



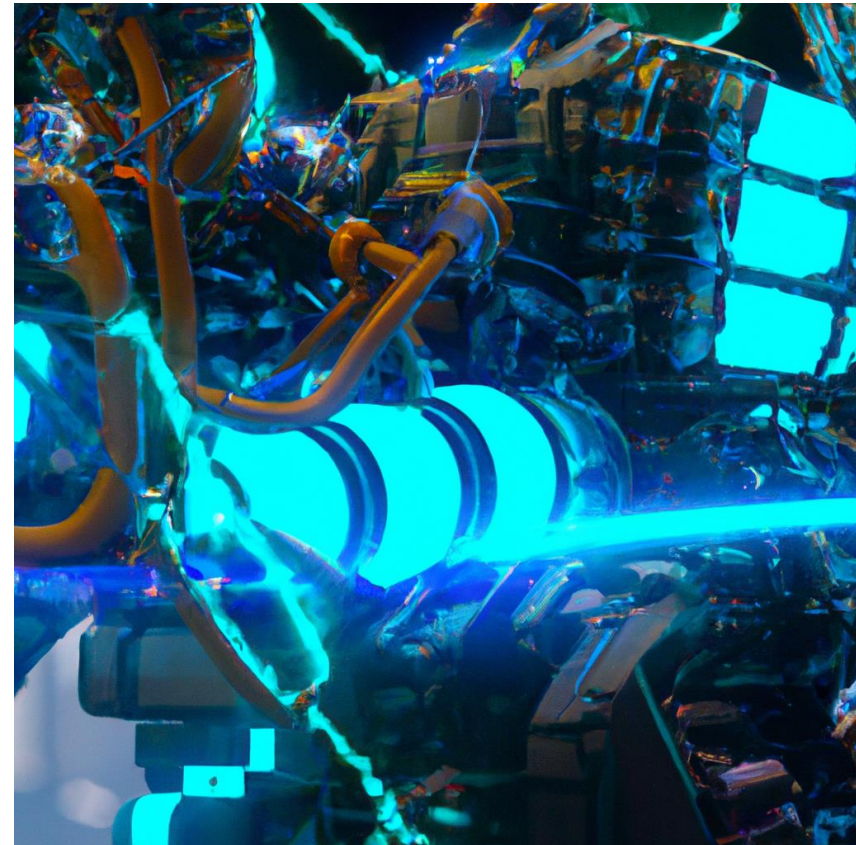
19M0611 - AUTOTRONICS

UNIT 2 - DIESEL FUEL INJECTION



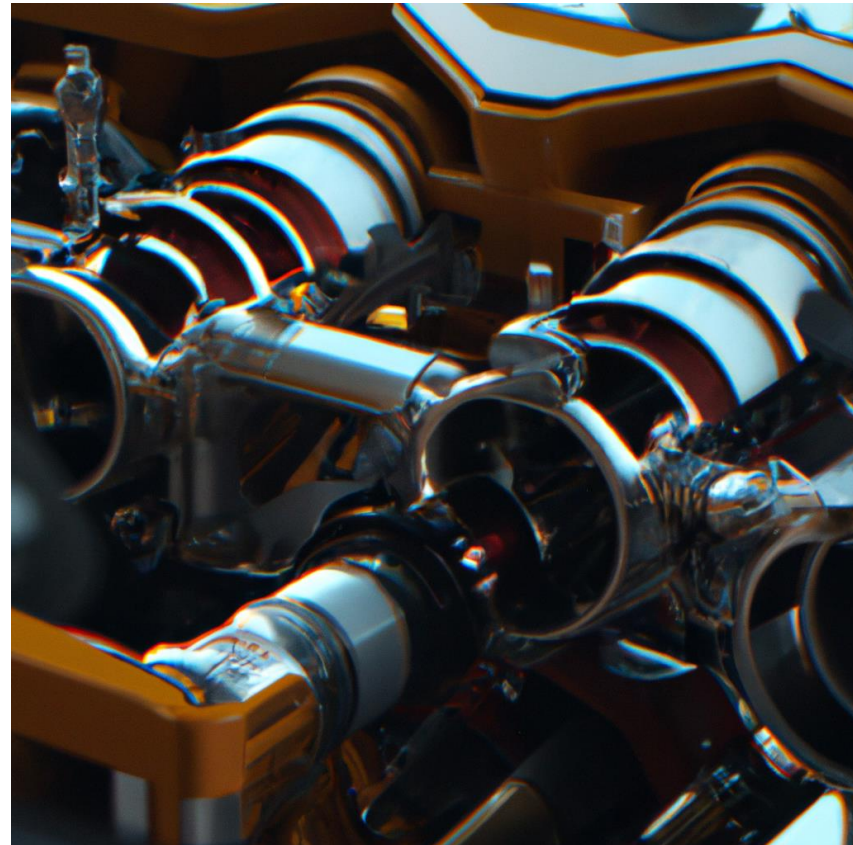
INTRODUCTION TO DIESEL FUEL INJECTION

- ❑ Diesel fuel injection is a crucial component of modern diesel engines. It ensures that the right amount of fuel is delivered into the engine cylinders at the right time, which in turn ensures optimal combustion and engine performance.
- ❑ There are two main types of diesel fuel injection systems: mechanical and electronic. Mechanical systems use a series of pumps and valves to control fuel delivery, while electronic systems use sensors and computer-controlled injectors for more precise fuel delivery.



MECHANICAL FUEL INJECTION SYSTEMS

- ❑ Mechanical fuel injection systems were once the norm in diesel engines. They used a series of pumps and valves to deliver fuel to the engine cylinders. The fuel was pressurized and injected into the cylinders at the right time using a camshaft-driven pump.
- ❑ While mechanical fuel injection systems were reliable and durable, they lacked the precision and efficiency of electronic systems. As a result, most modern diesel engines use electronic fuel injection systems instead.



