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Combustion Characteristics of a Methyl Ester of Pumpkin Oil in a Single Cylinder Air Cooled and Direct Injection Diesel Engine

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Abstract

Biodiesel is a promising alternative fuel for compression ignition engines (CI) since it has properties similar to diesel fuel. Pumpkin seed has considerable oil content. The oil from pumpkin seed can be converted into methyl ester (biodiesel) and used as an alternative fuel for CI engines. In this study, the combustion characteristics of a diesel engine fueled with methyl ester of pumpkin oil (POME) and its diesel blends (10%, 20%, 30%, 40% and 50% by volume basis) were evaluated and compared with diesel fuel. Tests were performed at different loads condition in a single cylinder, four stroke and air cooled direct injection diesel engine developing power of 4.4 kW at rated speed of 1500 rpm. From the results, it is found that the ignition delay and combustion duration are shorter for POME and its diesel blends compared to those of diesel fuel at full load condition. The maximum heat release rate occurs for diesel fuel and followed by POME diesel blends and POME. The combustion characteristics of POME and its diesel blends closely followed the diesel fuel operation. The analysis of results are presented in this paper.

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