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Impact of compression ratio and effect of biodiesel blends in performance, combustion and emission characteristics of VCR DI diesel engine

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Abstract

The work has been carried out to use mahua oil methyl ester (MOME) in variable compression ratio (VCR) engine with three compression ratios (CR) 17:1, 17.5:1 and 18:1 was used for the experiment. Also the blend ratios are (M10, M20 and M30) mahua biodiesel blends at zero to maximum load with a constant speed 1500 rpm. The MOME properties are identical to diesel. The characteristics that means brake thermal efficiency (BTE), specific fuel consumption (SFC), hydrocarbon (HC), carbon monoxide (CO), oxides of nitrogen (NO_x), smoke, cylinder pressure (CP) and heat release rate (HRR) were superior at CR 18:1 and the blend B20, but considering the engine vibration and noise of the CR is limited to a value of 18:1.