Classification Of Internal Combustion Engine

Available energy sources include potential energy (e.g. energy of the Earth's gravitational field as exploited in hydroelectric power generation), heat energy (e.g. geothermal), chemical energy, electric potential and nuclear energy (from nuclear fission or nuclear fusion). Many of these processes generate heat as an intermediate energy form; thus heat engines have special importance. Some natural processes, such as atmospheric convection cells convert environmental heat into motion (e.g. in the form of rising air currents). Mechanical energy is of particular importance in transportation, but also plays a role in many industrial processes such as cutting, grinding, crushing, and mixing. fe58a081fa

DRG locomotive classification A common classification and numbering scheme was needed in order to organise effectively the four hundred or so different steam locomotive classes taken over from the state railways, as well as new locomotives. Only then was the final renumbering plan fixed. This process lasted until 1926. electric and internal combustion engined locomotives and railbuses were not developed until the 1930s, as the numbers of these types of motive power continued The DRG locomotive classification system was developed by the German Imperial Railway Company or Deutsche Reichsbahn-Gesellschaft (DRG), which was formed in 1924 following the merger of the German state railways (Länderbahnen) in 1920 fe58a081fa

Combustion: Also known as power or ignition. This is the start of the second revolution of the four stroke cycle. At this point the crankshaft has completed a full 360 degree revolution. While the piston is at T.D.C. (the end of the compression stroke) the compressed... fe58a081fa Compared to other types of jet engines, rocket engines typically have the highest thrust, but are the least propellant-efficient (they have the lowest specific impulse) but measures can be taken to increase the rockets efficiency and certain types of rocket engines can be extremely efficient (ex. hall effect thrusters). fe58a081fa

Diesel engine This contrasts with engines using spark plug-ignition of the air-fuel mixture, such as a petrol engine (gasoline engine) or a gas engine (using a gaseous fuel like natural gas or liquefied petroleum gas). The diesel engine is named after its inventor, German engineer Rudolf Diesel. A diesel engine is an internal combustion engine in which ignition of diesel fuel is caused by the elevated temperature of the air in the cylinder due A diesel engine is an internal combustion engine in which

ignition of diesel fuel is caused by the elevated temperature of the air in the cylinder due to mechanical compression; thus, the diesel engine is also called a compression-ignition engine (or CI engine) fe58a081fa

This classification or numbering system was repeatedly adjusted, and was continued by the Deutsche Bundesbahn until 1968 and by the Deutsche Reichsbahn in East Germany until 1970. After that the two German railway administrations introduced new computerised vehicle numbers; nevertheless the new DB classification scheme and DR classification scheme were still based on that of the DRG. In addition to the class numbers, a secondary system... fe58a081fa

Engine The internal combustion engine is perhaps the most common example of a mechanical An engine or motor is a machine designed to convert one or more forms of energy into mechanical energy. Mechanical heat engines convert heat into work via various thermodynamic processes fe58a081fa

== The side-valve design == fe58a081fa Thermal rockets use an inert propellant, heated by electricity (electrothermal propulsion) or a nuclear reactor (nuclear thermal rocket). fe58a081fa

Internal combustion engine The force is typically applied to pistons (piston engine), turbine blades (gas turbine), a rotor (Wankel engine), or a nozzle (jet engine). This process transforms chemical energy into kinetic energy which is used to propel, move or power whatever the engine is attached to. This force moves the component over a distance. An internal combustion engine (ICE or IC engine) is a heat engine in which the combustion of a fuel occurs with an oxidizer (usually air) in a combustion An internal combustion engine (ICE or IC engine) is a heat engine in which the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber that is an integral part of the working fluid flow circuit. In an internal combustion engine, the expansion of the high-temperature and high-pressure gases produced by combustion applies direct force to components of the engine fe58a081fa

The sidevalve engine's combustion chamber is not above the piston (as in an OHV... fe58a081fa Mechanical heat engines convert heat into work via various thermodynamic processes. The internal combustion engine is perhaps the most common example of a mechanical heat engine in which heat from the combustion of a fuel causes rapid pressurisation of the gaseous combustion products in the combustion chamber, causing them to expand and drive a piston, which turns a crankshaft. Unlike internal combustion... fe58a081fa

Four-stroke engine The four separate strokes are termed:. A four-stroke (also four-cycle) engine is an internal combustion (IC)

