

STEAM ENGINE

A steam engine is an external combustion heat engine that makes use of the thermal energy that exists in steam, converting it to mechanical work.

Where used

Steam engines were used in pumps, locomotives, steam ships and steam tractors, and were essential to the Industrial Revolution[[2]]. They are still used for electrical power generation using steam turbine[[3]]s.

How it works

A steam engine needs a boiler to boil Water to produce steam under pressure. Any heat source can be used, but the most common is a fire fueled by wood,coal, or oil. (However, anything that can be burned can be used as fuel for the fire: paper, trash, used crankcase oil, ground-up corncobs, manure, natural gas, gasoline, high proof alcohol, dry grass, hay, dry weeds, etc). The steam expands and pushes against a piston or turbine, whose motion does the work of turning wheels or driving other machinery.

Types of steam engine

Steam engines can be classified in two main ways:

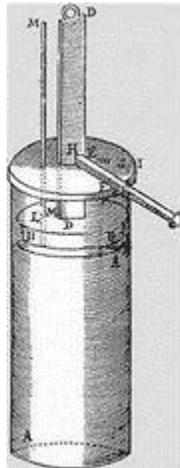
- By the technology used. Most steam engines use either piston engines or turbines.
- By the application. Steam engines are used as:
 - Stationary engines. Stationary steam engines again divide into two main classes:
 - Winding engines, rolling mill engines, and similar applications which need to frequently stop and reverse.
 - Engines providing power, which stop rarely and do not need to reverse. These include nearly all thermal power stations, and were also used in mills, factories and to power cable railways and cable tramways before the widespread use of electric power.
 - Vehicle engines:
 - Steamboats and steamships.
 - Land vehicles:
 - Steam locomotives.
 - Steam cars.

- Steam rollers.
- Steam shovels.
- Traction engines.
- Steam rocket cars

Invention



Aeolipile



The first piston steam engine, developed by Denis Papin in 1690.

The first steam device, the aeolipile Aeolipile, was invented by Hero of Alexandria [[4]], a Greek, in the 1st century AD, but used only as a toy. Incidentally, 700 years earlier in Corinth, Greece, rail tracks were invented; however the Greeks never thought of putting the two together.

In 1663, Edward Somerset, 2nd Marquess of Worcester [[5]] published designs for, and may have installed, a steam-powered engine for pumping water at Vauxhall House [[6]]. Denis Papin [[7]], a French physicist, built a working model of a steam engine in about 1687 --with the help of Leibniz [[8]], a paddle steam boat and is cred with a number of significant gadgets such as the safety valve. Sir Samuel Morland [[9]] also developed ideas for a steam engine during the same period, he built a number of steam-engine pumps for Louis XIV in the 1680s. Early industrial steam engines were designed by Thomas Savery (The "fire-engine", 1698) and Thomas Newcomen (1712). Humphrey Gainsborough [[10]] produced a model condensing steam engine in the 1760s, which he showed to James Watt[[11]]. In 1769 Watt patented improvements to the Newcomen engine that made it much more fuel efficient, which finally led to the general acceptance and use of steam power.

Source: http://engineering.wikia.com/wiki/Steam_engine