

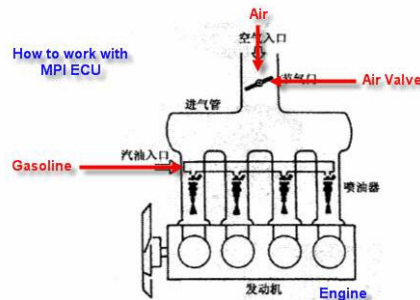
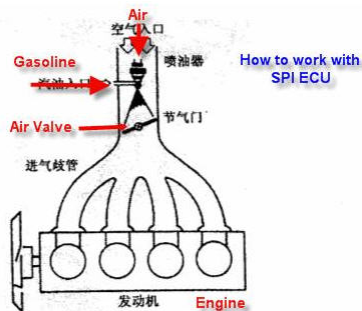
ECU technology and product

ECU Main technical descriptions

1. Electronic controls fuel injection engine technology synopsis

The Electronic control fuel injection engine technology has applied on the aircraft engine as early as in Second World War period, but because of the high cost and the complex structure, it has not been applied on the automobile.

With the big increase of automobile quantity in the 70's, the automobile discharges waste gas and the fuel oil consumption unceasing rise is puzzling the people, because energy intense, the environmental pollution endangers the humanity the survival, forces the people to seek the effective method to reduce dyeing which the automobile creates. Simultaneously electronic technology rapid development, also powerfully impelled electrically controlled to spray technical the progress, and rapidly achieved the practical application.



The disadvantage of installing the electronic control fuel injection is that the cost is higher than carburettor; enable the efficiency of the engine power and the environmental protection to obtain the unprecedented enhancement. Actually the initial electricity eruption motive only is the control fuel injection quantity, but the present electricity eruption motive not merely controls fuel injection quantity, but also controls the ignition, acceleration, discharges, the air conditioning, even also participation from the travelling wave box, the skid resistant system, the electronic stable procedure control system control, enable modern the integration of machinery technology to obtain perfect manifesting. In under the modern electronic technology force support, the electricity spurts the technology the engine power, efficient, the environmental protection display nearly perfect boundary, thus also delivered the traditional carburettor type engine the grave.

Compares with the carburettor type engine, the prominent merit is can accurately control the mixture air the quality, guaranteed in the air cylinder the fuel burning is complete, causes less waste gas discharge and fuel oil consumption, simultaneously it also enhanced the engine charge efficiency, increased the engine power and the torque. The most major problem in the fuel injection system development is the system structure complex, higher production cost, but compared to the movement efficiency and the environmental protection disposition these shortcomings were not worthy of mentioning. The electronic control sprays the technology to obtain the rapid popularization and the application.

From 1979 US's General Motor, Ford, Japan's Toyota, Mitsubishi and Nissan has all promoted the respective electronic control fuel injection, especially the multi- tyre valves engine promotion has caused the electronic control to spray the technology in particular to obtain the rapid popularization and the application. So far, the European and American date and so on the main automobile produces the great nation the passenger vehicle fuel oil to give the system, 95% of the above have installed fuel injection.

The electrically controlled fuel injection engine will substitute for the carburettor engine. The European Economic Community had stipulated that all cars produced after 1996 had to equip the electrically controlled fuel injection. So far, 95% of the European, American and Japanese car manufacturers installed fuel injection systems. At present, in the American market passenger vehicles nearly completely have used fuel injection in the engine system, Japan and Europe enter the American market the automobile completely to be loaded with fuel injection in the engine system. China also massively uses fuel injection in the engine system to replace traditional carburettors. The Chinese government stipulated from January 1, 1999, only passenger vehicles installed with the electronic control fuel injection are permitted to sell in the China Car, the national department concerned has also appeared the related policy laws and regulations stipulation from September 1, 2001, prohibition sale of the carburettor type passenger vehicle, therefore the electronic control fuel injection system more and more generally obtains the application on the vehicles.

2. Electronic control unit (ECU)

The modern passenger vehicle engine mostly uses the electronic fuel injection system, including the form of the side box control part called "ECU". Simply speaking, ECU is composed by the microcomputer and the peripheral electric circuit. But the microcomputer was integrated with the microprocessor together on the chip (CPU), memory and input/output connection unit. The ECU main part is a microcomputer, but the core is CPU. ECU the input signal will transform as the digital form, according to the reference data which saves carries on the contrast processing, calculates the output value, the output signal passes through the power to enlarge again controls certain adjustments servo part, for example relay and switch and so on. Therefore, ECU is in fact "the electronic control unit" (Electronic Control Unit), it is by the input circuit, the microcomputer and the output circuit and so on three parts is composed.

Now the modern passenger vehicle engine ECU control mode mainly may divide into two kinds: the simple point control sprays (SPI ECU) and the multi-spots control spurts (MPI ECU), for details see the schematic drawing:

The MPI characteristic is: precise of fuel oil control, but the price is much higher; Its opposite precisely to MPI, SPI to the fuel oil control lower, but the price corresponding is also lower.

Spurts the fuel injection system based on the above two kind of types, carries on engine ECU the development, the basic principle sees attempts:

The motor car engine applies ECU, may obviously reduce the oil consumption, reduces the exhaust to discharge, regarding now saves the energy, the attention environmental protection world has the significant social significance.

Leading product competition analysis

Our company main competitor is the Shanghai Delphi exhaust control system limited company, German BOSCH Corporation, the Japanese light display joint-stock company (Denso) and the union automobile electron company and so on the minority several foreign capitals enterprise, in particular Delphi exhaust control system limited company and German BOSCH Corporation.

A) Delphi is the world biggest automobile spare part supplier. At present, Delphi engine management system has included the Chinese all mini trucks factory the gasoline motorcar enterprise necessary, the successful gasoline engine fuel injection the system market to be worthy of the name "the eldest child".

B) German BOSCH Corporation BOSCH and Delphi although all are the world-class automobile spare part supplier, in the gasoline engine fuel injection domain, two family backgrounds market

share is balanced, Delphi to Chinese automobile diesel engine market hesitating, causes BOSCH temporarily not to have the competitor at the Chinese automobile diesel engine market, becomes the Chinese biggest automobile diesel engine blow system supplier.

C) Our company's ECU product has the higher technical content, the product selling price only has the similar product which in the present market sells 1/3 to 1/5, has the quite obvious superiority in the price aspect.

If we have much stronger finance support, we can easily be the world biggest ECU manufacturer as we have 100% of the Intellectual Property right on the product and our R&D cost may only be 20% of our competitors.