

Case Study

Eunoia Junior College

Eunoia Junior College (EJC) is Singapore's first high rise school constructed using Mass Engineered Timber (MET). It has an estimated total Gross Floor Area (GFA) of 48,000m². Located at 2 Sin Ming Place, EJC integrates advanced building techniques, showcasing innovative construction methods.





Tower Block Rear Elevation



Tower Block Front Elevation

Use of MET

EJC's construction of the academic block prominently incorporates Mass Engineered Timber (MET), employing Cross Laminated Timber (CLT) for façades and the CREE hybrid slab system for flooring. This methodology strengthens structural integrity whilst contributing to a reduced carbon footprint.

The MET construction system was implemented across the 10 and 12-storey sections (on either side of the block) from the 4th floor upwards, excluding the roof. The façade application of CLT alone delivered productivity gains exceeding 30% compared to precast concrete walls, as the lighter weight of CLT facilitates easier on-site installation.

CREE Hybrid Slab System for Enhanced Productivity

The construction employs CREE hybrid slab, which is an innovative prefabricated structural floor system that combines precast concrete slab with Glued Laminated Timber (Glulam) beams.

This method offers several benefits:

<p>1. Optimised Structural Performance</p>	<p>The CREE system reduces vibration while maintaining a lightweight structure, combining the benefits of reinforced concrete slab and Glulam beams.</p>
<p>2. Time and Man-hour Savings</p>	<p>The larger panel sizes directly contribute to fewer lifting and installation works, thereby reducing the overall man-hours required during the installation phase.</p>
<p>3. Enhanced Construction Productivity</p>	<p>A significant advantage is that no skim coat is required for the underside of the CREE panels, which further saves man-hours and streamlines the construction process.</p>



CREE Hybrid Slab system used in EJC (courtesy of Kimly-Lian Ho Lee Joint Venture)



View of a typical classroom in EJC (courtesy of Kimly-Lian Ho Lee Joint Venture)

Fire Safety Measures

To meet fire safety requirements and for weather protection, the external face of the CLT walls is cladded with non-combustible vapour barrier boards and aluminium panels.

For fire compartmentalisation at each floor, the façade system is separated via cavity gaps and fire-stops on every level. As the internal-facing CLT walls are not lined with any cladding or fire protection board, a deluge sprinkler system is installed to protect the internal walls from fire incidents.

Project Team

 ROLE	 ORGANISATION
Developer	Ministry of Education
Architect	CPG Consultants Pte Ltd
Structural Engineer	CPG Consultants Pte Ltd
M&E Engineer	CPG Consultants Pte Ltd
Main Contractor	Kimly-Lian Ho Lee Joint Venture
CLT Engineer	Essepi XXL, KLH
Glulam Supplier	HESS Timber