

عنوان مقاله:

Simultaneous reduction of smoke and NOx emissions of diesel and biodiesel fueled engine with ethanol blends

محل انتشار:

ششمین همایش موتورهای درونسوز (سال: 1388)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Though diesel engines have several advantages like high thermal efficiency, torque capacity, low CO and HC emissions and adaptability, they suffer from high concentration of NOx, smoke and particulate emissions when using diesel fuel. The use of Biodiesel in conventional diesel engines results in a substantial reduction of HC, CO and PM. Its higher cetane number improves the ignition quality. However it suffers from cold starting problems and increased NOx emissions when compared with diesel fuel. Reduction of NOx emissions and particulate matter simultaneously is quite difficult due to the Soot/NOx trade off. In this investigation, tests were conducted on a single cylinder DI diesel engine fueled with neat diesel and biodiesel as baseline fuel and addition of 5 to 20% ethanol on a volume basis in steps of 5 vol.% as a bio-resource supplementary oxygenated fuel to analyze the combustion and emissions characteristics. The results have shown a simultaneous reduction of NOx and smoke emissions in comparison with baseline fuels. A global overview of the results has shown that the 15% ethanol addition to diesel and biodiesel fuel produce the lowest smoke opacity. Meanwhile the lowest amount of NOX emissions belongs to the 10% and 15% ethanol addition to diesel and biodiesel respectively.

کلمات کلیدی:

Diesel, Biodiesel, Ethanol, NOx, Smoke

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