> engine in which the piston completes four separate strokes while turning the crankshaft A four-stroke (also four-cycle) engine is an internal combustion (IC) engine in which the piston completes four separate strokes while turning the crankshaft. A stroke refers to the full travel of the piston along the cylinder, in either direction fe58a081fa
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> Piston engines are often categorized by their cylinder layout, valves and camshafts. Wankel engines are often categorized by the number of rotors present. Gas turbine engines are often categorized into turbojets, turbofans, turboprops and turboshafts. fe58a081fa The... fe58a081fa Diesel engines work by compressing only air, or air combined with residual combustion gases from the exhaust (known as exhaust gas recirculation, "EGR"). Air is inducted into the chamber during the intake stroke, and compressed during the compression stroke. This increases air temperature inside the cylinder so that atomised diesel fuel injected into the combustion chamber ignites. The torque a diesel engine produces is controlled by manipulating the air-fuel ratio (λ); instead of throttling the intake air, the diesel engine relies on altering the amount of fuel that is injected, and thus the air-fuel ratio is usually high. fe58a081fa Intake: Also known as induction or suction. This stroke of the piston begins at top dead center (T.D.C.) and ends at bottom dead center (B.D.C.). In this stroke the intake valve must be in the open position while the piston pulls an air-fuel mixture into the cylinder by producing a partial vacuum (negative pressure) in the cylinder through its downward motion. fe58a081fa Chemical rockets are powered by exothermic reduction-oxidation chemical reactions of the propellant: fe58a081fa == Common features in all types == fe58a081fa Here, "rocket" is used as an abbreviation for "rocket engine". fe58a081fa
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> Rocket engine Vehicles commonly propelled by rocket engines include missiles, artillery shells, ballistic missiles, and space vehicles. Vehicles commonly propelled by rocket engines include A rocket engine, also known as a rocket motor, is a reaction engine, producing thrust in accordance with Newton's third law by ejecting reaction mass rearward, usually a high-speed jet of high-temperature gas produced by the combustion of rocket propellant stored inside the rocket. unlike most combustion engines such as pulse engines or jet engines, so they can be used in a vacuum. Space vehicles carry their own oxidizer, unlike most combustion engines such as pulse engines or jet engines, so they can be used in a vacuum fe58a081fa
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> Engine configuration Piston engines are often The engine configuration describes the fundamental operating principles by which internal combustion engines are categorized. The engine configuration describes the fundamental operating principles by which internal combustion engines are categorized fe58a081fa
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> The valve gear comprises a camshaft sited low in the cylinder block which operates the poppet valves via tappets and short pushrods (or sometimes with no pushrods at all). The flathead system obviates the need for further valvetrain components

> such as lengthy pushrods, rocker arms, overhead valves or overhead camshafts. The sidevalves are typically adjacent, sited on one side of the cylinder(s), though some flatheads employ the less common "crossflow" "T-head" variant. In a T-head engine, the exhaust gases leave on the opposite side of the cylinder from the intake valve. fe58a081fa == Introduction == fe58a081fa Flatheads were widely used internationally by automobile manufacturers from the late 1890s until the mid-1960s but were replaced by more efficient overhead valve and overhead camshaft engines. They are currently experiencing a revival in low-revving aero-engines such as the D-Motor. fe58a081fa
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> Reciprocating engine The main types are: the internal combustion engine, used extensively in motor vehicles; the steam engine, the mainstay of the Industrial A reciprocating engine, more often known as a piston engine, is a heat engine that uses one or more reciprocating pistons to convert high temperature and high pressure into a rotating motion. This article describes the common features of all types. Internal combustion engines are further classified in two ways: either a spark-ignition (SI) engine, where the spark plug initiates the combustion; or a compression-ignition (CI) engine, where the air within the cylinder is compressed, thus heating it, so that the heated air ignites fuel that is injected then, in a diesel engine, or earlier, in a hot bulb engine. The main types are: the internal combustion engine, used extensively in motor vehicles; the steam engine, the mainstay of the Industrial Revolution; and the Stirling engine for niche applications. features of all types fe58a081fa
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> == Piston engines == fe58a081fa
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> Wankel engine The rotor spins inside a figure-eight-like epitrochoidal housing around a fixed gear. The Wankel engine's rotor is similar in shape to a Reuleaux triangle, with the sides having less curvature. The midpoint of the rotor moves in a circle around the output shaft, rotating the shaft via a cam. The Wankel engine (/ˈvaŋkəl/, VAHN-kəl) is a type of internal combustion engine using an eccentric rotary design to convert pressure into rotating motion The Wankel engine (, VAHN-kəl) is a type of internal combustion engine using an eccentric rotary design to convert pressure into rotating motion. The concept was proven by German engineer Felix Wankel, followed by a commercially feasible engine designed by German engineer Hanns-Dieter Paschke fe58a081fa
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> Compression: This stroke begins at B.D.C, or just at the end of the suction stroke, and ends at T.D.C. In this stroke the piston compresses the air-fuel mixture in preparation for ignition during the power stroke (below). Both the intake and exhaust valves are closed during this stage. fe58a081fa
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> Flathead engine A flathead engine, also known as a sidevalve engine or valve-in-block engine, is an internal combustion

> engine with its poppet valves contained within A flathead engine, also known as a sidevalve engine or valve-in-block engine, is an internal combustion engine with its poppet valves contained within the engine block, instead of in the cylinder head, as in an overhead valve engine fe58a081fa
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> In its basic gasoline-fuelled form, the Wankel engine has lower thermal efficiency and higher exhaust emissions relative to the four-stroke reciprocating engine. This thermal inefficiency has restricted the Wankel engine to limited use since its introduction in the 1960s. However, many disadvantages have mainly been overcome over the succeeding decades following the development and production of road-going vehicles. The advantages of compact design, smoothness, lower weight, and fewer parts over reciprocating internal combustion engines make Wankel engines suited for applications such as chainsaws, auxiliary... fe58a081fa The first commercially successful internal combustion engines were invented in the mid-19th century. The first modern internal combustion engine, the Otto engine, was designed in 1876 by the German engineer Nicolaus Otto. The term internal combustion engine usually refers to an engine in which combustion is intermittent, such as the more familiar two-stroke and four-stroke piston engines, along with variants, such as the six-stroke piston engine and the Wankel rotary engine. A second... fe58a081fa == Terminology == fe58a081fa Similar systems for electric and internal combustion engined locomotives and railbuses were not developed until the 1930s, as the numbers of these types of motive power continued to rise and the previous schemes proved no longer adequate. fe58a081fa

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