

# CHAPTER I

## INTRODUCTION

### 1.1 Background of The Study

Car (short of an automobile which comes from the Greek 'autos' (own)) and Latin 'movere' (move) is four or more wheeled vehicle that carries its own engine. Types of cars, including buses, vans, trucks. Operation of the car is called driving. Over time the car needs for humans its increasing because it is very helpful to the process of traveling and working, the development of the car in the country Indonesia is growing very rapidly, especially the use of an SUV. The development of the SUV (Sport Utility Vehicle) in Indonesia will be interesting to observe. Since the start of the type of this car with the toughness, agility and endurance in various fields earned him many fans in the country. Orientation SUV development is focused on its ability to penetrate various field. For that SUVs are often said to be a cruiser car for extensive home range, and the car was often used by many organizations as field operations for multi-functional car. Understanding SUV (Sport Utility Vehicle) is a car designed to carry passengers and goods such as cars pick up. This car can usually equipped with 4-wheel drive system (4 x 4) and also comes with a small tub open the taillights. This car is also designed to be able to pass through terrain both on road and off road. However, recently classified SUV car does not have to have a 4 wheel drive system or pickup. The car has a powerful engine, great body which can accommodate passengers and freight, and able to be used both on-road and off-road can be classified as an SUV. SUVs generally divided into 3 categories based on size (size), which also determines the size difference in the car, engine power, passenger room and price.

- a. Compact, often also referred to as a mini SUV  
Compact SUV: SUV is a car that has the smallest size class with the ability to carry passengers and goods are limited and have little capacity to saving engine fuel consumption. Length of the car between 4:25 - 4.60 meters. Cars belonging to the compact SUV include: Ford Escape, Audi Q5, Jeep Compass, Range Rover Evoque, Toyota Rav4, Toyota Fortuner, Grand Vitara and Honda CR-V.
- b. Mid-Size  
Midsize SUV: is the middle class of SUV. But there are some countries that call this car with car Full Size SUV. Cars that belong to this group are the Hyundai Santa Fe, Land Rover Discovery, Toyota Highlander, Kia Sorento.
- c. Full-Size  
Full Size SUV: SUV is a car with a large size and represent all the properties of the SUV is equipped with a large, large size, capable of carrying passengers and goods in large quantities, and is able to traverse both onroad and offroad terrain. Cars that fall into this class of car is the Toyota Landcruiser, Toyota Sequoia, Ford Expedition, Mercedes Benz GL.

Listening things mentioned above and the importance of human comfort in driving, the authors are interested in analyzing more about the engine power produced in grand vitara car. Therefore, in this final project the author takes the title “ POWER ANALYSIS OF GRAND VITARA CAR”.

## **1.2 Objectives of the Study**

According to the problems statement above, the research has some objectives of the study. The objective is to analysis engine power.

- a. To know the engine power, from analysis of the engine.
- b. To know the engine torque, from analysis of the engine.

### **1.3 Benefit of The study**

Two benefits of this project study are as follows:

- a. Theoretical Benefit

The study is expected to give extra lessons to know about engine Performance.

- b. Practical Benefit

The study is expected to learn more the knowledge of researcher and reader about principles mechanisms machine.

### **1.4 Problem Limitations**

Problem limitation on the engine test is used In-Line 4-Cylinder 16- Valve DOHC VVT. The fuel which is used in the experiment is gasoline with the number octane of 98. The discussion is about the engine torque and engine. The tools which available and also for issues to be discussed or analyzed is not too widespread. The dynamometer used to know the power and torque from the engine.

### **1.5 Systematic of Writing**

The final report consists of four chapters. Each chapter describes the things that are learned, contained in a report form and the individual chapters are interrelated.

To facilitate the study of this report, the following report will describe the system that starts from one chapter to chapter which contains four of the preliminary conclusions and further work.

## CHAPTER I

## INTRODUCTION

Background of the Study, Objectives of the Study, Benefit of the study, Problem Limitations, and systematic of the report.

## CHAPTER II

## BASIS THEORY

Discusses the theoretical basis of the research supporting.

## CHAPTER III

## FUEL COMBUSTION

Discusses about fuel combustion

## CHAPTER IV

## ANALYSIS

This chapter discusses the results of the data obtained from each test through discussion of the calculation and analysis presented in the form of tables and graphs.

## CHAPTER V

## CONCLUSION AND FURTHER WORK

Discuss the conclusions and further work of the research that has been done.