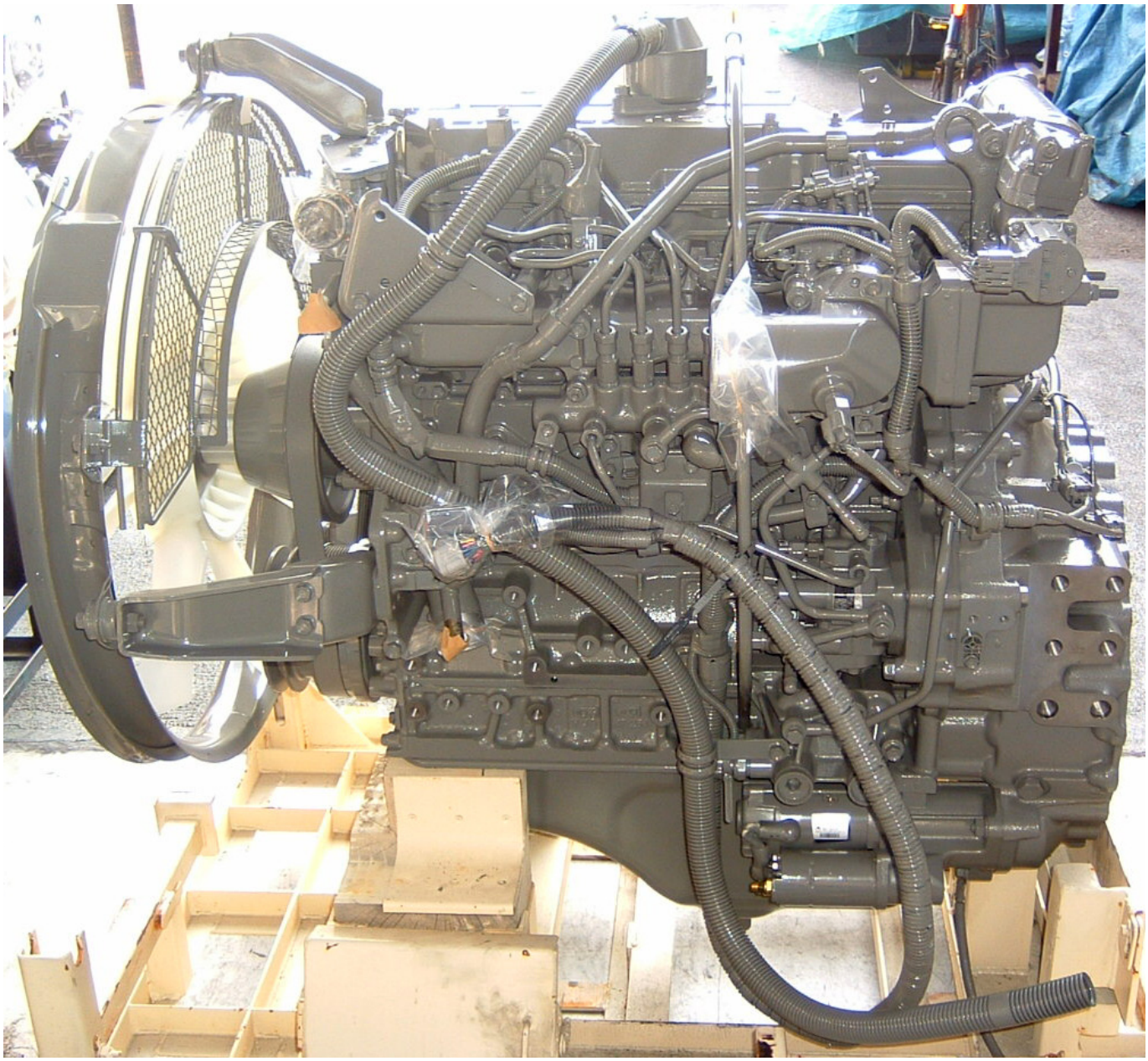
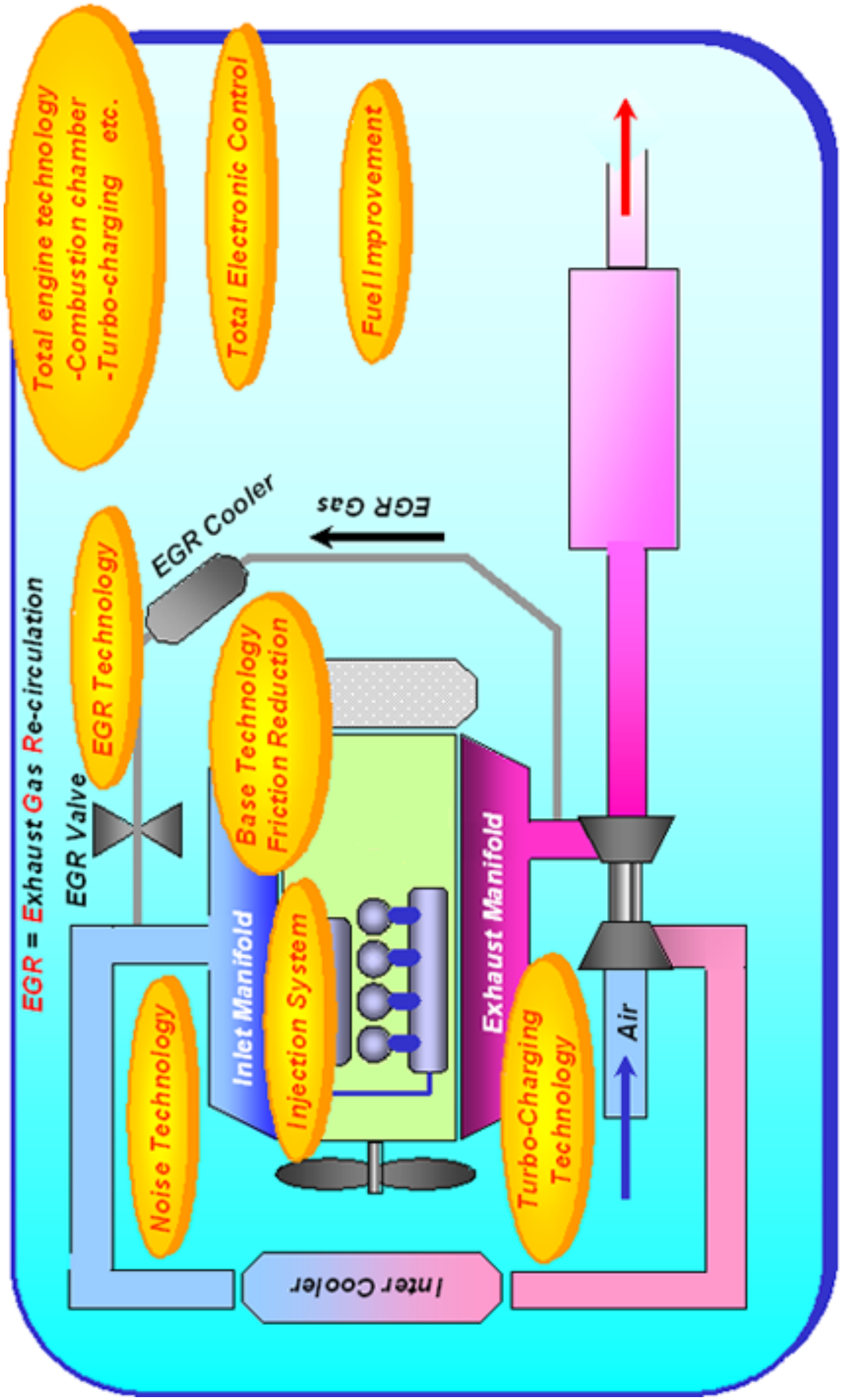
