

EXPERIMENTAL INVESTIGATION OF JATROPHA AND HIPPIE OIL
BLENDS WITH ETHANOL USING SEMI-ADIABATIC AIR-GAP BIMETALLIC METAL MATRICES CROWN
PISTONS IN TWIN CYLINDER DIESEL ENGINE AND ITS PERFORMANCE EVALUATION

ABSTRACT

All over the world the use of petroleum products has increased day by day. The Vehicle population is also increasing day by day. The vehicle population has tremendously increased in the recent year with the explosion of vehicle population in the Worldwide. As the vehicle population increases the use of fossil fuels like petrol and Diesel has also increased tremendously. The present automobile industry like petrol engine, diesel engine uses the fossil fuel like petrol and diesel as fuel. The pollution caused by this fossil fuel has much more effect on environmental air pollution. All over the world many researchers are trying to reduce the emission from these engines to protect the environment from air pollution. For the above mentioned problem many researchers have develop the catalyst converter to reduce the exhaust emission like CO, HC and NO_x.

Generally CO, HC, NO_x, SO₂, particulate matters and smoke are treated as emissions from the exhaust gas of engines. Among these emissions, HC and CO are more toxic in nature which leads to air pollution. The diesel engine being predominant than petrol engine in developed countries like India, these engines are widely used in the sectors like agriculture, power and automobile.

Finally we conclude that use of ethanol blended fuels resulted in reduced usage of petroleum products .Main aim of the project is to reduce emissions like HC, CO, CO₂,NO_x, SO_x from the exhaust gases of diesel engine.

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Vegetable oils are considered as good alternatives to diesel as their properties are close to diesel. Thus they offer the advantage of being used readily in existing diesel engines without modifications. Hence to meet these requirements humans have to look towards alternatives to the petroleum based fuels like petrol and diesel.

This project tries to find an alternate to diesel fuel. Initially base line data was generated with diesel and neat jatropha oil. Subsequently, jatropha oil was converted into its methyl ester by transesterification to minimize the problems of volatility, viscosity and polyunsaturated characters faced while using crude oil.

The engine performance test was carried out in a double cylinder diesel engine developing a power of 15 kv at 1500 rpm. After the tests were carried out, the performance graphs were plotted. This project also aims to find the suitability of Ethanol blended fuels in a diesel engine and various characteristics emissions were studied.