

ENHANCEMENT OF INTAKE GENERATED SWIRL TO ENHANCE LEAN COMBUSTION IN A FOUR STROKE DIESEL ENGINE

V. V. Naga Deepthi¹ & K. Govindarajulu²

¹Research Scholar, Department of Mechanical Engineering, Jawaharlal Nehru Technological University Anantapur,
Andhra Pradesh, India

²Professor, Department of Mechanical Engineering, Jawaharlal Nehru Technological University Anantapur,
Andhra Pradesh, India

ABSTARCT

The valves in the IC engine are primary and their design plays an important role in the inlet and exhaust strokes which help in the suction of fuel and exhaust the gases burned within the cylinder. At the starting of induction stroke, the exhaust valve be at stop position and usually, the inlet valve opens slightly before the top dead center and the exhaust valve remains open slightly after the top dead center. With the increase in the pressure during the compression and combustion, the tiny quantity of the air-fuel mixture is enforced about the edges of the exhaust valve, between the valves and the valve seat. Thus in order to have low mechanical losses, the engine should run at low speeds where the combustion should be fast for enabling good efficiencies. Therefore high turbulence should be produced prior to the combustion within the cylinder, so swirl is induced by inlet channel within the cylinder head. In this paper, to enhance the creation of turbulence by swirl, the inlet and exhaust valves are re-designed by keeping the pitch 0.5mm and 1mm with a depth of cut of thread as 4mm with 3 threads per inch to improve the swirl motion in wild combustion as well as improve efficiency. The investigations are done in a Direct Injection Single Cylinder Diesel Engine to know how the performance techniques are considered to enhance the air swirl to achieve betterment in engine performance and emission and the results are compared with the normal engine.

KEYWORDS: Diesel Engine, Swirl, Inlet and Exhaust Valve

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