

# MIIEx2017

Melaka  
International  
Intellectual  
Exposition

## PROGRAMME ABSTRACT



**“Bridging Gaps with Creativity for Future Sustainability”**

# MIIEx2017



“Bridging the Gaps with Creativity for Future Sustainability”

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## **COVER DESIGN:**

AFTI Sdn Bhd

## **PUBLISHED BY:**

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## E-SMART REHAL

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### Abstract

"Rehal is a one of the important equipment for most of a Muslims in the world. This is because, rehal helps to stand Qu'ran and make Muslim read the Qu'ran in easily way. This equipment normally will reduce the stress of our backbone and neck bone during read the Qu'ran because we can sit comfortably and do not need to bow down the neck hardly. With the advancement of technologies in nowadays world, our team had innovated new product called "E-Smart Rehal" as our initiative to improve the existing traditional rehal that available in the market. Differ with conventional rehal, our team introduced well advanced e-smart rehal that have the advanced new functions button such as USB button, earphone button, and rechargeable lamp that will give a lot of side benefits that not only can facilitates individual while reading Qu'ran but this rehal also can be used as the portable study desk. Moreover, this electronic rehal is suitable for light and heavy usage which is relevant with the main purpose of this product (reading Qu'ran or study).

## OPTIMIZED VEHICLE FRONT END FOR PEDESTRIAN PROTECTION AND ENHANCED AERODYNAMIC EFFICIENCY

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### Abstract

This study proposes a method of achieving an optimized vehicle front-end profile for improved protection for both adult and child pedestrian group, which at the same time is able to avoid designs that may cause Run-over scenarios. Design of Experiment is used to generate computational samples. The models are designed using Catia software based on seven design parameters focusing on the frontal area only. These designs undergo the simulation of Ansys to obtain the drag coefficient, Cd. Next, head injury criteria, HIC results from the crash simulations are tabulated as the response functions and optimization is carried out using Genetic Algorithm method. The optimized vehicle front end profile for the child pedestrian is shown to be different from the adult pedestrian and the optimized profiles are shown to be mutually not applicable for safety. Furthermore Run-over scenario is observed in child pedestrian optimized profiles where it invalidates the optimization. The designs which fulfill both aspect, low Cd and low HIC values are classified as the optimized models. The significance of this project is to build a vehicle front end profiles which is simultaneously safe for both the adult and child pedestrian in the event of the frontal impact, and to ensure that the profile generated does not allow a Run-over scenario to take place as that is more fatal than the primary impact itself. The project can be taken to further heights by studying the impact scenario for different pedestrian statures and also ensuring that the proposed vehicle front end design is aerodynamically efficient. This project expected to provide a guideline parameters in the car manufacturing industries and widely introduced to this sector in order improve the safety factor for pedestrian group.