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**B.V.BHOOMARADDI COLLEGE OF ENGINEERING & TECHNOLOGY,
HUBLI-31**

(NBA ACCREDITED & AUTONOMOUS INSTITUTION WITH ISO 9001:2008 CERTIFICATION)



DEPARTMENT OF AUTOMOBILE ENGINEERING

Academic Year: - 2011-2012

A Project work On

**“EFFECT OF NOZZLE HOLE GEOMETRY ON THE PERFORMANCE OF
BIODIESEL FUELLED DIESEL ENGINE”**

(Sponsored by KSBDB, KSCST under Bio-Fuel Projects)

Project Ref no: - 35S_B012

Under the Guidance of

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Submitted By

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ABSTRACT

Continuous utilization of fossil fuels have been greatly polluting and thereby harming our atmosphere. Depletion of fossil fuel reserves due to their increasing consumption associated with harmful exhaust emissions from the engines and rapid increase in their cost have generated interest in search for suitable alternative fuels. One such alternative fuel for CI engine application is use of vegetable oils. Vegetable oils are renewable, biodegradable and clean burning fuels. The major problem associated with the use of vegetable oils is their high viscosity and low volatility.

The demand for petroleum products in India has been increasing at a rate higher than the increase in domestic availability. At the same time there is continuous pressure on emission control through periodically tightened regulations particularly for metropolitan cities. In the wake of this situation there is an urgent need to promote use of alternative fuel as substitute for HSD. The acceptance of any fuel for utilization in different sectors depends on its suitability with regards to the existing designs of internal affordable prices to the consumers. This makes necessary for the thorough analysis of fuels to ensure their compatibility for use as alternatives to the petroleum fuels.

Higher viscosity and lower volatility of vegetable oils cause problems mainly associated with injector chocking and bigger sized fuel droplets which affect combustion of fuel. Experiments have been carried out to study the performance and emission characteristics by injecting different vegetable oils using different multi-hole nozzles in a single cylinder compression ignition engine. Large droplets have a higher penetration but smaller droplets are required for quick mixing and evaporation of fuel. The fineness of the atomization is indicated by the mean droplet diameter. Smaller the diameter better is the atomization. An increase in injection pressure results in smaller droplets and uniformity of atomization.

The proposed study intends analysis of Effect of nozzle hole geometry on the operation of single cylinder four-stroke CI engine fuelled with diesel and biodiesels and to conduct performance, combustion and emission characteristics.