

Investigation of emissions characteristics of secondary butyl alcohol-gasoline blends in a port fuel injection spark ignition engine

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Abstract. Exhaust emissions especially from light duty gasoline engine are a major contributor to air pollution due to the large number of vehicles on the road. The purpose of this study is to experimentally analyse the exhaust pollutant emissions of a four-stroke port fuel spark ignition engines operating using secondary butyl alcohol–gasoline blends by percentage volume of 5% (GBu5), 10% (GBu10) and 15% (GBu15) of secondary butyl- alcohol (2-butanol) additives in gasoline fuels at 50% of wide throttle open. The exhaust emissions characteristics of the engine using blended fuels was compared to the exhaust emissions of the engine with gasoline fuels (G100) as a reference fuels. Exhaust emissions analysis results show that all of the blended fuels produced lower CO by 8.6%, 11.6% and 24.8% for GBu5, GBu10 and GBu15 respectively from 2500 to 4000 RPM, while for HC, both GBu10 and GBu15 were lower than that G100 fuels at all engine speeds. In general, when the engine was operated using blended fuels, the engine produced lower CO and HC, but higher CO₂.

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