A review of the performance and emissions of nano additives in diesel fuelled compression ignition-engines

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ABSTRACT

This paper reports the results of various researches on the engine performance and emission characteristics of Diesel engine using nano particles additives in diesel, biodiesel and water emulsified fuels. There are two methods of reducing the exhaust gas emission of the Diesel engine. First method is to reduce the emissions by using exhaust gas treatment devices like catalytic converter and diesel particulate filter. However, use of these devices affects the performance of Diesel engine. Second method to reduce emissions and improve performance of CI engine is the use of fuel additive. Main pollutants of Diesel engine are oxide of nitrogen (NOx) and particulate matter (PM). However, it is difficult to control NOx and PM simultaneously. Many researchers report that the best method to control the emissions and improve the engine performance is the use of nano particles additives and water emulsified fuels. This research paper also reports the biodiesel fuel as an alternative to diesel fuel by using various nano particle additives. Comparative studies of effects on various properties of diesel and biodiesel fuels without/with water contents and nano particles additives by previous researchers are done. Most of the researchers reported improved engine performance and reduction in emission characteristics with dosing of nano particles additives in diesel and biodiesel.

KEYWORDS:

Performance; Emissions; Nano additives; Diesel fuelled compression