KE-Motronic This system is based on the K-Jetronic continuous injection system. - Mono-Motronic system This system is based on the Mono-Jetronic intermittent injection system. - M-Motronic system This system is based on the L-Jetronic system for intermittent injection system in the intake manifold. - ME-Motronic system It is an integrated electronic throttle control (ETC) system in the M-Motronic system. MED-Motronic It is a system that combines in one system direct gasoline injection, electronic ignition and electronic throttle control. DI-Motronic (Direct Gasoline Injection) System In engines with direct injection of gasoline, the proportion of the mixture is formed directly into the air in the combustion chamber. During the intake stroke, air is drawn only through the intake valve, and the fuel is compressed at high pressure into the combustion chamber by means of a special injector. Accurate calibration, preparation and distribution of inlet air and fuel for each combustion stroke reduced fuel consumption rates and reduced exhaust emissions. 1_Operating modes 1-Stratified charge mode The engine runs in stratified charge mode up to the medium engine load and speed range. Through mixture stratification in the combustion chamber, the engine can be operated at a total lambda of approx. 1.6 to 3. - A highly ignitable mixture forms around the spark plugs at the centre of the combustion chamber. - This mixture is enveloped by an outer layer which ideally comprises fresh air and recirculated exhaust gas the engine is in the corresponding engine load and speed ranges - there are no exhaust emission faults in the system - the coolant temperature is above 50°C - the NOx sensor is ready, and - the temperature of the NOx storage catalyst is between 250°C and 500°C 1-Intake process the throttle valve is opened as wide as possible in order to minimise throttle losses. The intake manifold flap closes the lower duct in the cylinder head. The intake air flows at a faster rate and tumbles into the cylinders via the upper duct. 2-Injection cycle Fuel is injected during the last third of the compression stroke. It begins approximately 60° before ignition TDC ends approximately 45° before ignition TDC. The injection point has a major role to play in the position of the atomised mixture in the area of the spark plugs The fuel is injected in the direction of the fuel recess. 2- Homogeneous lean charge mode In the transition zone between stratified charge mode and homogeneous charge mode, the engine runs in homogeneous lean charge mode. The lean mixture is distributed homogeneously (evenly) throughout the combustion chamber. The air/fuel ratio is approximately lambda 1.55. 3-Homogeneous charge mode At higher engines loads and speeds, the engine runs in homogeneous charge mode. The air-fuel ratio in this operating mode is lambda=1. 4-Mixture formation process In stratified charge mode, a crank angle of only 40° - 50° is available for mixture formation. This is a decisive factor influencing the ignitability of the mixture. If the interval between injection and ignition is shorter, the mixture is not ignitable because it has not been sufficiently prepared. A longer interval would lead to further homogenisation throughout the combustion chamber. This is why a highly ignitable atomised mixture forms around the spark plug at the centre of the combustion chamber. This is enveloped by an outer layer which is ideally composed of fresh air and recirculated exhaust gas. The air-fuel ratio throughout the combustion chamber is between □=1.6 and 3. 5-Combustion process The ignition cycle commences when the air-fuel mixture is positioned exactly in the area of the spark plugs. Only the atomised mixture is ignited, while the other gases act as an insulating envelope. Thus, heat losses through the cylinder wall are reduced and the engine's thermal efficiency is increased. The ignition point lies within a narrow crankshaft window because of the retarded

injection end point and the time available for mixture formation at the end of the M-Motronic system This system is based on the L-Jetronic system for intermittent injection system in the intake manifold The fuel cycle in the Motronic system:- The objective of the fuel circuit is to generate a pressure quantity and stabilize it at a certain limit within the circuit in all operating conditions of the engine, where the electric fuel pump draws fuel from the fuel tank and raises its pressure to reach about (2.5 bar) in the intake pipe, after the process of purifying it from impurities by Fuel filter, used to adjust this pressure pressure regulator, if the fuel pumped by the pump exceeds the required limit, the excess returns to the fuel tank again The fuel line oscillations are damped by the fuel damper, the fuel valves are mounted above the intake valves connected to the distribution tube, atomizing the fuel during the injection process, and the thermal timing valve controls the injection time of the cold drive start valve (in some systems). 1 pump Fuel 9 RPM Sensor 17 RPM Sensor 2 Fuel filter 10 Secondary air pump 23 18 Motor temperature sensor 3 Fuel injector 11 Secondary air valve 19 Oxygen sensor I 4 Carbon canister 12 Differential pressure sensor 20 Oxygen sensor II 5 valve Throttle 13 mass Air meter 21 pedal Accelerator 6 Tank vent valve 14 Throttle valve potentiometer 22 Camshaft sensor 7 Intake manifold pressure sensor 15 Air temperatures sensor 23 ECU 11 8 Pressure actuator 16 Knock sensor 24 Diagnosis interface Fuel pump:- An electric hydraulic pump is used in modern systems to drive and supply monkeys to circulate, and electrify a pump that is supplied when The battery voltage is normal, 60 liters / speed and 200 liters / speed, and its pressure ranges from 3 to 7 liters . 1 Compression region 2 Electric propane 3 Propane gasket 4 Air valve Return 5 Thrust tube 6 electrical connection Fuel filter:- It consists of a composite rim frame inside a paper casing of the size of the cylinder, with a diameter of 10 m m, and the filter cartridge with a diameter of 10 mm. The pump and its function purify the fuel from dirt and water, because the atomizers, for example, are subject to wear if they pass Dirt entered God, even if it was a little Fuel Quantity Calculations:- The calculations of the amount of fuel depend on the signals sent from many sensors, namely: the air flow sensor, the speed sensor, the correction (adjustment) sensors, the temperatur