LAPURAN PROJEK TAHUN AKHIR KURSUS DIPLOMA KEJURUTERAAN ELEKTRONIK KAJIAN KEJURUTERAAN, I.T.M. SHAH ALAM.

CAPACITOR-DISCHARGE IGNITION SYSTEM

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PREFACE

The prime objective of this project is to improve the performance of the conventional ignition system by adding an electronic ignition system. It also gives an idea of what an ignition system is.

The convention ignition system has both the merits and demerits whereas the CDI system on the other hand, suffers from almost none of the demerits.

The analysis of the project such as the operations of the circuit is determined in the succeeding chapter. CDI system, also confers an impressive list also explained in this report later.

Finally, the performance of the experimental measurement and testing of the circuit response are analysed including the methods of overcoming the problems encountered.

ACKNOWLEDGEMENT

In the Name of Allah, most merciful and most compassionate.

I glorify Allah and ask blessing on and salute the noble Prophet (p.b.u.h) his companions and those who follow him up holding the cause of right religion. I thank Allah along that He is in His Infinite Mercy and Grace made my humble endeavours possible.

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1.0 Introduction

The ignition system plays a very important part in the operation of the automobile, for it produces high-voltage surges of up to 35 KV and then delivers these surges to the cylinders in the engine. The engine operates and produces power because of innumerable explosions in the engine cylinder. The piston in the engine is forced outward by the pressure and this movement is transmitted by means of the crankshaft and gears to the automobile wheels.

The main function of the spark generator is to produce a spark at the plug electrodes inside the cylinder at the appropriate time to ignite the air-fuel mixture. The spark timing must be automatically controlled so that it is correct for engine starting and also for all conditions of speed and load over the complete speed range.

For the spark to initiate ignition satisfactorily, the air-fuel mixture must be readily igniteable whether it be supplied from a caburetter or fuel injection system and the air-fuel mixture must have easy acess to chamber, the duration of the spark and the movement of the mixture are decisive for reliable ignition.

1.1 The Process of Ignition

At the moment when the spark is initiated the gaseous mixture in the cylinder is compressed to approximately 80 - 100 lb/in^2 and the piston is still on the stroke. The initiation of the explosion occurs simultaneously with the beginning of the spark discharge and at the same instant a pressure wave arising from the explosion is propogated throughout the gaseous medium, the rate of propogation being accelerated by the turbulent state of the mixture.

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