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Effect of rapeseed biodiesel B20 on combustion characteristics and emissions of DI Diesel engine

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Biodiesel produced from rapeseed oil considered one of promising option in Romania for compression ignition engines due to the higher level of productions and environmental friendliness. In this work, biodiesel B20 is prepared from rapeseed oil (blends 20% Rapeseed methyl ester with 80 % Diesel volumetric fraction). The fuel is tested on a direct injection, four cylinders, four stroke Diesel engine at different engine speeds under full load operating condition. Parameters such as effective power, effective torque, brake specific fuel consumption, carbon monoxide, smoke and nitrogen oxides emissions (NOx) are evaluated. Results show that the engine effective power and torque does not change significantly with biodiesel B20. The brake specific fuel consumption increased with biodiesel B20 for all operating conditions. Carbon monoxide and smoke emissions are up to 60% lower, while the NOx emissions are higher in comparison to Diesel fuel.

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