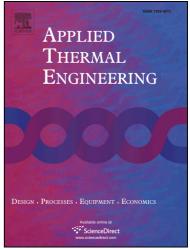
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Performance and combustion characteristics of a diesel engine fuelled by butanol-biodiesel-diesel blends

Amr Ibrahim

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3

Amr Ibrahim^{*}

4 Mechanical Engineering Department, Alexandria University, Alex 21544,

- 5 Egypt
- 6 Abstract

7 Using renewable alternative fuels in the diesel engines has been grown 8 recently. The aim of the study was to experimentally investigate and compare 9 the performance, combustion characteristics, NO emissions, and stability of a 10 diesel engine fuelled by five different fuels, which included diesel, biodiesel, 11 and different blends of diesel-biodiesel-butanol mixtures. All the tests were 12 conducted using a single-cylinder direct-injection diesel engine at a speed of 13 1500 rpm and different engine load conditions. It was found that the optimum 14 alternative fuel among all the tested fuels was the B50 fuel blend as its use 15 increased the maximum engine thermal efficiency by 6.5% and decreased the 16 lowest engine brake specific fuel consumption by 5% compared to the diesel 17 fuel. NO emission increased significantly with increasing the engine load and 18 increased slightly with using oxygenated fuels. The change of fuel type had 19 no significant effect on the combustion start timing while the combustion 20 duration increased with increasing the engine load. All the tested fuels did no 21 negatively affect the engine stability.

^{*}Corresponding Author: Tel: +2 01091320421, Email: <u>amralihi@yahoo.com</u>, Address: Mechanical Engineering Department, Alexandria University, Alex 21544, Egypt.

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