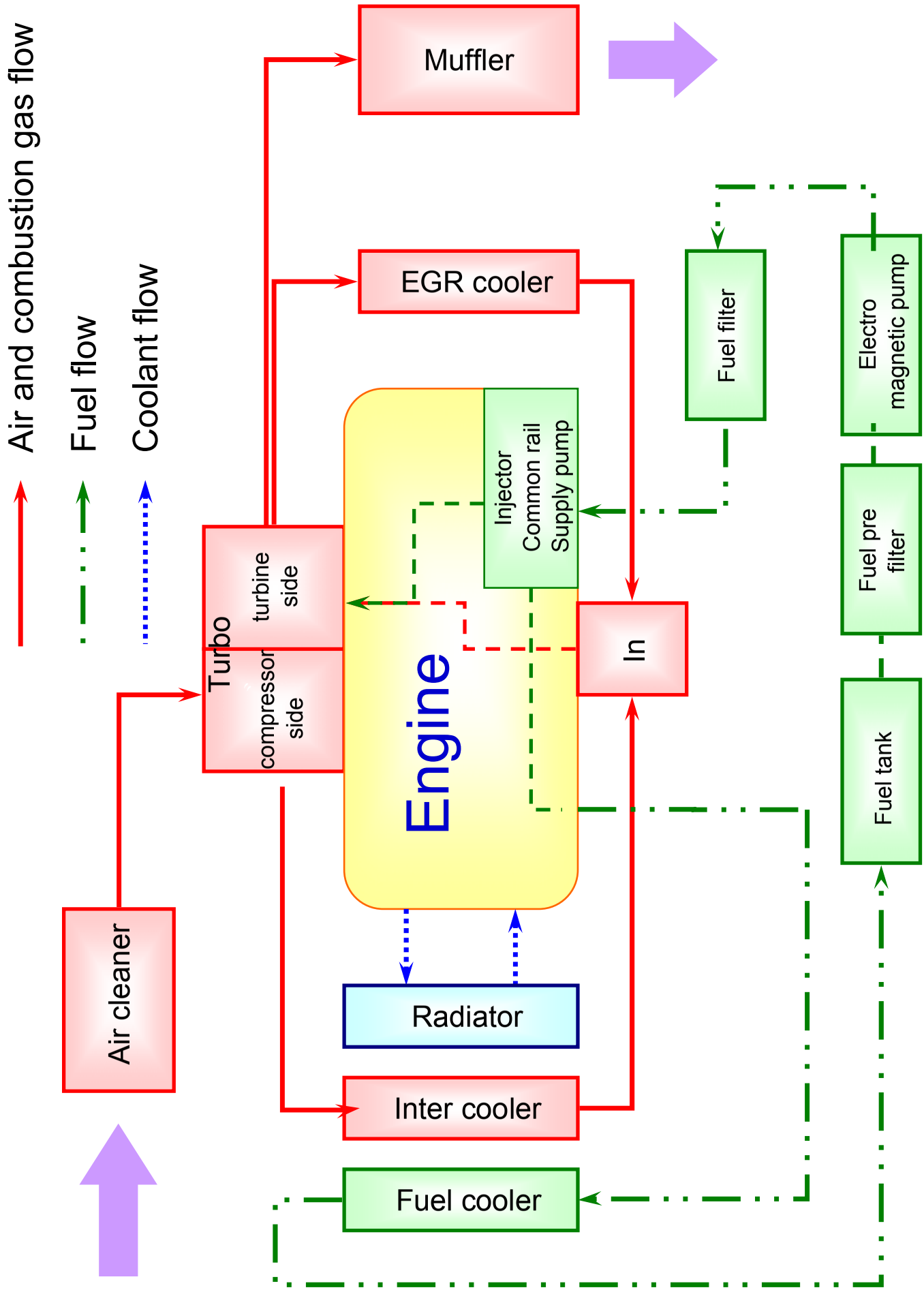
