not using any type fuel combustion as total power is generated by current, hence it doesn't produce harmful gases like IC engines do, which is very harmful for both human and atmosphere, hence it is very Environmental friendly.

**Keywords**–Solenoid, Engine, Power, Magnetic Field, Fossil Fuel.

## I. INTRODUCTION

Now a Days most of the engines used are based on the combustion of fossil fuels for the generation of power, which emits harmful gases. These produces lot of Pollution l eading Global warming and effects human health. To solve this problem we have fabricated a Linear 4 Cylinder Solenoid Engine. This engine works on Principle of Electromagnetism. It has 4 Cylinders or Pistons which Generates power to run the engine. When we pass the current through the solenoids it converts this Electrical energy into Mechanical energy by reciprocating the piston back and fro.

## II. LITERATURE REVIEW

**.Author :** K Srinivas, T Suresh, p sai sriniwasulu, K Akhileshwar and B Santhi.

Combustion takes place and produces heat which converts into mechanical energy. We know IC engines are used in Automobiles,aeroplanes etc . Modern science and technology has been taken many positive steps for emission control, here I have introduce a mechanism which has more load carrying and running capacity then electrical vehicles but make zero emission or pollution.

**Author :** Ruthwik Aki , N.V. Dharma Teja , K.S.V. Phanindra , Setty Siddhartha.

In an automobile, engine is a main power source in which by combustion of fuel takes place. Here we prefer Electromagnetic Engine for generation of power.

## III. WORKING

In this Engine we are using solenoid, a solenoid is a coil of wire that acts as a magnet while carrying an electric current. It is a cylindrical coil wound into a tightly packed helix. The core material that is used in the solenoid is ferromagnetic in nature i.e. the magnetic lines of flux are concentrated which increases the conductance of the coil. The magnetic flux can be seen outside the coil near the end of the core material but most of the flux is present within the core material. So when the current is passed through wire it produces an electromagnetic flux, which attracts the any metal put inside the pipe towards it, and when electric supply is stop then electromagnetic flux doesn't present which drops the metal into its original position, again when electric supply is given the metal attracts again. The TO and FRO of the metal is used to produce mechanical energy of engine.

## IV. COMPONENTS

1. Solenoid
2. Pistons
3. Connecting rod
4. Screw and nuts L brackets
5. Crankshaft
6. Fly-wheel

### 1.Solenoid

A solenoid is a coil of wire that acts as a magnet while carrying an electric current. It is a cylindrical coil wound into a tightly packed helix. The core material which is generally copper when current is passed through this copper coil the magnetic flux is produced ,which is used for reciprocating the piston.

## 2. Piston

The pistons are the reciprocating part of the engine which have TO and FRO motions along one direction and are the primary component that transfers the mechanical motion to the

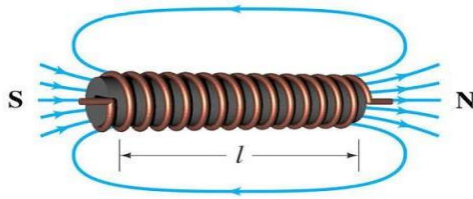


Fig.1 Piston

## 3. Connecting Rod

Connecting rod is used to transfer the reciprocating motion of the piston to the rotating motion of the crankshaft.

## 4. Screws and Nuts

Screws and nuts are an important part of any mechanical working component. The different types of screws and nuts that are used in this solenoid engine are generally of cast iron.

## 5. L -Bracket

L brackets are used to hold the shaft straight. Its purpose is to provide support to the shaft and make sure that shaft doesn't deform or bend due to forces on it.



Fig. 2 L- Bracket.

## 6. Crankshaft

Crankshaft is a rotating shaft which is used to transmit the power generated by the movement of pistons .The material we are using to make the crankshaft is "En-8"(medium carbon steel).



Fig.3 Crank Shaft.

## 7. FlyWheel



Fig.4 Fly Wheel.

The flywheel is an cylindrical shape and its function is to store the energy . It is made up of medium carbon steel.

## Materials Used:

Copper Mild Steel Wood  
En-8

## V. ADVANTAGES

It is having less operating cost when compare to conventional engine. It does not emit harmful gases, hence it is friendly to Environment.

It consumes less electricity when compared to ordinary electric vehicles. Can produce much more power and running capacity then battery cars and bikes.

## VI. DISADVANTAGES

It is having lesser power then an IC Engine.

## Applications

The core of the solenoid is used for applying mechanical force to the valves. This is used in door lockers for security. Computer printers and fuel injector gears in cars use solenoid.

## VII. CONCLUSION

By using solenoid engine there will be no pollution to environment. To eradicate the use of fossil fuel. It is lighter in weight then an internal combustion engine and requires less maintenance then IC Engine. The global temperature is rising over the decades so there will be no air pollution by using solenoid engine .

## REFERENCES

- [1]. Runpeng Cui, Hu Liu, and Changshui Zhang, "A Deep Neural Framework for Continuous Sign Language Recognition by Iterative Training", IEEE,2018;
- [2]. Kshitij Bantupalli, Ying Xie, "American Sign Language Recognition using Deep
- [3]. Learning and Computer Vision", IEEE International Conference on Big Data (Big Data),2018.
- [4]. Sepp Hochreiter et al., "Long Short-Term Memory," , Neural Computa- tion 9(8): 1735-1780,1997.
- [5]. Vi N.T. Truong ,Chuan-Kai Yang,Quoc-Viet Tran,Translator for American Sign Language to Text

- and Speech ”, IEEE 5th Global Conference on Consumer Electronics,2016.
- [6]. Z. Ren, J. Yuan, J. Meng, and Z. Zha,“Robust Part-Based Hand Gesture Recognition Using Kinect Sensor”, ” IEEE Trans. Multimedia, vol. 15, no. 5, pp. 1110–1120,2013
- [7]. P. Molchanov, X. Yang, S. Gupta, K. Kim, S. Tyree, and J. Kauz, “Online detection and classification of dynamic hand gestures with recurrent 3D convolutional neural network”, in Proc. IEEE Conf. Comput. Vis. Pattern Recog,2016.