

## **A Study on Biodiesel as a Fuel in I.C. Engines**

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### **Abstract :**

During last century consumption of fossil fuels is increased much. The use of such conventional fuels caused more money, damaged economy of people, increased pollution. Global warming, acidic rains, ozone depletion are evil effects of the use of conventional fuels. To protect nature from pollution the use of conventional fuels like diesel, petrol to be replaced by a non polluting and bio degradable fuel. Bio diesel is such fuel; a great interest is focused on biodiesel. it is renewable and biodegradable. Its non toxic and do not pollute the nature. The biodiesel can be prepared from pure vegetable oils such as soya . The bio diesel can run diesel engine like the conventional diesel. In this paper the performance of diesel engine is studied with biodiesel.

Key words: biodiesel, bio degradable, mechanical performance, vegetable oils.

### **1. Introduction;**

The use of conventional fuels is increasing throughout the world. The use of fuel may create the shortage of supply of such fuel. The expected scarcity of diesel, petrol near future is a reason for research in bio diesel. The consumption of conventional fuels in the world per day

may be around 25 billion litres. So one can imagine the consequences of the burning of fuel. This increase the green house effect and depletion of ozone layer. Bio diesel means it is made from bio materials, may be from plants or animal oils, chemically biodiesel is Ester, oxygenate, technically, as mentioned earlier. Biofuels appear to be more environment friendly in comparison to fossil fuels considering the emission of greenhouse gasses when consumed.

## 2. Literature review

In between 1930-1940 the use of biodiesel is limited (1). Increase in the prices of petroleum products, the interest is focused on biodiesels (2). Biodiesel is renewable, bio degradable, non pollutant fuel (3). Presently about 1% of bio diesel is produced when compared to diesel (4,5), methods like pyrolysis, catalytic cracking are developed to get pure biodiesel (6,7,8), bio diesel can also be made of cotton seed oil (9), and also from used cooking oil (10), is also used to make biodiesel (11), sodium hydroxide can also be used as catalyst, potassium hydroxide can also be used (12).

## 3. Bio Diesel

1. Its an alternative for energy source can be used to run engines like diesel
2. Biodiesel do not contain any diesel, but it can be mixed in proportions
3. The most important advantage of biodiesel is that, it is 100% biodegradable

## 4. EXPERIMENTAL Procedure Testing with bio diesel

### 4.1. Description

The engine is of 1500 RPM, 3.7 KW vertical, 4 – stroke, single cylinder. The voltmeter and ammeter is arranged to measure power. Separate cooling water lines are fitted with temperature measuring thermocouples. The arrangement is made to measure the fuel consumption. The volume measurement of air is also measured, the inlet and outlet air temperatures are also measured.

### 4.2. Experimental procedure

Engine is test run with no load the diesel as a fuel and the readings were noted down. then the engine is rest run with biodiesel as a fuel

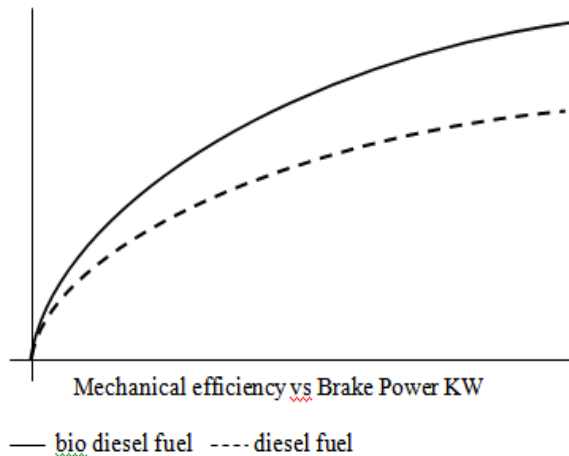
- a) Time of fuel consumption
- b) Manometer reading
- c) Voltmeter, ammeter reading
- d) speed of Engine

## 5. Applications

Biodiesel can be a fuel for automobiles

Biodiesel as it is running, it cleans the engine parts

The reduction of pollutants is decreased with biodiesel



## CONCLUSIONS

After knowing the basic working of diesel engine, the biodiesel test run is conducted, the conclusions are given below

When compare to diesel, biodiesel is improving the mechanical efficiency by 8%

The study of smoke reveals that the smoke does not contain the harmful mixture of gases; the noise pollution is also less.

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