Cooling of Internal Combustion Engines

The Engine cooling system is one of the necessary thing that is present in the Internal Combustion Engine to reduce the temperature of the components inside the engine. It also helps to reduce the wear out of the component and provide smooth functioning and long life of the components.

**Types of Cooling System:**

Generally, there are two types of the cooling system, and those are:

* Air Cooling System
* Water  Cooling System

Air Cooling System:

Air cooling is a process of lowering air temperature by dissipating heat it provide Increased air flow and reduced temperatures with the use of cooling fins, fans or finned coils That move the heat out of the piston jackets.

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Applications of Air Cooling System:

Air cooling is commonly used in Motorcycles, general aviation aircraft, lawn mowers, generators, outboard motors, pump sets, saw benches and auxiliary power units.

Liquid Cooling System:

This type is the most commonly used type of system in this system dissipation of heat is done by the circulation of water through the jackets around the Cylinder and passes this hot water through the radiator where air absorbs heat from the water.

Parts of Water Cooling System

1. Radiator.
2. Thermostat valve.
3. Water pump
4. Fan.
5. Water Jackets.
6. Coolant

Applications of Liquid Cooling System:

The Liquid Cooling systems are commonly used in the four wheelers like truck, Car, Generators, etc…

Types of Liquid Cooling System:

Thermo-Syphon Cooling:

A thermo-siphon is a passively driven thermal management device that utilizes the motive forces of natural convection and conduction. The device uses these forces to create a cyclic fluid flow from areas of high heat to low heat and back.

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Forced or Pump Cooling:

Forced-air cooling is accomplished by exposing packages of produce in a cooling room to higher air pressure on one side than on the other. This pressure difference forces the cool air through the packages and past the produce, where it picks up heat, greatly increasing the rate of heat transfer.

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Thermostat Cooling:

A thermostat is the key component of the engine cooling system. The cooling system keeps the engine from overheating. The system is filled with liquid coolant (antifreeze) and is connected into a loop with a radiator to reduce the heat

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Pressurized Water Cooling:

The pressurized cooling systems keep the water in contact with hottest parts of the engine. Because the system is air-free and under pressure, there are no steam pockets that form hot spots allowing you to run longer and hotter.

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Evaporative Cooling:

This is predominately used in stationary engine. In this the engine will be cooled because of the evaporation the water in the cylinder jackets into the steam. Here the advantage is taken from the high latent heat of vaporizing of the water by allowing evaporating in the cylinder jackets. If the steam is formed at a pressure above atmospheric the temperature will be above the normal permissible temperature.

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