CREATIVE WRITING

PHYSICS Assignment

CAR ENGINES

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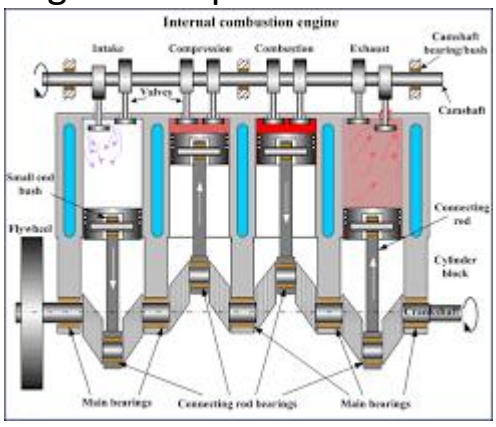
An engine or motor is a machine designed to convert one or more forms of energy into mechanical energy. Automobiles work on this principle and have become an integrated part of human lifestyle. The mechanism of working of an engine in quite interesting.

Mechanical cars use an internal combustion engine. 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 some component of the engine. The force is applied typically to pistons(piston engine), turbine blades(gas turbine), a rotor(Wankel engine), or a nozzle(jet engine). The force moves the component over a distance, transforming chemical energy into useful kinetic energy and is used to propel, move or power whatever the engine is attached to. This replaced the external combustion engine for applications where weight or size of the engine is important.



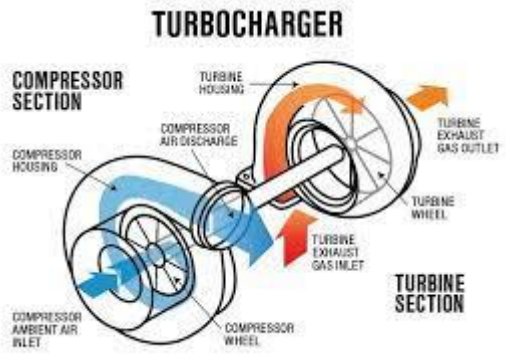
Internal Combustion Engine

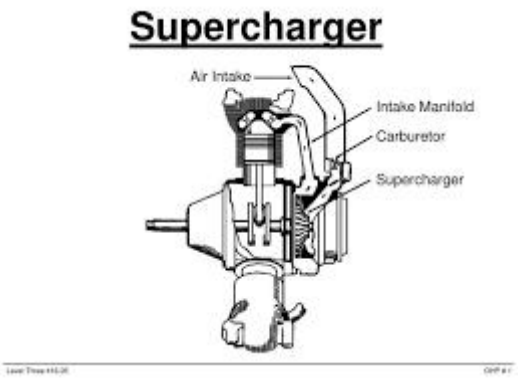
There are many types of engines in the car world. These are based on the number of the pistons or the alignment of the pistons. The more commercially used one is the L4(4 piston in-line) engine. In this engine, the 4 pistons are arranged in a straight line. They are used widely due to their easy and

inexpensive manufacturing and installation process. The lower end sport cars use the L6(6 piston in-line) or the V6(6 piston V-aligned) engines. Having more than 6 piston in the engine brings the car in the supercar category. There are various alignments in this category from W16 engine in Bugatti Chiron, V8 in the Ferrari F8 Tributo to the V12 in a Lamborghini Aventador.

Basic Alignment of pistons in a V6

To add to the output of an engine, components like turbochargers and superchargers are used. A turbocharger, commonly referred to as a turbo, is a turbine driven, forced induction device that increases an ICE's power output by forcing extra compressed air into the combustion chamber. This improvement over a naturally aspirated engine's power output is because the compressor can force more air - and proportionally more fuel - into the combustion chamber than atmospheric pressure alone. On the other hand, a supercharger is an air compressor that increases the pressure or density or air supplied to an internal combustion engine. This gives each intake cycle of the engine more oxygen, letting it burn more fuel and do more work, this increasing the power output.





Everything has drawbacks. Engines are no exception. The burning of fuels gives out toxic gasses such as carbon monoxide, nitrogen oxide, and nitrogen monoxide which are harmful to the human beings as well as the atmosphere. Even though petrol cars are cheaper, they are heavy on the pockets due to the high fuel costs. Also, petrol cars have a lot of components and each is necessary for the proper functioning of the vehicle. Hence, these cars have very high maintenance costs.

Air pollution due to cars

A viable replacement to petrol cars are electric vehicles(EVs). Electricity is a renewable resource and can be obtained from various sources like hydro-power and wind energy. A lot of automobile companies have started launching EVs, some of them being Tesla, Porche and Rivian. These will drastically reduce the carbon footprint as no gasses are emitted. As electricity is cheaper than fuel, the running costs of EVs are less. Also, these have fewer mechanical parts and hence, low maintenance costs. Moreover, they make no sound, and hence prevent noise pollution.

Electric Vehicle

Sources:
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