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Performance, Emission and Combustion Characteristics of a DI Diesel Engine Fuelled with Diesel–Dimethoxymethane blends

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The aim of this present study is to evaluate the performance, emission and combustion characteristics of a direct injection diesel engine fuelled with Diesel–Dimethoxymethane blends. The effects of Dimethoxymethane (DMM) on engine's power, fuel economy, emissions and combustion characteristics were studied on a single cylinder (vertical mounted), four stroke, direct injection, water cooled, compression ignition engine. The tests were carried out with 5, 10, 15 and 20% v/v of DMM blends starting from a base diesel. The overall laboratory test results suggests that 20% DMM blend with Diesel gave better performance in terms of efficiency as well as exhaust emissions. The emission levels of smoke, carbon monoxide and hydrocarbon were appreciably reduced with the addition of DMM with diesel, while the oxides of nitrogen emission in the exhaust increased due to higher incylinder temperature. Compared with neat diesel fuel, DMM blended fuel increases the ignition delay and shortens the total combustion duration. The oxygen content in the DMM blends played greater role in the combustion process compared to neat Diesel fuel. Finally, this study concludes that blending of DMM with diesel upto 20% v/v can be used in DI diesel engine without any modifications.

Biography

R.Pachaiyappan has completed his Master Degree in Thermal Engineering from Adhiparasakthi Engineering College, Melmaruvathur under Anna University and Pursuing his Ph.D. from Anna University, Chennai. He has about 5 years of teaching experience. Presently he is working as Assistant Professor at Adhiparasakthi Engineering College, Melmaruvathur. He has published 7 papers in International Journals and Conferences. His area of interest includes Heat Transfer, Energy Conservation Methods and Biofuels.

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