The next timber revolution: IOI Palm Wood and OnCore

Every 25 years, mature oil palm plantations undergo essential replanting cycles, leaving behind millions of tonnes of trunks that have traditionally been left to decompose or be burned — an underutilised biomass stream contributing significantly to greenhouse gas emissions.

Across Peninsular Malaysia alone, this replanting accounts for more than 100,000 hectares annually, generating a massive structural surplus of agricultural biomass.

VALORISING INDUSTRIAL BIOMASS STREAMS

IOI Palm Wood reframes this ecological challenge into a high-value industrial opportunity.

Through proprietary processing and advanced engineering, the company converts oil palm trunks into high-performance engineered wood panels, establishing OnCore as the foundation of the next timber revolution.

LEGEND

1 *IOI Palm Wood processes oil palm trunks into high-performance panels for furniture and interior applications*

2 *Table made with OnCore panels from IOI Palm Wood*

TECHNICAL ENGINEERING: FROM BIOMASS TO HIGH-PERFORMANCE SUBSTRATES

Oil palm trunk is widely recognised as one of the most challenging agricultural biomass materials to industrialise due to its vascular anatomy, high moisture content and variable cross-sectional density. IOI Palm Wood's engineered processing model resolves these technical barriers.

Unlike traditional logs, oil palm trunks exhibit non-uniform density and moisture distribution. The company utilises tailored sawmilling configurations — optimising blade geometry, feed speeds and cutting angles — to process raw oil palm trunks into uniform lamella elements. This precise mechanical breakdown preserves structural integrity and eliminates micro-fracturing, providing a consistent substrate for downstream manufacturing.

Managing moisture is critical to ensuring dimensional stability in palm-based panel products. Moving away from conventional ambient methods, IOI Palm Wood employs a dynamic controlled drying matrix that continuously modulates temperature, relative humidity and airflow according to real-time moisture sensors. Core moisture is reduced to precise single-digit percentages, eliminating structural warping, internal stress and premature degradation.

Conditioned oil palm trunk lamellae are integrated into engineered panels through a rigorous multi-stage sequence: planing, precision trimming, sizing, resin application and hot-pressing. Utilising calibrated pressure-temperature cycles and moisture-resistant resins, the

lamellae are bonded into structurally stable, flat boards. This process guarantees uniform load distribution across the panel, matching or exceeding the performance of conventional tropical timber substrates.

THE ONCORE PRODUCT PORTFOLIO: A SUSTAINABLE ALTERNATIVE TO FOREST TIMBER

OnCore represents the commercial culmination of IOI Palm Wood's technical capabilities — a complete portfolio of engineered panels designed for global furniture, joinery and interior manufacturing needs.

The OnCore Lamella is one of the products in the portfolio, alongside OnCore PalmCore, OnCore Blockboard and OnCore Three-Layer Panels. By substituting tropical hardwood cores with valorised agricultural biomass, OnCore offers manufacturers a direct solution to timber supply deficits, price volatility and stringent forest protection mandates.

INDUSTRY IMPACT: ELEVATING ESG PERFORMANCE FOR FURNITURE MANUFACTURERS

For furniture exporters competing in highly regulated global markets, the transition to OnCore offers several strategic advantages. Transforming oil palm trunks into durable engineered panels sequesters biogenic carbon long-term while avoiding landfill decomposition and open-burning emissions, helping to create a climate-positive footprint.

Diverting agricultural waste into mainstream panel production also improves forest resource efficiency by directly reducing sourcing pressure on natural forests and commercial timber plantations.

OnCore is fully aligned with recognised sustainability and environmental standards, including SIRIM Ecolabelling and the MyHijau Mark. The company is also currently in the process of certifying the MSPO Chain of Custody for Oil Palm Biomass (MS 2751:2022), supporting its certified compliance credentials.

With regulatory frameworks such as the EU Deforestation Regulation (EUDR) and eco-conscious buyers demanding verified sustainable supply chains in Europe and North America, OnCore provides exporters with a certified, audit-ready compliance framework, offering a potential commercial advantage in highly regulated markets.

IOI Palm Wood's mission is clear: transforming agricultural biomass streams into high-value engineered substrates for the global woodworking industry. The future of sustainable timber is not in natural forests — it is in precision biomass management. P

All images courtesy of IOI Palm Wood.

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Inspiring the next "material revolution" by creating sustainable and high-performance materials from oil palm waste, **Peter Fitch**, together with IOI, have set up IOI Palm Wood to commercialise this untapped potential.