

Abstract

Renewable fuels have gained popularity nowadays due to their environmental friendliness, availability and low cost compared to fossil fuels. Among these alternative fuels, methanol, commonly extracted from biomass feedstocks and agricultural wastes, can be the major replacement for gasoline in the gasoline-fuelled engine. In this work, the experimental setup is developed for investigating the comparative performance, combustion, emissions and particulate size measurement using methanol blend with gasoline and with pure gasoline fuel in modern BS-VI compliant car engines. With a higher octane number of methanol, knocking will reduce in higher compression ratio SI engines. Since Latent heat of vaporization of methanol is greater than gasoline, therefore, it absorbs a larger proportion of heat from contents of the cylinder during vaporization in the compression stroke, and work for compression decreases which raise the brake thermal efficiency. Emissions will be lower in alcohol-gasoline blends because they have a high latent heat of vaporization, more fuel oxygen, and less C/H ratio compared to gasoline. In addition to the above measurement, the effectiveness of catalytic converter can be determined by checking the emissions before and after catalytic converter along with temperature variations axially across the catalytic converter with methanol-gasoline blend and pure gasoline at different loading conditions.