INFLUENCE OF AVOCADO SEED OIL (PERSEA GRATISSIMA) BIODIESEL ADDITION (10-30)% AT DIESEL FUEL TO DIESEL GENERATOR SET PERFORMANCE

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Abstract
Avocado seed (persea gratissima) is a waste where is so many people throw them away after using the fruit flesh. The content avocado seed oil is ranged from 1-12%. The transesterification of crude avocado seed oil in to avocado biodiesel was one of it. In this research, wanted to know the performance characteristics and exhaust emissions of diesel engines using biodiesel fuel mixture of avocado seed oil with diesel fuel.

This research uses a mixture of avocado seed oil biodiesel and diesel fuel with volumetric compositions of avocado seed oil biodiesel: diesel fuel were 10%: 90% (B.10), 20%: 80% (B.20), and 30%: 70% (B.30) and 100% avocado seed oil biodiesel (B.100). As a control group used pure diesel fuel (B.0). The testing conducted at Fuels and Combustion Engineering Laboratory Mechanical Engineering Department of FTI-ITS Surabaya with Shogun L40AE-S diesel generator set, 199 cc maximum power 3.1 kW/3600 rpm as testing engine.

Avocado seed oil biodiesel’s properties fulfill SNI for Biodiesel. From engine performances point of view, BHP, Torque, and BMEP for B.10, B.20, B.30, B.100 decrease with equal percentages of 2,21%, 3,73%, 5,94%, and 11,86%. At the BSFC increase with percentages of 4,58%, 8,94%, 15,24% and 34,81%. The value of thermal efficiency decrease percentage of 1,32%, 2,81%, 7,84% and 8,94%. Decreasing percentages of air fuel ratio (A/F) equal to 2,18%, 5,08%, 8,18% and 21,00%. Opacities (soot) decrease with percentage of 5,11%, 9,09%, 15,35% and 51,55%.

Key words: Avocado seed oil biodiesel, performances, Opacities (soot).