

The Analysis of Exhaust Emission from Single Cylinder Non-Mobile Spark Ignition Engine Using Ethanol-Gasoline Blend as Fuel

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Abstract : In view of the prevailing pollution problems and its consequences on the environment, efforts are being made to lower the concentration of toxic components in combustion products and decreasing fossil fuel consumption by using renewable alternative fuels. In this work, the impact of ethanol-gasoline blend on the exhaust emission of a single cylinder non-mobile spark ignition engine was investigated. Gasoline was blended with 5 - 20% of ethanol sourced from the open market (bought off the shelf) in an interval of 5%. The results of the emission characteristics of the exhaust gas from the combustion of the ethanol-gasoline blends showed that increasing the percentage of ethanol in the blend decreased CO emission by between 2.12% and 52.29% and HC emissions by between 12.14% and 53.24%, but increased CO₂ and NO_x emissions by between 25% to 56% and 59% to 60% respectively. E15 blend is preferred above other blends at no-load and across all the load variations. However its NO_x emission was the highest when compared with other samples. This will negatively affect human health and the environment but this drawback can be remedied by adequate treatment with appropriate additives.

Keywords : blends, emission, ethanol, gasoline, spark ignition engine

Conference Title : ICBBT 2017 : International Conference on Biofuels, Bioenergy and Technology

Conference Location : Amsterdam, Netherlands

Conference Dates : December 04-05, 2017