

## CHAPTER I

### INTRODUCTION

#### 1.1 Background of The Study

Nowadays, many demands from consumers to have a car with powerful engine and low of gasoline so vehicle manufactures think how to make the engine like that. Vehicle manufactures develop technology which can increase of efficiency volumetric and the engine can have a great power and torque.

Basically, to generate maximum power at low RPM is required a different setting. This is because of the properties of the mixture of air and fuel during combustion is different. How big the valve should be opened and how long the valve should be opened, when the all valve is open by differently. The setting of the low RPM will cause the engine's performance while in high RPM and power output is reduce. Otherwise, the setting of the high RPM will cause poor engine performance while in low RPM. Intellegence Variable Timing and Lift Electronic Control (i-VTEC) can be used to problem solve above because Intellegence Variable Timing and Lift Electronic Control can control timing valve. I-VTEC can increase efficiency volumetric that can make the gasoline engine will increase engine performance.

Intellegence Variable Timing and Lift Electronic Control is a generalized term used to describe any mechanism or method that can change the timing of valve lift event within an internal combustion engine. Vehicle manufacture have special name for his VTEC technology. For examples: VVT-i, VTEC, VANOS, MIVEC.

The last evolution of Honda's VTEC system was back in 1995 where they introduced the now-famous 3-stage VTEC system. The 3-

stage VTEC was then designed for an optimum balance of super fuel economy and high power with driveability. For the next 5 years, Honda still used the regular DOHC VTEC system for their top power models, from the B16B right up to the F20C in the S2000. Now, Honda have announced the next evolution of their legendary VTEC system, the i-VTEC.

The i stands for intelligence, i-VTEC is intelligence-VTEC. Honda introduced many new innovations in i-VTEC, but the most significant one is the addition of a variable valve opening overlap mechanism to the VTEC system. Named VTC for Variable Timing Control, the current (initial) implementation is on the intake camshaft and allows the valve opening overlap between the intake and exhaust valves to be continuously varied during engine operation. This allows for a further refinement to the power delivery characteristics of VTEC, permitting fine-tuning of the mid-band power delivery of the engine.

Through this engine test will analyze the effect of i-VTEC technology on Honda All New Jazz on to the engine performance and fuel consumption. The result of this engine test will give us brief explanation whether this device is efficient or not.

## **1.2 Problem Statement**

Problems statement that can be drawn from the problem above is how does the effect of i-VTEC to the gasoline engines in engine performance.

## **1.3 Objectives**

The objectives of the research are as follow:

- a. To investigate the torque that resulted by the engine use i-VTEC with the torque that resulted by conventional engine.

- b. To investigate the power that resulted by the engine use i-VTEC with the power that resulted by conventional engine.

#### **1.4 Benefit of The study**

Two kinds of benefits which can be gained from the study are as follows:

1. Theoretical Benefit

The study is expected to give additional information and knowledge about effect of i-VTEC on engine Performance.

2. Practical Benefit

The study is expected to enrich the knowledge of researcher and reader about principles and mechanisms of i-VTEC Technology.

#### **1.5 Problem Limitations**

Problem limitation on the engine test is used to adjust the tools which available and also for issues to be discussed or analyzed is not too widespread. Limitations are as follows:

- a. The fuel which is used in the experiment is gasoline with the number octane of 98.
- b. The engine that used is Honda All New Jazz i-VTEC RS 1.5 M/T.
- c. The discussion is about the torque and power on engine use i-VTEC and conventional engine.
- d. The dynamometer used to know the power and torque from the engine.