NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATION IN ENGINEERING, RESEARCH AND TECHNOLOGY [IJIERT]
NATIONAL CONFERENCE ON INNOVATIVE TRENDS IN ENGINEERING & TECHNOLOGY-2016
11TH & 12TH MARCH 2016
CONFERENCE PROCEEDINGS ISSN NO - 2394-3696

Paper ID: NITETMECH11

FOUR STROKE INTERNAL COMBUSTION ENGINE

Mr. Chavare shubham,

Mr. Dhawale Suraj,

Mr. Jadhav kiran,

Mr. Bilgude Rohit

Prof. A. K. Athani.
Project GuideDepartment of Mechanical Engineering B. M. I. T. -Solapur

ABSTRACT

This paper deals with highlighting the current information about Four Stroke Internal Combustion Engine. The current principle of Four Stroke cylinder engine includes axis of cylinder head. This in itself has channels that are used to supply the fuel. The new principle of the cylinder head for all 4-stroke engines include the axis of the cylinder head, which in itself has channels that are used to supply burn-smiling or flue gases. Axle head gaskets into the cylinder head of engine that has the holes that much channel cylinder head and through which piston valves which leans slightly wire spring on shaft of cylinder head. Such Four Stroke engine has enormous advantages over record circuits and permanent set no condition in engine.
This principle of Four Stroke cylinder engine is an ideal environment for further development and improvement.

KEYWORDS: Four Stroke Internal combustion engine, Axle head gaskets.

INTRODUCTION

An engine is device which transforms one form of energy into another form. Most of engine converts thermal energy into mechanical energy. An internal Combustion Engine is a heat engine where the combustion of fuel occurs with oxidiser (usually air) in a combustion chamber the first commercially successful internal combustion engine was created by Étienne Lenoir around 1859 and the first modern internal combustion engine was created in 1864 by Siegfried Marcus.
The engine with proposed improvements is capable of doubling the engine output power and of holding it up for a certain period (time depends on a type of the engine) without overheating. This feature allows increasing the vehicle power-to-weight ratio when it is necessary in accordance with the changing vehicle operation and road conditions.

CLASSIFICATION OF INTERNAL COMBUSTION ENGINE:

A. ACCORDING TO CYCLE OF OPERATION:

i. Two Stroke Cycle Engine.
ii. Four Stroke Cycle Engine.

B. ACCORDING TO CYCLE OF COMBUSTION:

i. Otto Cycle Engine.
ii. Diesel Cycle Engine.
iii. Dual Combustion Cycle Engine.

C. ACCORDING TO ARRANGEMENT OF CYLINDER:

i. Single Cylinder Engine.
ii. In Line or Straight Engine.

D. ACCORDING TO THEIR USE:

iii. Stationary Engine.
iv. Mobile Engine.
v. Portable Engine.

E. ACCORDING TO SPEED OF ENGINE

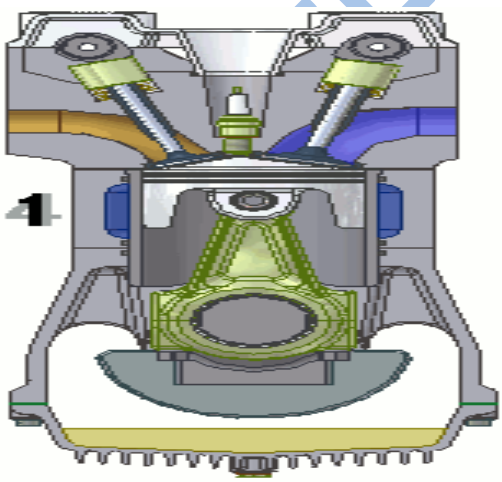
i.Low Speed Engine.
ii.Medium Speed Engine.
iii.High Speed Engine.

F. ACCORDING TO IGNITION:

i.Spark Ignition Engine.
ii.Compression Ignition Engine.

Concept about Four Stroke Engine: Basic idea about four stroke internal combustion engine as shown in Fig. The Top Dead Centre (TDC) of a piston is the position where it is nearest to the valves; Bottom Dead Centre (BDC) is the opposite position where it is furthest from them. A stroke is the movement of a piston from TDC to BDC or vice versa together with the associated process. While an engine is in operation the crankshaft rotates continuously at a nearly constant speed. In a 4-stroke ICE each piston experiences 2 strokes per crankshaft revolution in the following order. Starting the description at TDC, these are:

