

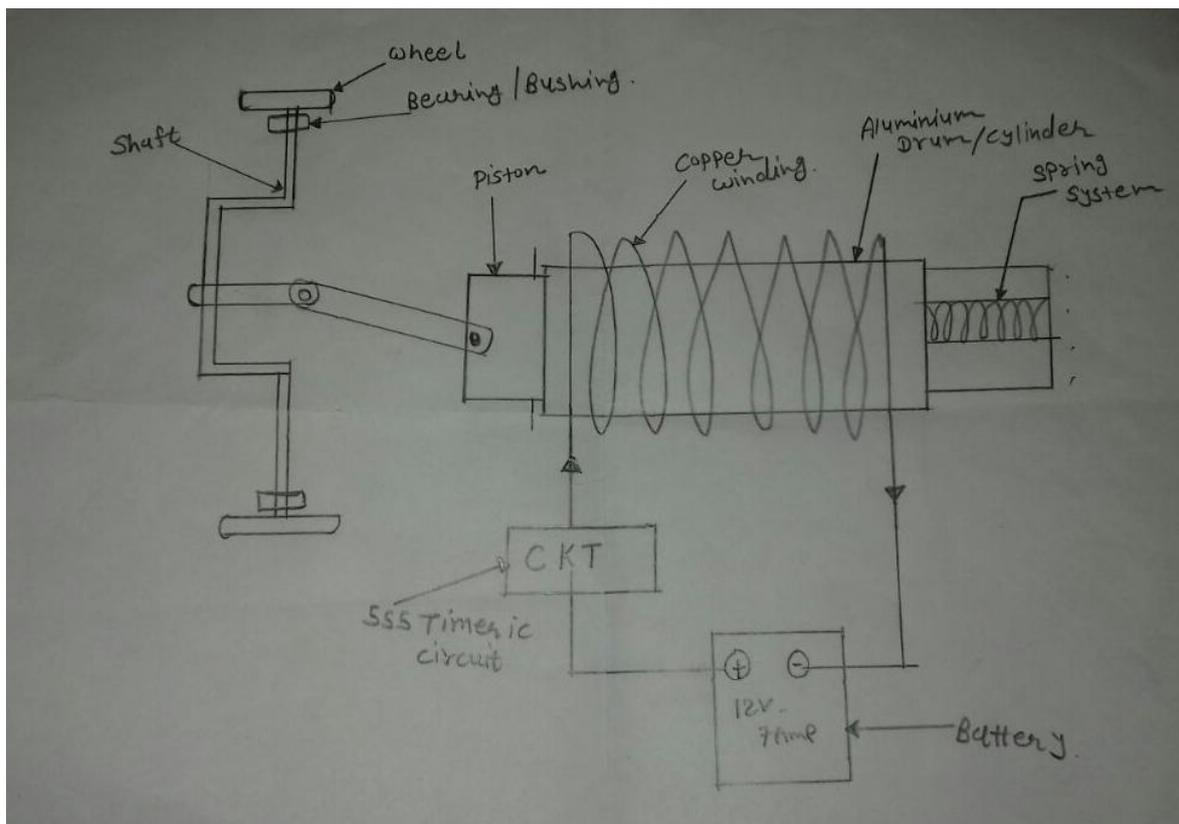
**“EXPERIMENTAL ANALYSES OF INTERNAL NON COMBUSTION  
ENGINE DRIVEN BY MAGNETIC REPULSION”**Raghuveersinh D. Chawda<sup>1</sup>, Devrajsinh S. Gohil<sup>2</sup>, Raju K. Thakor<sup>3</sup><sup>1</sup>Mechanical Engineering, Vadodara Institute Of Engineering, Kotambi.<sup>2</sup>Mechanical Engineering, Vadodara Institute Of Engineering, Kotambi.<sup>3</sup>Mechanical Engineering, Vadodara Institute Of Engineering, Kotambi.

