

Engines

An engine, also referred to as a motor, is an apparatus which changes energy into useful mechanical motion. Motors which transform heat energy into motion are known as engines. Engines come in various kinds such as internal and external combustion. An internal combustion engine usually burns a fuel making use of air and the resulting hot gases are used for creating power. Steam engines are an illustration of external combustion engines. They use heat so as to produce motion utilizing a separate working fluid.

The electric motor takes electrical energy and produces mechanical motion through different electromagnetic fields. This is a common kind of motor. Various kinds of motors function through non-combustive chemical reactions, other types could utilize springs and function through elastic energy. Pneumatic motors function by compressed air. There are other designs based on the application required.

Internal combustion engines or ICEs

Internal combustion happens when the combustion of the fuel combines together with an oxidizer inside the combustion chamber. In the IC engine, higher temperatures would result in direct force to certain engine components such as the turbine blades, nozzles or pistons. This particular force produces functional mechanical energy by moving the component over a distance. Typically, an ICE has intermittent combustion as seen in the popular 2- and 4-stroke piston motors and the Wankel rotating engine. The majority of jet engines, gas turbines and rocket engines fall into a second class of internal combustion motors referred to as continuous combustion, which occurs on the same previous principal described.

External combustion engines like for instance steam or Sterling engines vary greatly from internal combustion engines. External combustion engines, where the energy is delivered to a working fluid such as liquid sodium, hot water and pressurized water or air that are heated in some type of boiler. The working fluid is not mixed with, having or contaminated by combustion products.

Different designs of ICEs have been developed and placed on the market together with various strengths and weaknesses. If powered by an energy dense fuel, the internal combustion engine produces an efficient power-to-weight ratio. Though ICEs have succeeded in numerous stationary applications, their real strength lies in mobile utilization. Internal combustion engines dominate the power supply utilized for vehicles like for instance aircraft, cars, and boats. A few hand-held power tools utilize either ICE or battery power equipments.

External combustion engines

An external combustion engine is comprised of a heat engine where a working fluid, like for instance steam in steam engine or gas in a Stirling engine, is heated by combustion of an external source. This particular combustion takes place through a heat exchanger or via the engine wall. The fluid expands and acts upon the engine mechanism that generates motion. After that, the fluid is cooled, and either compressed and used again or disposed, and cool fluid is pulled in.

Burning fuel utilizing the aid of an oxidizer to supply the heat is known as "combustion." External thermal engines could be of similar use and configuration but utilize a heat supply from sources such as exothermic, geothermal, solar or nuclear reactions not involving combustion.

Working fluid can be of whichever composition, even though gas is the most common working fluid. Every so often a single-phase liquid is occasionally used. In Organic Rankine Cycle or in the case of the steam engine, the working fluid varies phases between liquid and gas.