



PERFORMANCE AND EMISSION ANALYSIS OF ALGAE BIODIESEL ON VCR ENGINE BY VARIING INJECTION PRESSURE

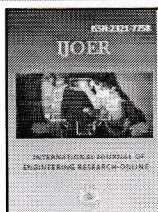
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ABSTRACT

Biodiesel is a non-toxic, highly biodegradable, renewable fuel and emits less amount of CO₂ and NO_x. Burning of petroleum based fuel causes accumulation of carbon dioxide in the environment and fuel price is increasing day by day. An algae is emerging as an alternative raw material to petroleum based fuels and is the highest yielding feedstock for biodiesel. It is very much important recently because of its environmental benefits and the fact that it is made from renewable resources. It is proved that algae grown in CO₂enriched air can be effectively converted to oily substances. Such an approach definitely solves major problems of air pollution resulting due to CO₂evolution and future crisis due to a shortage of fossil energy source.

In this study we used common species of algae called Dunaliella for experimentation. In this study, Biodiesel was processed from algae. The various properties of bio diesel were experimentally estimated. Performances were conducted on a Variable compression ratio single cylinder diesel engine using diesel and biodiesel. Using algae as raw material, adaptation of continuous trans-esterification process and recovery of high quality glycerol as by product may be options to be considered to lower the cost of bio-diesel.

In this project, we are using 3 compression ratios and 3 injection pressures to justify the potentiality of the algae oil Methyl Esters of as alternative fuel for compression ignition engines. However blending of this oil with diesel up to 20% (by volume) can be used safely in a conventional CI engine without any engine modification that could help in controlling air pollution.

KEY WORDS:ABD, CR, FI,

INTRODUCTION

"Biodiesel" is defined in ASTM D6751 as "a fuel comprised of mono alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100" that is biodiesel is long chain fatty acids ester composed of only one alcohol molecule and one ester linkage. The majority of energy used today is obtained from fossil fuels. The environmental concern of the global warming and

climate changes has greatly increased the interests of the application study of renewable fuels to internal combustion engines. The investigations have concentrated on decreasing fuel consumption and on lowering the concentration of toxic components in combustion product by using non-petroleum, renewable, sustainable and non-polluting fuels. So what is the need of hour to switch over to non-conventional energy sources such as