



**PERFORMANCE ANALYSIS ON INTERNAL COMBUSTION ENGINE OF
SPARK IGNITION (SI) TYPE ON PERODUA ENGINES**

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ABSTRACT

Nowadays it is important to analyze several internal combustion engine parameters. These parameters are important in order to ensure that the engine runs smoothly, at top performance and emit less pollutant to environment. The main parameters that are usually considered are Break-Power and Fuel Consumption. Every vehicle owners are very particular about this thing. They want a high performance engine with an economically fuel consumption.

I, as a final year student under the tutelage of Prof. Madya Dr. Rahim Atan have to perform a field evaluation and analysis of engine performance by doing testing for different types of engine at PERODUA ENGINE MANUFACTURING SDN. BHD. The test is based on five types of engines, Kancil, Kenari, Kelisa, Rusa and Kembara. Some adjustments are made to the engines to ensure the engines are able to run consistently and at performance standard. Service was done to the engines, where we changed several parts that have worn-out, such as the piston ring, crank bearing and connecting rod bearing.

All the testing is run in the QA department lab at PERODUA ENGINE MANUFACTURING SDN. BHD. Results obtained from the testings are used to calculate the parameters mentioned earlier. The analysis and evaluation have also been done by which we make recommendations at which ignition timing, emission level and fuel consumption to be set to make the engines run at top performance.

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CHAPTER I

INTRODUCTION

The basic task in the design and development of engines is to reduce the cost and improve the efficiency and power output. In order to achieve this, the development engineer has to compare the engine developed with another engines in terms of its output and efficiency. Towards this an analysis and evaluation must be make to the engine by measuring of relevant parameters that reflect the performance of the engine. In general to achieve this a variety of engine tests must be conduct, therefore as my final project I decided to analyze engine performance that is done at PERODUA. The tests to be conduct depend upon a large number of factors but I just focus on the Brake Power, Fuel consumption and emissions.

Internal combustion engine generally operates within a useful range of speed. Some engines are made to run at fixed speed by means of a speed governor that is its rated speed. At each speed within the useful range the power output varies and it has maximum usable power at the same speed is called the load. The performance of engine depends on inter relation between power develop, speed and specific fuel consumption at each operation condition within the useful range of speed and load. The following factors are to be considered in evaluating the performance of an engine.

1. Maximum power or torque available at each speed within the useful range of speed.