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**Effect of Compression Ratio on the Performance, Combustion and Emission of a Single Cylinder Diesel Engine Using Multinblended Second Generation Biofuel**

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**Abstract**

This work tries to unfold the impact of compression ratio to the operation, emission and combustion characteristics of a petrol engine operate on multi mixed second production bio fuel. For this investigation one canister, 4-S, water-cooled, guide injection varying compression diesel engine and another for petrol using waste cooking oil Methyl Ester (WME) by including Tyre Pyrolysis Oil (TPO) and also Cerium oxide (CeO2) have been utilized. Tests are run at different compression rates (17, 16 and 14) under various loading conditions adjusting the normal injection time at 23 CA BTDC. The fracture thermal efficiency increases along with the particular fuel consumption reduces with the rise of compression ratio. The gain in compression ratio induces increase in air pressure and heat discharge rate. The NOx emissions grow at greater compression ratio as a result of high cylinder temperature and pressure. On the flip side, Carbon monoxide (CO) and Hydrocarbon (HC) emissions are somewhat significantly less in higher compression levels.

**Keywords:**

Waste Cooking Oil, Tyre Pyrolsis Oil, Cerium Oxide, Compression Ratio & Emission

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