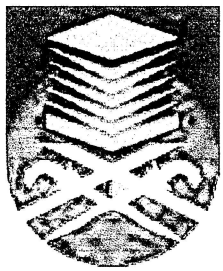

CONCEPTUAL DESIGN OF HYDROGEN PROTON EXCHANGE MEMBRANE (PEM) FUEL CELL POWERED VEHICLE: POWER PLANT

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree"

Signed: .....

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ABSTRACT

A fuel cell vehicle (FCV) is a vehicle which uses hydrogen fuel cell to produce its on-board motive power. Fuel cells create electricity to power an electric motor using hydrogen or a reformed hydrocarbon fuel and oxygen from the air. This long-term project aims to develop a racing vehicle (go-kart) running on hydrogen PEM fuel cell as its power source. Named as team FKM-UiTM ZeroE racing team, the target has been set to enter the Formula Zero championship in 2012. The Formula Zero Championship will be a zero emission, open series, competition for top international universities and companies. The teams need to design, build and race own hydrogen fuel cell racing vehicle. The first phase of this project concentrates on various conceptual designs of the vehicle, coupled with design analysis on the fundamental and technical aspects of hydrogen fueled vehicle. The final outcome of the first phase is a number of comprehensive conceptual designs with adequate system and technical analysis. Two types of system designs need to be considered in this thesis which is single and double stack fuel cell systems. The power rating of the systems need to be same (which stated in formula zero racing regulation 8kW power) to compare. Comparison in terms of overall system prices and other components that each system needed were carried out in this thesis and this only can be achieved by continuously contacting the manufacturer and also built up relation with the formula zero organizer in order the systems that will be produce for the result in this thesis were solid.

TABLE OF CONTENTS