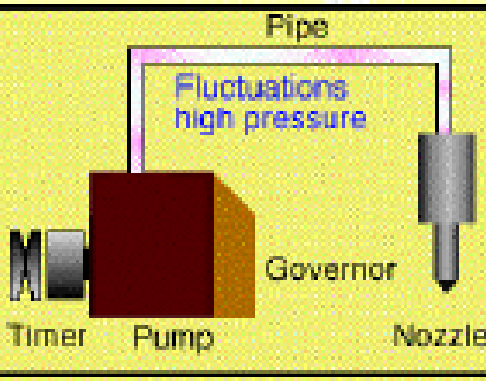
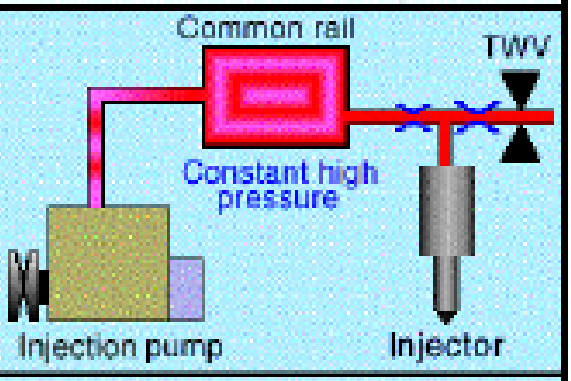


