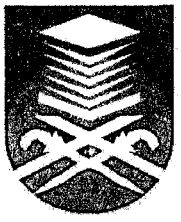

FAKULTI KEJURUTERAAN MEKANIKAL
UNIVERSITI TEKNOLOGI MARA
SHAH ALAM

FINAL YEAR PROJECT REPORT

TEST ENGINE BED "TD-10"
UPGRADING FOR RADICAL COMBUSTION TESTING

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Firstly, we would like to express our gratitude to our dedicated project advisor Dr. Ahmad Suhaimi Abd Rahim for the supervision, support and valuable suggestion in preparing the text and experimental setup which has a significant positive impact on the quality of the report and for making this report successful. Not forgotten to our ex-advisor Dr. Saqaf Ahmed Alkaff and Dr. Habib Ur Rahman who most give endless help and idea about this project. Unfortunately, they are not here to see our victory.

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SYNOPSIS

The objective of this project is to make a necessary upgrade and maintain the availability of the existing equipment TD-10 engine test bed. The second objective is to design a new measurement acquisition device from the engine, so that it can be recorded into the computer for further analysis. The data acquire is in form of torque, temperature and the speed of the engine. Advance measurement, computer system is used and the data are log in into computer using Adam Data Acquisition Module (ADAM) interface. The technique need to be reprogrammed, so that the ADAM module output can be read and analysis in the computer, and also determine the suitable output from instrument panel on engine test bed.

Using a new engine (Yamaha RX-Z) attached to TD10 engine test bed to analyze their performance under several load and variation of speed. Dynamometer is used to determine their torque and consequently determine their achieved brake power. Some modifications have been made on that engine such as attached an electric starter motor to start the engine easily. The previous student's project used the pull rope type to start the engine. With the attachment of the starter motor, we designed the gears that act as a flywheel. The design procedure is very difficult since all the aspect has been considered such as the number of teeth, the selection of material, the machining process, and the like. We use carbon steel as materials because it is suitable for particular job and long lasting. We bought and machine it using gear hobbing according the specification that has been satisfied. After installation less vibration effect and the gear look center and nice contact with starter motor. To measure the torque, dynamometer is used and one shaft is used to connect between engine and dynamometer. Failures to design according their standard cause failure to shaft.

The engine used is from Yamaha model RX-Z 135cc. Of course the original mounting of previous project are not suitable enough to fit a new engine to the test bed. So we made new mounting to attach the engine to test bed. This job takes about four days since we need make is perfectly since the dynamometer is fix at its position and only the engine position can be adjustable.