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Diesel Injection System

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In a diesel engine the fuel from the fuel tank is passed through the injectors and on top of the cylinder. However to reduce the exhaust produced by the engine and to make the fuel pressure constant at the injection, a system called common rail is introduced, the fuel from the tank is passed to a high pressure pump, which compresses the fuel and then on to the common rail system and further on to the injectors.

Common rail diesel injection system is an integrated injection system combined with its extended functions in diesel engine, increasing the degree of freedom available for defining the combustion process. The basic principle involved in common rail fuel injection system is "injection pressure is independent of engine speed and injection fuel quantity".

The study basically contains housing pump which under goes several operations such as axial machining, radial machining, durr cleaning, thermal energy machining, hot spray cleaning, endoscope etc. Where the housing of the high pressure pump, after machining is composed of many chips in the flow line of the fuel. These chips need to be eradicated/eliminated by de burring operation to ensure a continuous flow of fuel through the pump. However through manual de burring segments of these chips still remain. Thus the main goal is to know the cause of these chip formation and eliminate the burr levels ensuring free flow of fuel into the injectors which can be achieved by modifying the drill bit with external diameter 3.8 mm, the helix angle (range of 16-32°) and the lip relief angle (range of 8-15°) allowing the tool bit to enter the metal without interference, thereby by improving its cutting efficiency.