

The performance of diesel engine using biodiesel fuel from rubber seed oil production by catalytic method

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Abstrak

The performance test of CI engine which uses biodiesel fuel from vegetable oils and its blends with diesel fuel is essential to be carried out. This research investigates the quality of rubber seed oil methyl ester (RSOME) which is produced via catalytic method dry wash system which uses magnesol (magnesium silicate) as absorbent based on Indonesian Biodiesel Forum (FBI) standard in 2005 and the performance of CI engine, which uses its blends with diesel fuel (B-10, B-20, and B-30). The best engine performance is then compared with RSOME which is produced via non-catalytic method, namely, superheated methanol high temperature atmospheric pressure and diesel fuel (B-0). The engine test shows that B-20 produces the best engine performance at 2550 rpm. Compared to RSOME non-catalytic method and diesel fuel, RSOME catalytic method and non-catalytic method yield the same effective power, whereas diesel fuel is lower than both methods. The engine which uses RSOME non-catalytic method needs the same specific fuel consumption as diesel fuel, but a bit more than catalytic method. The thermal efficiency of RSOME non-catalytic method is higher than catalytic method and diesel fuel, but catalytic method has lower efficiency than diesel fuel. The emission of non-catalytic method is the most eco-friendly, catalytic method is the next, and diesel fuel is the one with the highest emission levels.