CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Four stroke engines was created by Eugenio Barsanti and Felice Matteuci in 1854 and followed by first prototype in 1860 [3]. A French engineer, Alphonse Beau de Rochas was also made the conceptualized in 1862 [3]. But the first who develop a functioning four-stroke engine was Nicolaus Otto, the German engineer. That is why the four stroke principle known as Otto cycle and for four stroke engine using spark plugs called Otto engine.

The four stroke cycle is more fuel-efficient and clean burning than the two stroke cycle but it requires considerably more moving parts and manufacturing expertise and the resulting engine is larger and heavier than two stroke engine of comparable power output. The Otto cycle is characterized by four stroke or straight movement in a single direction which obtained intake (induction) stroke, compression stroke, power stroke and exhaust stroke. All the cycle must be repeated over and over for the engine to continue operation.
1.2 OBJECTIVE

- To investigate the performance of Modenas 110cc 4-stroke motorcycle engine using GT Power engine simulation software.
- To determine the best parameter for the engine part to achieve the highest performance.

1.3 SCOPE

The main operation of operating the engines are covered in this work is to improving the performance of Modenas 110cc 4-stroke motorcycle engine. An overview of the different methods, their effect on performance, emissions, and applicability of these methods to the current objective is presented. It consists of the experimental apparatus used for engine testing, and the development of a new setup consisting of a motorcycle engine before we used the simulation to compare the results. The results of two different ways on performance are also discussed. A model of the engine system is created using GT-Power software. The model is calibrated using experimental measurements, and is used to predict gain performance for change in different parameters. A model of this system is also created and compared with experimental predictions.
GT Power Simulation & Modeling

Start

Engine system study

GT-Power study using tutorial

Engine parameter & measurement

Engine modeling – GT Power

Run simulation

Acceptable results

Result & discussion

Conclusion & recommendation

End

Figure 1.1: GT Power Simulation & Modeling Flow Chart