

Role of Biofuel and Their Binary (Diesel–Biodiesel) and Ternary (Ethanol–Biodiesel–Diesel) Blends on Internal Combustion Engines Emission Reduction

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ABSTRACT

Exhaust emission from transportation sector affects the human health. It is the main contributor to degrade the air quality. Biofuel is promising alternative to maintain both human health and environment quality better by reducing harmful emission from biofuel runs diesel engines. This study explores the global and Australian greenhouse gas (GHG) emission scenario along with the contribution of transportation sector to the GHG emission in Australia. Besides, the world biofuel standard with the target and mandate taken by the government of different countries to use biofuel are also discussed in the paper. This review indicated that engine emission is dependant on some factors such as engine operating condition, biofuel types, blending etc. Both biodiesel–diesel and ethanol–biodiesel–diesel blending plays a significant role in reducing the exhaust gas emission such as carbon monoxides (CO), hydrocarbons (HC), particulate matter (PM). But ethanol–biodiesel–diesel and biodiesel–diesel blends produce higher carbon dioxides emission, which is absorbed by the crops and considered as lower net CO₂emission. Finally, about 5–10% of ethanol with 20–25% biodiesel can be added with petro-diesel effectively and efficiently to reduce global GHG emission, thus to maintain environment and human health better.

KEYWORDS: Air pollution; Transportation sector; Emission reduction; Biofuel target; Biodiesel; Ethanol

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