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Evaluation of combustion analysis for various fuel injection timings with bio-diesels

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Abstract : In the valuation of compression ignition engine, the effect of fuel injection timings on combustion analysis aspects were inspected in a Kirloskar DM10 category engine using Pongamia, Soya bean and Rice bran methyl esters. The different biodiesel properties were analysed and found the fatty acid contents in the different methyl esters. The GC/MS test results were utilized to found the base peak chromatogram with retention time. The different biodiesel blends were practised with diesel engine and carried out the suitable fuel and blends. The shim concept of tiny metal leafs had been used to added and removed from the timings gears and varied the injection crank angle positions. The 9 °Crank angle degree position was varied from the standard injection timings and carried the effects of combustion cylinder pressure with advanced and retarded fuel injection timings. The advancement of injection timing had higher in combustion rates using higher blends of Pongamia methyl ester. The retardment of injection timing has lower combustion rates compared to standard and advancement positions by various oil methyl ester blends. Optimum injection timings with suitable biodiesel blends had produced better hopeful outcomes compared to other oil methyl esters with the blend ratios of 10%, 30% and 50%..

Keywords : Compression ignition engine; Retardment injection timing; Advancement injection timing; Combustion; Pongamia methyl esters.

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