

MARA INSTITUTE OF TECHNOLOGY
SCHOOL OF MECHANICAL ENGINEERING

FINAL YEAR PROJECT REPORT

EFFECT OF SPARK PLUG ON EXHAUST EMISSION

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By

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ABSTRACT

Problem of exhaust gas emission to the world become a serious problem especially to the urban area where it pollutant in the air.

So many work done by car manufacture, government and NGO bodies to settle this pollutant problem.

This project involve an experiments on petrol engines with engine dynamometer by studying the effect of spark plug on exhaust emission.

The effect of spark plug to exhaust emission can be determine by studying the changes in exhaust emission content with using exhaust analyzer and engine dynamometer.

The range condition of spark plug were used in this experiments are:

- 1. New spark plug,
 - a. 0.8mm gap*
 - b. 0.9mm gap**
- 2. After 5,000km used on the road
 - a. before cleaning*
 - b. after cleaning*
 - c. cleaning by sand paper*
 - d. cleaning with correct procedure**
- 3. After 10,000km used on the road
 - a. before cleaning*
 - b. after cleaning**

The content of exhaust emission under study are Nitrogen Dioxide (NO_x), Carbon Monoxide (CO), Hydrocarbon (HC) and Carbon Dioxide (CO₂).

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1.0 ENVIRONMENTAL AIR POLLUTION

Today, there are approx. 400 million automobiles in use throughout the world, all producing considerable amounts of exhaust gases.[11]

The great responsibility of industry for the environment, the corresponding legislation and the increased environmental awareness of consumers have paved the way for new trends and developments in the field of automotive engineering.

It fundamentally deals with exhaust emission from motor vehicles and the pollutants contained in them, as well as the design measures adopted on vehicles for emission control.

The rate of air pollution at town area is high. It happens because of pollution from industries and automobile vehicles. Automobile vehicles was the no. 1 produce of carbon monoxide (CO), hydrocarbon (HC), nitrogen oxide (NO₂) or NO_x and plumbum which polluted the urban area (Rolfe 1993). Research, which was conducted by Spreng in 1993 at Kuala Lumpur, determined, concentrated of dangerous gas of carbon monoxide (CO) near equal to maximum level of World Health Organization (WHO) was established.[9] The concentrated of dangerous gas of such as sulphur dioxide and nitrogen dioxide was over the level that WHO was established.

WHO predetermine CO as the colourless odourless gas and lighter than air. This gas is dangerous and could result death. Breathing of about 30 minutes of the air which consist