**Abstract** — 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.

**Keywords** – Electromagnetic piston, Battery, Permanent magnet, Shaft, Spring

**I. INTRODUCTION**

Coal, petroleum, herbal gas, water and nuclear power are the 5 important electricity sources that have performed vital roles and have been extensively used through human beings. Magnetic engines are described as 2-phases engine which has no exhaust emission, higher efficiency such characters are considered in these types of engines. The prototype model specifically ‘MAGNETIC REPULSION ENGINE’ is the engine works on the repulsion precept of magnets. Both the magnets are going through every other with like poles. This engine does not require any input source and works on the magnet force itself; hence it is eco-friendly and can be applied in strolling automobiles, machines, energy generation, and many different applications. In future the discipline of software of the engine will widen. Due to the rising gas costs, environmental issues and diminishing natural gas reserves, magnetic engine can turn out to be a workable.



## II. LITERATURE REVIEW

Sumit Dhangar and Ajinkya Korane and Durgesh Barve has done a 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 [1].

N.G.Lokhande, V.B.Emche and V.M.Khanke have successfully and deeply learned about various types of magnets, their grades, power, availability, operating condition, factors affecting magnet power and many more. We have also learned about the difference between theoretical concept (i.e. design and working) and actual concept of the engine. Also, we learned about various difficulties arising during actual construction of engine. Due to this project we got very important information related to magnets and various magnetically operating engines and various efforts being made all over the world for developing an engine which are highly efficient, ecofriendly and will run indefinitely [2].

Menta Sudheer, Konduru Vasu and Kalahsti Sirisha Vamsi has done wonder solution for the replacement of the internal combustion engine. Only improvements of the current technology can help it progress within reasonable time and financial limits. The Magnetic Piston Engine fits perfectly into this view. Its adoption by the automobile industry would have a tremendous impact on the environment and world economy. By further research and development it can prove to be a boon to the middle class Indian citizen [3].

Abil Joseph Eapen, Aby Eshow Varughese, Arun T.P, Athul T.N has done an 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. 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 the electromagnetic engine. Less noise is produce during working [4].

Md Modassar Akhtar, Santosh Kumar Tripathy, Ekula Prasant Kumar has done the solenoid shoots the ball with a sufficient 8 m/s. It is also possible to shoot with different speeds. This can be done by varying the power through the coil with some simple electronics. The switch can be replaced by a transistor which is controlled by a pulse source. The speed of the ball is now linked to the time the transistor is open. The time the transistor is open, is controlled by the pulse source [5].

Fanse Mayur N, MachhiJeetkumar B, Panchal Preshitkumar D and Pattni Sunny L done pentagonal engine structure . In future ,for more power and torque output we can design the structure with more sectional design like V8 or V 12 engine with more efficient power outage. Due to use of this and this type of system use of non renewable resources is somewhat reduced and energy for future can be conserve [6].

Xu De, Fei Hong-Zi, Liu Peng, Zhou Wei and Fan Li-Yun has done the finite element model of HSV was developed according to its real size, and validated by experiment. It reveals the certain effect laws of each first-order factor on EF under overall operating conditions by correlation analysis. The significant first-order factors are coil turns and armature thickness. The correlation of coil turns with the EF decreases with the increase of driving current, while increases with the increase of working air gap. The correlation of armature thickness with the EF increases with the increase of driving current, while decreases with the increase of working air gap. The correlation between the EF and each self-interacting second-order factor has different effect laws to that of the corresponding first-order factor. By analyzing the interactions of HSV's different parameters, it reveals: the more the coil turns is, the larger the increase of the EF with the increase of armature thickness is; when damping hole location is at a higher level, the influence of armature thickness on EF is larger, while when damping hole location's level is too high, the increase of EF with the increase of armature thickness almost keeps the same; when damping hole radius is at a higher level, the influence of damping hole location on EF gets larger, while when damping hole radius's level is too high, EF increases slowly. HSV's characteristic of EF is determined by the combined action of its key parameters' interactions [7].