1. Suction stroke.
2. Compression stroke.
3. Power or Working stroke.
4. Exhaust Stroke.



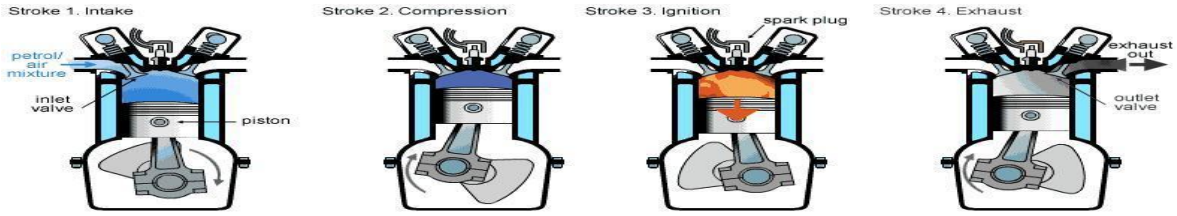
1. SUCTION OR INTAKE: The intake valves are open as a result of the cam lobe pressing down on the valve stem. The piston moves downward increasing the volume of the combustion chamber and allowing air to enter in the case of a CI engine or an air fuel mix in the case of SI engines that do not use direct injection. The air or air-fuel mixture is called the charge in any case. Mixture of Air and Fuel in the ratio of 14.7 : 1 (air : fuel) is drawn into the cylinder.

2. COMPRESSION: In this stroke, both valves are closed and the piston moves upward reducing the combustion chamber volume which reaches its minimum when the piston is at TDC. The piston performs work on the charge as it is being compressed; as a result its pressure, temperature and density increase; an approximation to this behaviour is provided by the ideal gas law. Just before the piston reaches TDC, ignition begins. In the case of a SI engine, the spark plug receives a high voltage pulse that generates the spark which gives it its name and ignites the charge. In the case of a CI engine the fuel injector quickly injects fuel into the combustion chamber as a spray; the fuel ignites due to the high temperature. Air and fuel mixture is compressed 8:1 to 12:1.

3. POWER OR WORKING STROKE: The pressure of the combustion gases pushes the piston downward, generating more work than it required to compress the charge. Complementary to the compression stroke, the combustion gases expand and as a result their temperature, pressure and density decreases. When the piston is

near to BDC the exhaust valve opens. The combustion gases expand irreversibly due to the leftover pressure—in excess of back pressure, the gauge pressure on the exhaust port—; this is called the blowdown.

4. EXHAUST: The exhaust valve remains open while the piston moves upward expelling the combustion gases. For naturally aspirated engines a small part of the combustion gases may remain in the cylinder during normal operation because the piston does not close the combustion chamber completely; these gases dissolve in the next charge. At the end of this stroke, the exhaust valve closes, the intake valve opens, and the sequence repeats in the next cycle. The intake valve may open before the exhaust valve closes to allow better scavenging.



TECHNICAL PROBLEM:

The existing valve technology for all 4-stroke engines that has so far developed a number of deficiencies that causes problems in the operation of all 4-stroke engines. Valve change of direction in its function and thus opens and closes the compression cylinder space. Due to the complete and sudden changes of direction valve appear forces on a number of revolutions disrupt the operation of the valve, causing vibration of the rod or rods valve which results in improper closing cone valve which leads to loss of burn-mix, loss of compression, which in turn results in utilization of burn-mixture, pollution, decrease torque and engine power. Losses are also done due to use of large number of powerful spring and heavy assembly and this result in an increase in fuel consumption and pollution.

SOLUTION ON THIS PROBLEM:

Prior to the development of IC engines worked on numerous pairs distributor panels and apparatus for distribution of pressure on the machines. Expansion of the head for all forms of motor starts with the development of internal combustion engines, especially with the early development of four-stroke engines. The advantage of these numerous technical solutions that are partially giving results but due to various technical problems was not sustainable. For this reason, the existing valve technology despite numerous shortcomings remained until today. To order to provide better conditions for the 4-stroke engine developed various forms and principles of the head of 4-stroke engines. Due to its illogical solution attempts sealing compression tolerance surfaces, due to high temperatures and spreading materials and losing function. Developed the technology of rotary valve that has never found its full implementation due to serious problems sealing compression, attempts sealing compression tolerance surfaces.

CONCLUSION

On in application discovery such an assembly cylinder heads for all 4-stroke engines has enormous advantages over its records circuits and permanent sets no conditions in the engine. The principle of operation of the cylinder head is an ideal environment for the further development and improvement and widespread use. Persistent problems are solved damage to the engine, which until now have caused to date valve and without valve technology.

REFERENCES

OTHER WEBSITES:
https://en.wikipedia.org/wiki/Internal_combustion_engine
http:// www.iosrjournals.org
http://www. powershow .com
BOOKS:
Internal Combustion Engines By Rajput, Dhanpat Rai Publications.
Internal Combustion Engine by Ganesan Tata McGraw Hill.