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Effect of varying fuel injection pressure of Selective Vegetable oil biodiesel on C.I engine performance and pollutants

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Abstract: The aim of this work is to enhance diesel engine performance by varying fuel injection pressure of J20 (Jatropha biodiesel) from 180bar to 240bar through experimental investigation with respect to brake power, fuel economy and smoke emissions in a single cylinder. The result shows that the maximum BTE at 75% load for J20 at 240bar is 3.04% more than standard fuel injection pressure of 200bar, 3.5% Lowered SEC noticed at maximum load at 240bar, HC emissions lowered by 21.4% at 240bar, CO emissions lowered by 0.03% along with the increased NO_x emissions and exhaust gas temperature. The Smoke opacity is 5.2HSU higher for J20 at 240bar, the cylinder peak pressure is found to be 2.8% higher, the HRR is found to be 4.3% lower when equated to diesel at 75% load against 200bar for standard diesel. From this study, it is clear that J20 biodiesel at 240bar fuel injection pressure will give optimum engine performance.

Keywords: Diesel, Jatropha Oil, Biodiesel, Performance, Emissions.

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