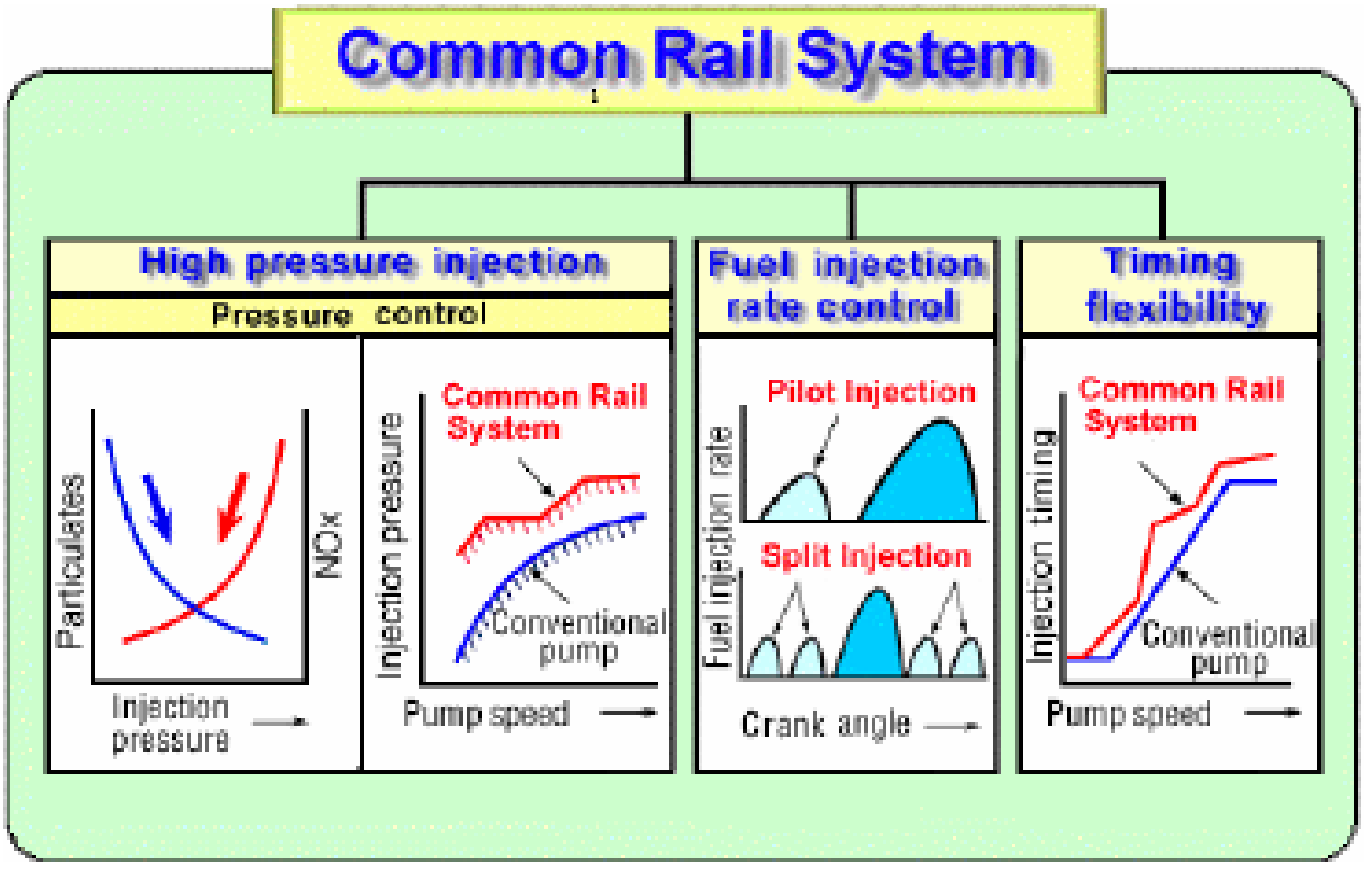
Key technologies of diesel engine:



