

Technical Visit to Kenaf Polymer Composite Pilot Plant, MARDI

AGRICULTURAL AND FOOD ENGINEERING TECHNICAL DIVISION



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THE Agricultural and Food Engineering Technical Division (AFETD) of IEM organised a technical visit to MARDI's Kenaf Polymer Composite Pilot Plant in Serdang, Selangor on 15 December 2010. The purpose of the visit was to have an overview of the research and development activities at the Kenaf plant, and to facilitate the sharing of experience and transfer of technology between the two institutions. A total of 20 participants joined the technical visit.

A technical briefing was given by Kenaf project leader En. Mat Daham Mohd. Daud. He described the background of the Kenaf plant and the research that has been conducted at MARDI.

Kenaf is an environmentally friendly crop which can be grown throughout the year in the tropics. The plant could be harvested within 4 to 5 months. Kenaf fibre is an outstanding re-enforcing filler in thermo-plastic composites. Kenaf materials from whole stalk, bast or core fibre could be used in combination with plastic resins to produce various shapes and high quality Kenaf polymer composite (KPC) profiles. The combined properties of Kenaf and plastic materials allow one to design products tailored to end-user requirements within the framework of cost, recyclability and environmental aspects. KPC is made from sustainable raw material which could be recycled and renewed. The benefits of KPC products are:

- Highly resistant against external environmental impacts
- Moisture and weather resistant
- Dimensional stability and longevity with a natural feel to it
- Resistant to rots and cracks
- Stable over a wide range of temperature

- Simple to work at just like normal wood
- Outstanding screw and nail retention
- Low flame spread
- Contains non-toxic chemicals or preservatives
- Recyclable

KPC PRODUCTION PROCESS

Sector/Industry	Applications	
Building and Construction	Window frames and components Cladding – exterior horizontal and vertical Door frames and components Roofline products Roof top	
Industrial/Infrastructure	Industrial flooring Railings	
Interior/Internal Finish	Interior panels Decorative profiles Office furniture Kitchen cabinets Shelving	Worktops Blinds/Shutters Skirting boards Railings
Garden and Outdoor	Decking Fencing and fence posts Garden furniture Shelters and sheds	Park benches Playground equipment Playground surfaces

Stem harvesting → Fibre drying → Pulveriser → High speed mixer → Pelletiser → Extruder pellet → KPC pellet → Extruder profile → KPC profile → Various KPC product profiles

At the Kenaf Polymer Composite Pilot Plant, the delegates had the opportunity to observe the process flow in which KPC is produced. The processing works are challenging, both technically and environmentally. ■

