



An Investigation of Performance and Emission Characteristic of Bio Diesel Additive Blends

Raju, N. S.¹ and Suchith, K. M.T.²

¹M.Tech, Student Mechanical department AIT Chikmagalura Karnataka India

²Asst Professor, Mechanical department AIT Chikmagalura Karnataka India

Abstract

Petroleum sourced fuels is now widely known as non-renewable due to fossil fuel depletion and environmental degradation. Renewable, carbon neutral, transport fuels are necessary for environmental and economic sustainability. Biodiesel derived from oil crops is a potential renewable and carbon neutral alternative to petroleum fuels. Chemically, biodiesel is mono alkyl esters of long chain fatty acids derived from renewable feed stock like vegetable oils and animal fats. It is produced by trans-esterification in which, oil or fat is reacted with a monohydric alcohol in presence of a catalyst. The process of trans-esterification is affected by the mode of reaction condition, molar ratio of alcohol to oil, type of alcohol, type and amount of catalysts, reaction time and temperature and purity of reactants. We conducted the experiment for varying the injection pressure and the plunger diameter of the feed pump. In present work, calophyllum innophyllum seeds are used to produce biodiesel. In trans-esterification process, methanol and NaOH is used. The different blending of biodiesel, diesel and ethanol is tested in CI engine and also emission characteristics are studied. Further, additive ethanol is also used.

The main objective of this work is to study the effect of the fuel injection pressure on performance and pollution of the single cylinder diesel engine at different plunger diameter. From experiment it is found that engine at 9mm plunger dia at 200 bars has given efficient performance and less pollution.

Keywords: Diesel engine; Biodiesel; Calophyllum Inophyllum Methyl Ester; Ethanol Additive.