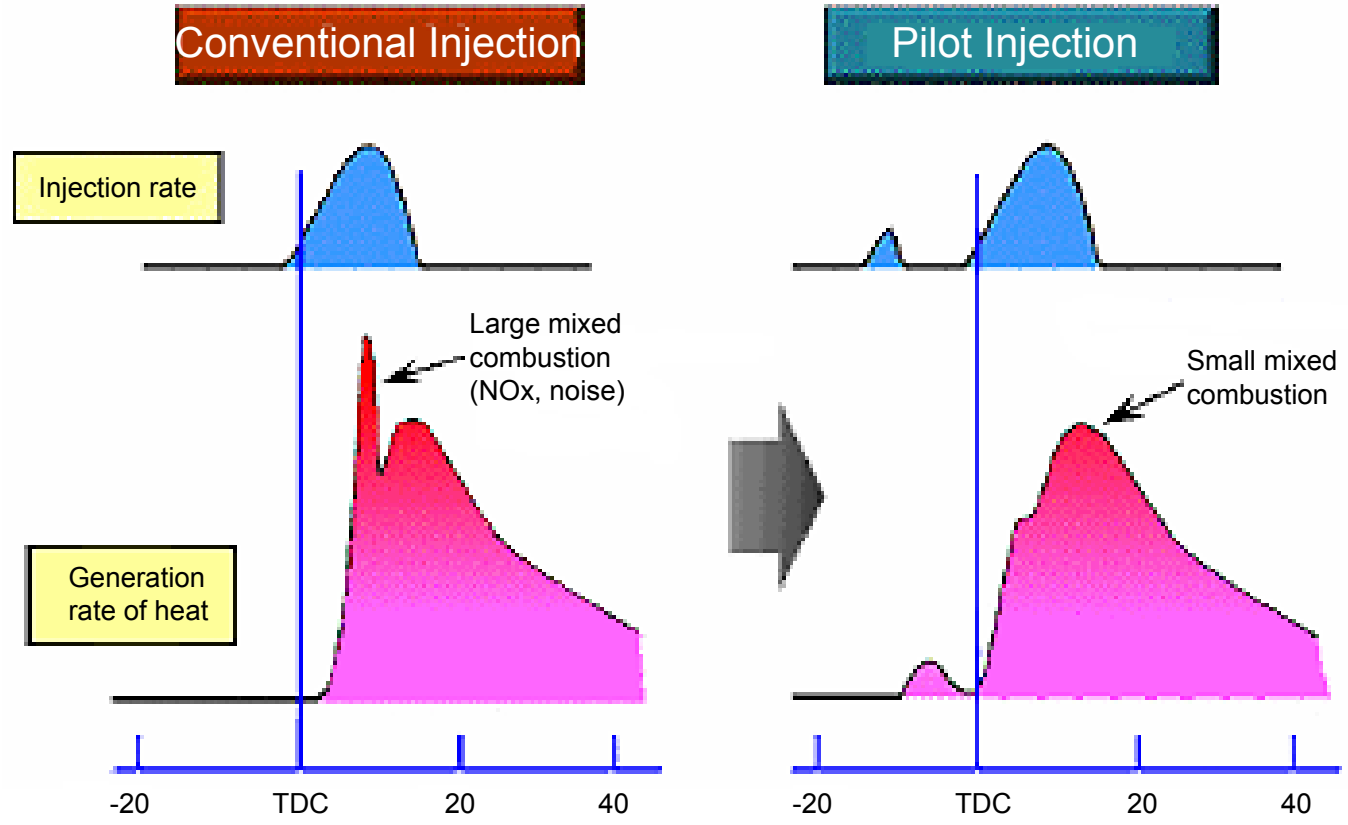

Air and combustion gas flow
Fuel flow
Coolant flow
Muffler
EGR cooler
Fuel filter
Electro magnetic pump
Injector Common rail Supply pump
Fuel pre filter
Turbo
turbine side
compressor side
In
Engine
Fuel tank
Air cleaner
Radiator
Inter cooler
Fuel cooler

Comparison with conventional system:

	In-line Type	Common Rail System
System		
Injection quantity adjustment	Pump (governor)	ECM, injector (TWV)
Injection timing adjustment	Pump (timer)	ECM, injector (TWV)
Increased pressure	Pump	Injection pump
Distribution	Pump	Common rail
Injection pressure adjustment	According to rotational speed, injection quantity.	Injection pump (PCV)



Fuel injection rate control:



Common rail-type electronic control injection system:

The common rail-type electronic control injection system is composed of a fuel supply pump that sets the target pressure of high-pressure fuel and supply it, a common rail that measures such high-pressure fuel and a fuel injector that turns it into a fine spray and injects it. Each is controlled via ECM based upon various signals, while injection timing or fuel injection quantity is controlled under every possible driving condition.

Fuel injector:

The fuel injector is a 7-hole nozzle that adjusts fuel injection quantity or injection timing by opening or closing an electromagnetic valve on the head of the fuel injector.

ECM corrects the dispersion of fuel injection quantity between fuel injectors according to ID code data in memory. At the replacement of fuel injectors, ID code data should be stored in ECM.