

**ES3.**

## **LP GAS CONVERSION IN PETROL ENGINES**

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Conversion of Petrol engine to run by Liquified Petroleum (LP) gas is becoming increasingly common in Sri Lanka due to the high price of petrol compared to cheaper LP gas option. Even though the diesel engines can be converted, it has not been paid much attention due to the low price of diesel. Many petrol vehicle owners are still searching for advantages and disadvantages of different conversion systems for which the cost varies from Rs. 10,000 to 50,000 depending on the conversion system. The paper presents a study which involves identifying the differences of the engine performance when converted to run from petrol to LP gas, rather than the cost effectiveness.

The Nissan petrol engine test bed (carburettor system) available at the Department of Mechanical Engineering was converted to be operated using gas from a domestic LP gas cylinder. Different arrangements were tested to understand the engine performance by changing the air: fuel ratio, by heating of gas supply, by changing cylinder pressure etc. Indicator diagrams were obtained to study the pressure variation inside the engine cylinder when petrol and LP gas are combusted. Exhaust gas emissions were analysed using the Orsat's apparatus.

It was found that the volumetric consumption of LP gas is higher than that of petrol. Heating of the gas supply reduced the gas consumption and reduced the engine temperature. No significant difference in the exhaust emission was identified perhaps due to the accuracy of the gas analyser. The ignition advance angle should be altered for better performance of the engine when running using LP gas which are preset for best performance when running with petrol.

The trials were made in a test engine with variation of brake loads and the performance during actual running conditions of vehicles should be studied separately. It is to be pointed out that the facilities of an advanced carburettor are not fully utilised when the engine is converted to run on LP gas. The engine performance could be enhanced if petrol and LP gas are used together to run the engine.