Pratik Kumar Sinha has done paper describes the practical approach of a high torque solenoid coil electric engine. By this work, a motor less, eco-friendly, with high torque and high load carrying small prototype engine is developed and

experimented with requirement value. The experiments value satisfies the required value hence, the engine has 80 Nm torque per 60 sec of time. The future work will be based on increasing the load and torque of the vehicle with longer life cycle [8].

Adarsha. H, Kaushik. V. Prasad, K. S. Harishanand & S. C. Sharma has done. The present study aims to have substitute engine for conventional IC engine. The advantage of substitute engine is that no fuel is used and thus no pollutants are liberated by the burning of the fuel. The growing demand of fuel further makes it attractive. The electromagnet based engine thus provides an attractive alternate option. This report presents the details of the development of an electromagnet engine [9].

Jotiba L. Dune, Vishal V. Nandarge, Ashwini M. Bhosale, Shankar S. Dhage and Proff A.K. Athani has done research. Very less amount of electric power is required to magnetize the electromagnets and these electromagnets can supply the sufficient amount of power continuously. On the other hand this mechanism is pollution free & has no bad environmental impact. Here, it is proved that it can produce sufficient amount of power. So, it is very much acceptable in environmental & pollution aspect [10].

### III. CONCLUSION

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 applications. 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.

### REFERENCE

- [1] Sumit Dhangar and Ajinkya Korane and Durgesh Barve, "MAGNETIC PISTON OPERATED ENGINE" International Journal of Advance Research in Science And Engineerin, Issue 06, June 2015.
- [2] N.G.Lokhande, V.B.Emche and V.M.Khanke "Review Paper on Magnetic repulsion engine" Department of Mechanical Engineering, Shri Datta Meghe Polytechnic, Nagpur,India, 2017 IJEDR.
- [3] Menta Sudheer, Konduru Vasu and Kalahsti Sirisha Vamsi, "Magnetic piston engine" Vol. 3, No. 1, January 2014 © 2014 IJMERR.
- [4] Abil Joseph Eapen, Aby Eshow Varughese, Arun T.P, Athul T.N "Electromagnetic engine" IJRET: International Journal of Research in Engineering and Technology.
- [5] Md Modassar Akhtar, Santosh Kumar Tripathy, Ekula Prasant "Review Paper on Solenoid engine" Final Year B.Tech. Students, 2Assistant Professor Department of Mechanical Engineering G.I.E.T. Gunupur, April 2017.
- [6] Fanshe Mayur N, MachhiJeetkumar B, Panchal Preshitkumar D and Pattni Sunny L" Review Paper on Solenoid Engine" Scientific Journal of Impact Factor (SJIF), Special Issue SIEICON-2017, April -2017
- [7] Xu De, Fei Hong-Zi, Liu Peng, Zhou Wei and Fan Li-Yun School of Power and Energy Engineering Harbin Engineering University, Nantong Street, Nangang District Harbin City, 150001, China, Published: Dec. 1, 2015.
- [8] Pratik Kumar Sinha research on High Torque Solenoid Coil Electric Engine, International Academy of Engineering and Medical Research, 2017 Volume-2, ISSUE-3 Published Online March 2017 in IAEMR.
- [9] Adarsha. H, Kaushik. V. Prasad, K. S. Harishanand & S. C. Sharma "Development Of Electromagnetic Engine" International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)ISSN (P): 2249-6890; ISSN (E): 2249-8001 Vol. 7, Issue 2, Apr 2017.
- [10] Jotiba L. Dune, Vishal V. Nandarge, Ashwini M. Bhosale, Shankar S. Dhage and Proff A.K. Athani international journal of innovation in engineering, research and technology [ijiert] national conference on innovative trends in engineering & technology-2016 11th & 12th march 2016.