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**PROJECT WORK REPORT ON**

**“STUDIES ON STABILITY OF BUTANOL, BIODIESEL AND DIESEL BLENDS FOR THE  
APPLICATION AS CI ENGINE FUEL”**

**(No: 35S\_B029)**

Submitted in the partial fulfillment of the requirement for the award of

**MASTER OF TECHNOLOGY  
IN  
THERMAL POWER ENGINEERING**

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## **ABSTRACT**

Recent concerns over the environment, increasing fuel prices and scarcity of its supply have promoted the interest in development of the alternative sources for petroleum fuels. At present, Biodiesel is commercially produced from the refined edible vegetable oils such as sunflower oil, palm oil and soya bean oil, etc. by alkaline catalyzed Esterification process. By blending the Biodiesel with diesel the brake thermal efficiency can be increased and reduce the fuel consumption. The exhaust gas emissions such as  $\text{NO}_x$ , unburnt hydrocarbons, CO,  $\text{CO}_2$ , are reduced with increase in Biodiesel concentration.

Some of the alternate fuels being used instead of petroleum products are Methanol, Ethanol, Propanol and Butanol. Methanol and Ethanol fuel are typically main alternate sources of energy; as they are convenient fuels for storing and transporting. Due to some disadvantages shown by these Methanol, Ethanol and Propanol we go for Butanol is because of, it can be transported via pipelines and has lower vapor pressure, lower water solubility, higher energy density and can be blended at higher concentrations.

In this experimental analysis an attempt has been made to investigate the performance studies on CI engine and to evaluate emission profiles Carbon-di-oxide ( $\text{CO}_2$ ), Carbon-monoxide (CO), Nitrogen oxides ( $\text{NO}_x$ ), Unburnt Hydrocarbons (UBHC) and smoke for the selected blends of Butanol-Biodiesel-Diesel.

The biodiesel is prepared from esterification process and prepared biodiesel is blended with butanol and diesel in there appropriate proportion. The properties of raw biodiesel, diesel, butanol and the different blends of BBD have been determined. The effects of blending proportion on the physical and chemical properties have also been determined. These can also vary the performance and emission profiles of CI engine. The results have revealed that the blending proportion has got a significant influence on the performance and emission profiles of CI engine.