

Short Course on Plastics for Automotive Application

By Ir. Dr Ramlee Karim



Ir. Dr Ramlee Karim is a Fellow of IEM, and has been a Past Chairman of CETD. He is currently a CETD committee member and has been an active supporter of IEM and CETD activities for many years.

The CETD Short-Course on Plastics for Automotive Applications was conducted in Wisma IEM on Wednesday, 24 November 2012 by Ir. Assoc. Professor Dr Tee Tiam Ting and Ir. Dr Lee Tin Sin from Universiti Tunku Abdul Rahman. It was attended by eager-to-know students as well as eager-to-know-more professionals from as far as Melaka and Penang.

The course was divided into six sessions. The details of the sessions are as follows:

Session 1 on *“Plastic Technology and Industry Analysis”* by Ir. Dr Lee covered the overall global picture on plastics application and market share and their contribution towards reduction of CO₂ emission, improving efficiency and safety. Definition and test methods for various properties were introduced. Special properties, especially visco-elasticity of plastics, were elaborated on.

Session 2 on *“Plastic Reinforcement and Processing”* by Ir. Dr Tee examined the range of various types and properties of plastics in automotive applications for the purpose such as fuel economy through weight reduction and aerodynamic streamlining; durability through corrosion resistance and recovery from small dents; vibration reduction through noise control; efficient use of space; more freedom for design, and production cost reduction through simplified assembly. Reinforcement materials used for the purpose of further enhancing the properties of plastics were also introduced.

Session 3 on *“Competition between Plastics, Composites and Other Materials”* by Ir. Dr Lee looked at competition from composites and other materials like mild steel, high strength steel, aluminium and magnesium alloys from the point of view of weight, corrosion, weldability, recyclability, ease of moulding with the ultimate aim of overall energy efficiency and minimum life cycle cost.

Session 4 on *“Environmental and Safety Requirements and Customer Demand”* by Ir. Dr Lee focused on rules and regulations on environmental impact in terms of CO₂ reduction and fuel efficiency, as well as driver and occupant safety and safety of people outside the vehicles. The vehicle’s crumple zone made of plastic materials is vital importance for passengers’ safety.

Session 5 on *“Recycling and Disposal”* by Ir Dr Tee looked at the recycling process for the recovery and disposal of plastics as well as ferrous and non-ferrous materials.

Session 6 on *“Examples of the Use of Plastics for Specific Components and Systems”* by Dr Tee was devoted to giving actual components application in the construction of the vehicles.

Great interest was shown by participants as demonstrated by active Q&A sessions after every session. Questions were asked on details of processing, economics aspects and safety.