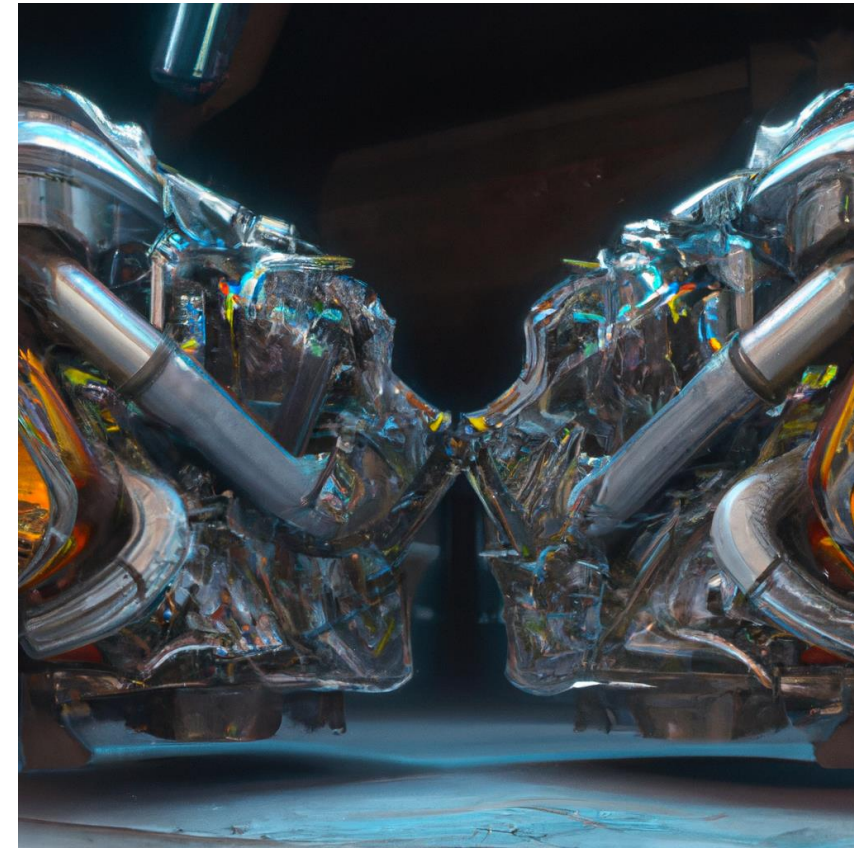
ELECTRONIC FUEL INJECTION SYSTEMS

- ❑ Electronic fuel injection systems use a combination of sensors and computer-controlled injectors to deliver fuel to the engine cylinders. The sensors monitor various engine parameters, such as air flow, temperature, and pressure, and send this information to the engine control unit (ECU).
- ❑ The ECU then uses this information to determine the optimal fuel delivery for each cylinder and sends signals to the injectors to deliver the fuel. This results in more precise fuel delivery, better combustion, and improved engine performance.



DIRECT INJECTION VS INDIRECT INJECTION

- ❑ Diesel engines can use either direct or indirect fuel injection. Direct injection involves injecting fuel directly into the combustion chamber, while indirect injection involves spraying fuel into a pre-chamber or swirl chamber before it enters the combustion chamber.
- ❑ Direct injection offers better fuel efficiency and power output, as well as lower emissions. However, it requires more precise control over fuel delivery and higher injection pressures. Indirect injection is simpler and less expensive, but it is less efficient and produces more emissions.





THANK YOU