

An Experimental Comparative Study of SI Engine Performance and Emission Characteristics Fuelled with Various Gasoline-Alcohol Blends

Authors : M. Mourad, K. Abdelgawwad

Abstract : This experimental investigation aimed to determine the influence of using different types of alcohol and gasoline blends such as ethanol - butanol - propanol on the performance of spark ignition engine. The experimental work studied the effect of various fuel blends such as ethanol – butanol/gasoline and propanol/gasoline with two rates of 15% and 20%, at different operating conditions (engine speed and loads), on engine performance emission characteristics. Laboratory experiments are carried out on a four-cylinder spark ignition (SI) engine. In this practical study, all considerations and precautions are taken into account to ensure the quality and accuracy of practical experiments and different measurements. The results show that the performance of the engine improved significantly in the case of ethanol/butanol-gasoline blends. The results also indicated that the engine emitted pollutants such as CO, hydrocarbon (HC) for alcohol fuel blends compared to base gasoline NOx emission increased for different fuel blends either ethanol/butanol-gasoline or propanol-gasoline fuel blend.

Keywords : gasoline engine, performance, emission, fuel blends

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