Izglītības programma: Autotransports

Kvalifikācija: Autoelektriķis, 3.līmenis

Mācību priekšmets: Profesionālā angļu valoda

Mācību materiāls: Motori

Skolotājs: Dace Cine

Engine/motor



Diagram of a cylinder as found in 4-stroke gasoline engines.:
**C** – [crankshaft](http://en.wikipedia.org/wiki/Crankshaft) -- kloķvārpsta
**E** – exhaust [camshaft](http://en.wikipedia.org/wiki/Camshaft) – izplūdes izciļņvārpsta
**I** – inlet [camshaft](http://en.wikipedia.org/wiki/Camshaft) - ieplūdes izciļņvārpsta
**P** – [piston](http://en.wikipedia.org/wiki/Piston) - virzulis
**R** – [connecting rod](http://en.wikipedia.org/wiki/Connecting_rod) - savienojošais stienis
**S** – [spark plug](http://en.wikipedia.org/wiki/Spark_plug)- aizdedzes svece
**V** – [valves](http://en.wikipedia.org/wiki/Poppet_valve) – vārsts (red: exhaust-izplūdes, blue: intake – ieplūdes).

 valve seat – vārsta ligzda
**W** – [cooling water jacket](http://en.wikipedia.org/wiki/Water_jacket) dzesēšanas korpuss.
*black structure* – [engine block](http://en.wikipedia.org/wiki/Engine_block) – motora bloks.

combustion engine – aizdedzes motors

internal combustion engine (ICE) – iekšdedzes motors

combustion chamber – aizdedzes kamera/telpa

[four-stroke](http://en.wikipedia.org/wiki/Four-stroke) – 4-taktu

[gas turbines](http://en.wikipedia.org/wiki/Gas_turbine) – gāzes turbīna

[jet engines](http://en.wikipedia.org/wiki/Jet_engine) – reaktīvais dzinējs

jet – strūkla, sprausla

[ramjet](http://en.wikipedia.org/wiki/Ramjet) –caurplūdes reaktīvais dzinējs

force – spēks

to accelerate – paātrināt

thrust – grūdiens, trieciens

renewable energy – atjaunojamā enerģija

clutch – sajūgs

gearbox-pārnesumkārba

alloy – sakausējums

cooling water jacket-dzesēšanas korpuss

alignemnt – noregulēšana

spark plug-aizdedzes svece

**Combustion engine** (**ICE**) is a [heat engine](http://en.wikipedia.org/wiki/Heat_engine) where the [combustion](http://en.wikipedia.org/wiki/Combustion) of a [fuel](http://en.wikipedia.org/wiki/Fuel) occurs with an [oxidizer](http://en.wikipedia.org/wiki/Oxidizer) (usually air) in a [combustion chamber](http://en.wikipedia.org/wiki/Combustion_chamber) that is an integral part of the working fluid flow circuit. In an internal combustion engine the expansion of the high-[temperature](http://en.wikipedia.org/wiki/Temperature) and high-[pressure](http://en.wikipedia.org/wiki/Pressure) gases produced by combustion apply direct [force](http://en.wikipedia.org/wiki/Force) to some component of the engine. The force is applied typically to [pistons](http://en.wikipedia.org/wiki/Piston), [turbine blades](http://en.wikipedia.org/wiki/Turbine_blade), or a [nozzle](http://en.wikipedia.org/wiki/Propulsive_nozzle). This force moves the component over a distance, transforming [chemical energy](http://en.wikipedia.org/wiki/Chemical_energy) into useful [mechanical energy](http://en.wikipedia.org/wiki/Mechanical_energy).

Typically an ICE is fed with fossil fuels like [natural gas](http://en.wikipedia.org/wiki/Natural_gas) or [petroleum](http://en.wikipedia.org/wiki/Petroleum) products such as [gasoline](http://en.wikipedia.org/wiki/Gasoline), [diesel fuel](http://en.wikipedia.org/wiki/Diesel_fuel) or [fuel oil](http://en.wikipedia.org/wiki/Fuel_oil). There's a growing usage of [renewable fuels](http://en.wikipedia.org/wiki/Renewable_fuel) like [biodiesel](http://en.wikipedia.org/wiki/Biodiesel) for compression ignition engines and [bioethanol](http://en.wikipedia.org/wiki/Bioethanol) for spark ignition engines. [Hydrogen](http://en.wikipedia.org/wiki/Hydrogen) is sometimes used, and can be made from either fossil fuels or renewable energy.

