



UiTM

**PERFORMANCE ANALYSIS AND COMPARISON BETWEEN PORT AND
DIRECT INJECTION FOR GASOLINE ENGINES**

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- Mohamad bin Ngah-

ABSTRACT

This paper discusses the development of a Direct Injection system for gasoline engine. The aimed of this project is to study the feature comparison between the conventional engine or Port Injection engine with the Direct Injection engine. Beside that, this project also analyzes the engine performance and fuel consumption by using the engine dynamometer-testing machine. Further, task is to modify and convert the port injection into direct injection. The significance of this project is to contribute knowledge in automotive engineering technology for local application; with the engine that deliver excellent fuel efficiency, superb performance and maintaining cleaner emissions.

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CHAPTER I

INTRODUCTION

1.1 Introduction

The most important challenge facing car manufacturers today is to offer vehicles that deliver excellent fuel efficiency and superb performance while maintaining cleaner emissions and driving comfort. Growing awareness of global warming as a big threat to the environment, has added yet another dimension to this challenge. In order to prevent global warming, the reduction of CO₂, one of the greenhouse gases, is called for. In order to achieve reduction of CO₂, there is an immediate need to develop and promote widely, the use of an automotive power plant that emits significantly less CO₂ than conventional petrol engines.

For years, engineers have known that if they could build a petrol engine that worked like a diesel engine- in other words, one in which fuel is injected directly into the cylinder and the stratified, rich mixture right near the spark plug is ignited-they would have an engine that achieved both the fuel efficiency of a diesel engine and attained the high output of a conventional petrol engine. However, development of such an engine has been impeded by petrol's poor combustibility. Diesel engines operate on a thermodynamic cycle, meaning that as long as a sufficient temperature is reached, thorough ignition will occur regardless of the air/fuel mixture condition. In order to achieve combustion with petrol, gaseous fuel and air must be mixed to