عنوان مقاله:
Diesterol::An Environment – Friendly IC Engine Fuel

محل انتشار:
پنجمین همایش موتورهای درونسوز (سال: 1386)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:
Diesterol is a new specific term which denotes to a mixture of fossil diesel fuel (D), vegetable oil methyl ester called biodiesel (B) and plant derived ethanol (E). In the context of the present paper this term refers specifically to the combination of diesel fuel, bioethanol produced from potato wastes and dehydrated in a vapor phase using 3A Zeolite and sunflower methyl ester produced through transesterification method. The mixture of DBE (i.e. diesterol) was patented under the Iranian patent No. 39407, dated 21-12-1385 of Iranian calendar. The main purpose of this research work was to reduce engine exhaust CO and HC emissions due to application of biofuel and the increase of fuel oxygen content. First, it was needed to prepare suitable, low cost and renewable additives. The diesterol properties such as pour point, viscosity, flash point, copper strip corrosion, ash and sulfur content and cetane number was determined in the laboratory. The optimum ratio of bioethanol and biodiesel was found to be 40/60 considering fuel oxygen content, fuel price and mixture properties. Bioethanol was added to get the use of the advantage of oxygenated component and the sunflower methyl ester was added to maintain the fuel stability at low temperatures, having a stable blend naming it as "Diesterol", a suitable fuel for engine performance evaluation. The parameters considered for investigation included engine power, torque, fuel consumption and exhaust emission for various mixture proportions. The results of Experiments show that bioethanol plays an important role on flash point of the blends. With the addition of 3% bioethanol on diesel and sunflower methyl ester, the flash point was reduced to 16 oC. The viscosity of the blend was reduced with the increase of bioethanol amount. Sulfur content of bioethanol and sunflower methyl ester is very low compared with diesel fuel. The amount of sulfur content of diesel is 500 ppm whereas that for bioethanol and sunflower methyl ester is 0 and 15 ppm respectively. The lower amount of sulfur content, facilitates the use of fuel blends in diesel engines. For bioethanol and sunflower methyl ester combination, this amount is less than 20 ppm. The maximum power and torque produced using diesel fuel was 17.75 kW and 64.2 Nm at 3600 and 2400 rpm respectively. Adding oxygenated compounds reduced maximum power and torque and increased an average bsfc for various speeds range. The experimental measurement and evaluation of volumetric ... percentage of CO and ppm HC indicates that both pollutants reduced for increasing the biofuel composi

کلمات کلیدی:
Biofuel, Bioethanol, Biodiesel, Ediesel, Diesohol, Duelfuel, Diesterol

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