Internal combustion engines are quite different from [external combustion engines](http://en.wikipedia.org/wiki/External_combustion_engine), such as [steam](http://en.wikipedia.org/wiki/Steam_engine) or [Stirling engines](http://en.wikipedia.org/wiki/Stirling_engine), in which the energy is delivered to a working fluid not consisting of, mixed with, or contaminated by combustion products. Working fluids can be air, hot water, [pressurized water](http://en.wikipedia.org/wiki/Pressurized_water_reactor) or even liquid sodium, heated in a [boiler](http://en.wikipedia.org/wiki/Boiler).

**The jet engine** takes a large volume of hot gas from a combustion process (typically a gas turbine, but rocket forms of jet propulsion often use solid or liquid propellants, and [ramjet](http://en.wikipedia.org/wiki/Ramjet) forms also lack the gas turbine) and feeds it through a nozzle that accelerates the jet to high speed. As the jet accelerates through the nozzle, this creates thrust and in turn does useful work.

**A gas turbine** is called a gas turbine because it compresses a gas, usually air. There are three stages to a turbine: 1) air is drawn through a compressor where the temperature rises due to compression, 2) fuel is added in the combuster, and 3) hot air is exhausted through turbines blades which rotate a shaft connected to the compressor.A gas turbine is a rotary machine similar in principle to a [steam turbine](http://en.wikipedia.org/wiki/Steam_turbine) and it consists of three main components: a compressor, a combustion chamber, and a turbine. The air, after being compressed in the compressor, is heated by burning fuel in it. About ⅔ of the heated air, combined with the products of combustion, expands in a turbine, producing work output that drives the compressor. The rest (about ⅓) is available as useful work output.

**Fuels.**The most common modern fuels are made up of [hydrocarbons](http://en.wikipedia.org/wiki/Hydrocarbon) and are derived mostly from [fossil fuels](http://en.wikipedia.org/wiki/Fossil_fuel) ([petroleum](http://en.wikipedia.org/wiki/Petroleum)). Fossil fuels include [diesel fuel](http://en.wikipedia.org/wiki/Diesel_fuel), [gasoline](http://en.wikipedia.org/wiki/Gasoline) and [petroleum gas](http://en.wikipedia.org/wiki/Liquefied_petroleum_gas), and the rarer use of [propane](http://en.wikipedia.org/wiki/Propane). Except for the fuel delivery components, most internal combustion engines that are designed for gasoline use can run on [natural gas](http://en.wikipedia.org/wiki/Natural_gas) or liquefied petroleum gases without major modifications. Large diesels can run with air mixed with gases and a pilot diesel fuel ignition injection. Liquid and gaseous [biofuels](http://en.wikipedia.org/wiki/Biofuel), such as [ethanol](http://en.wikipedia.org/wiki/Ethanol_fuel) and [biodiesel](http://en.wikipedia.org/wiki/Biodiesel) (a form of diesel fuel that is produced from crops that yield [triglycerides](http://en.wikipedia.org/wiki/Triglyceride) such as [soybean](http://en.wikipedia.org/wiki/Soybean) oil), can also be used. Engines with appropriate modifications can also run on [hydrogen](http://en.wikipedia.org/wiki/Hydrogen) gas, [wood gas](http://en.wikipedia.org/wiki/Wood_gas), or [charcoal gas](http://en.wikipedia.org/wiki/Wood_gas), as well as from so-called [producer gas](http://en.wikipedia.org/wiki/Wood_gas) made from other convenient biomass. Experiments have also been conducted using powdered solid fuels, such as the [magnesium injection cycle](http://en.wikipedia.org/wiki/Magnesium_injection_cycle).