

Apithep Suwongkrua 2009: The Effects of Gasoline-Jatropha Blended Fuel on the Fuel Consumption and Exhaust Emission in Motorcycles. Master of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor: Assistant Professor Taweedej Sirithanapipat, Ph.D. 117 pages.

This research is aimed to study the possibility of using the blended fuel between Jatropha and Gasoline in motorcycles. The research divides into two parts. The first part is the study of the properties of the blended fuel. Using the extracted jatropha oil from a screw press machine, eliminate a contaminant by filter and blended with Gasoline at 95:5 and 90:10. Then these blended fuel are tested for free fatty acid, viscosity, octane number, and distillation point. The stability of the free fatty value and the viscosity is verified after ten weeks period. This stability exhibits an insignificant change within the standard. The octane numbers, both RON and MON, are closed to Gasoline 91. The distillation point of the blended fuels is about the same as Gasoline 91, but the residue is more than Gasoline 91. The second part is the testing of the blended fuel, without treatment of the jatropha. The ratio of 5% and 10% Jatropha mixed with Gasoline and the pure Gasoline are tested in motorcycles which are carburetor and injection engines. The fuel consumption, emission and preliminary wear are studied and compared between the blended fuels and pure gasoline. The results showed that the fuel consumption is a slightly more than the Gasoline 91 fuel. The emission of HC and CO from the engine with blended fuels is lower than the engine with the Gasoline 91 fuel. With the blended fuels, both carburetor and injection engines are showing the thicker carbon deposit and sticky gum at the pistons, spark plugs, valves, and piston covers than the engines running the Gasoline 91 fuel.

Student's signature

Thesis Advisor's signature

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