

THE PROSPECT OF DIESOHOL IN FACING FOSSIL FUEL CRISSIS

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Abstract-The crisis of fossil (Petroleum) fuel around Lampung municipal and other districts in Indonesia need some alternative solution with SWOT analysis. The Diesohol can be applied both in gasoline engine and diesel engine respectively. The Diesohol which the mixing 2 percent of bioethanol and 98 percent of biodiesel or diesel oil was able to use in diesel engine properly. Although only 2 percent of bioethanol applied in diesohol but this opportunity will decrease fossil fuel consumption in the future. The Strength of Diesohol is The raw material is renewable which obtain from biomass around us, The Weakness is difficult to mix between bioethanol and biodiesel without agitator or stirrer. The Opportunity is circumstances kindly and under government national program. The threats is CO₂ gas which by product in bioethanol production and the higher cost production of diesohol rather than fossil fuel.

Key words : Diesohol, Bioethanol, Biodiesel, SWOT analysis

1. INTRODUCTION

Diesohol is an emulsion of hydrated ethanol in diesel fuel. Diesohol is important because it has the potential to create a very large market for ethanol that will require new ethanol production technology such as the Ethtec process. Some mining companies are already looking to use Diesohol within their mining operations and should they fully convert their fuel usage to Diesohol that in itself will create an enormous demand for ethanol. Opportunities to further access and commercialise this technology are currently being developed. The compression ignition engines are widely used in the transport sector, a standby power unit in industries and in agricultural fields due to their long life, reliability and economy. Due to the rise of the energy utilization in the recent years, the petroleum reserves are depleting at a faster rate, which results in the scarcity of diesel supply to meet the current demand. In addition, the stringent governmental regulations on emission control made the urgent need for search for an alternative

fuel that is renewable and non-fossil fuel nature or at least partly as fuel extender. Diesohol is a homogeneous blend of an alcohol and diesel. Among the various alcohols, Ethanol is the most preferred fuel because it is renewable and produced from various agricultural feed stocks. To utilize ethanol in the compression ignition engines, several techniques have been adopted such as blending ethanol with diesel, dual fuel mode, spark assisted ignition system, use of ignition improvers etc. Most of the techniques require engine modification or the use of expensive additives for making compatible with compression ignition engines. The fuel blending technique is an ideal choice to use ethanol in diesel engines as they do not require any engine modification. But the major challenge in employing this technique is the phase separation.

2. MATERIALS AND METHOD

An experimental investigation is carried out to establish the performance characteristics of a compression ignition

engine using diesel-ethanol blends with respect to Torque. As the diesel and ethanol are immiscible to each other, and no chemical used as a bridging agent so to prevent phase separation was used shaker. The study reveals that the stability of blends decreases with the decrease in the ambient temperature and the speed of shaker to prevent the phase separation. The performance characteristics are studied using the stable fuel blends in a single cylinder four stroke computerised variable compression ratio engine coupled with an eddy current dynamometer and a data acquisition system.. The performance of the engine using the stable diesel-ethanol blends was determined. The content of ethanol by volume in diesohol were 0,5%, 0.75%, 1.0%, 1.25%, 1.50% and 2.0% respectively.

3.RESULT AND DISCUSSION

The experimental observations indicated that using desired quantity of ethanol with diesel showed the performance could be improved. By SWOT analysis showed that The Strength of Diesohol is The raw material is renewable which obtain from biomass around us, The Weakness is difficult to mix between bioethanol and biodiesel without agitator or shaker. The Opportunity is circumstances kindly and under govenment national program. The threats is CO2 gas which side product in bioethanol production and the higher cost production of diesohol.rather than fossil or petroleum fuel. The result of laboratory experiment by using diesohol showed in fig 1 and fig 2

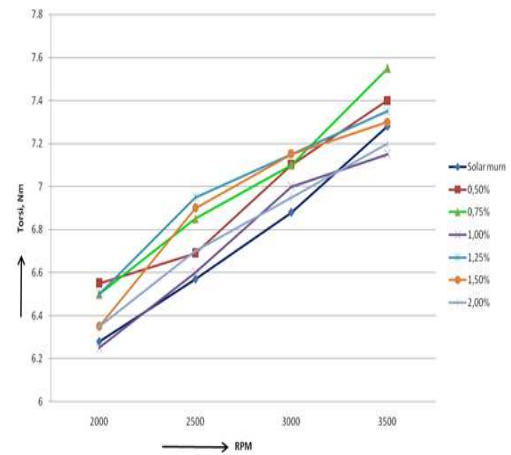


Fig 1. Torque and engine speed (rpm)

The torque and the brake horse power showed the positive corelation with engine speed. The application of 0,75 percent ethanol showed the highest torque in 3500 rpm.

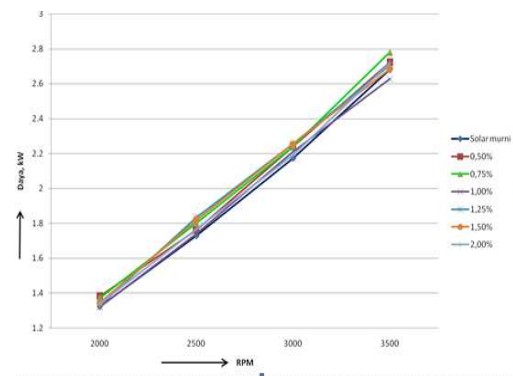


Fig 2. The graph of Brake Horsepower and engine speed (rpm)

The brake horse power showed the positive linier corelation with engine speed. The application of 0,75 percent ethanol showed the highest brake horsepower in 3500 rpm.

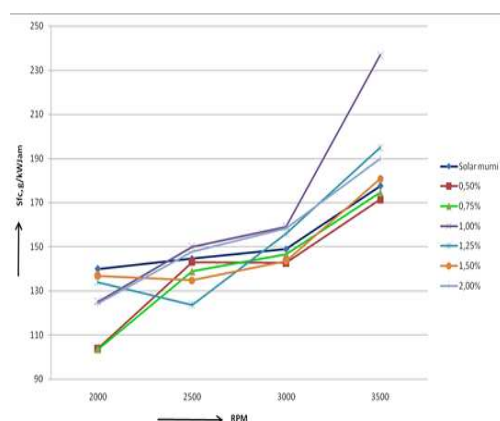


Fig 3. The graph of Spesific Fuel

Consumption(gr/Kw jam) and enginee
speed (rpm)

The specific f uel consumption by 0,5% and 0.75% ethanol in diesohol is the best in low speed of enginee (2000 rpm), but in high speed of enginee 1.50% of ethanol in diesohol seemed more suitable.

4.CONCLUSION

Diesohol is a homogeneous blend of an alcohol and diesel. Among the various alcohols, Ethanol is the most preferred fuel because it is renewable and produced from various agricultural feed stocks. To utilize ethanol in the compression with diesel . without an emulsifier or a co-solvent to prevent the phase separation of diesel-ethanol blends can be solve by shaker. The Strength of Diesohol is The raw material is renewable which obtain from biomass around us, The Weakness is difficult to mix between bioethanol and biodiesel without agitator or stirrer. The Opportunity is circumstances kindly and under govenment national program.. The threats is CO2 gas which by product in ethanol production and the higher cost production of diesohol.rather than fossil fuel.

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