

Combustion Characteristics of Bioethanol-Biodiesel-Diesel Fuel Blends Used in a Common Rail Diesel Engine

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Abstract : The changes in the performance, emission and combustion characteristics of bioethanol-safflower biodiesel and diesel fuel blends used in a common rail diesel engine were investigated in this experimental study. E20B20D60 (20% bioethanol, 20% biodiesel, 60% diesel fuel by volume), E30B20D50, E50B20D30 and diesel fuel (D) were used as fuel. The tests were performed at full throttle valve opening and variable engine speeds. The results of the tests showed decreases in engine power, engine torque, carbon monoxide (CO), hydrocarbon (HC) and smoke density values with the use of bioethanol-biodiesel and diesel fuel blends, whereas, increases were observed in nitrogen oxide (NOx) and brake specific fuel consumption (BSFC) values. When combustion characteristics were examined, it was seen that the values were close to one another.

Keywords : bioethanol, biodiesel, safflower, combustion characteristics

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