
Current PhD
Projects

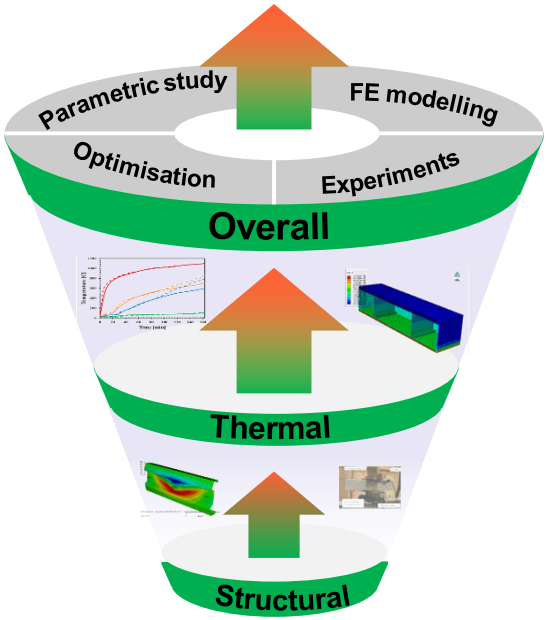
(1) Optimum Design of Cold-Formed Steel Beams for Modular Building Applications

PhD Student : Perampalam Gatheeshgar

Overall Aim

To optimise cold-formed steel beams to enhance the **structural**, **fire** and **energy performance** using Particle Swarm Optimisation, experimental and finite element analyses.

This project will enable developing an improved design procedure. This could ultimately contribute to design standards and enhance their applicability for modular building.



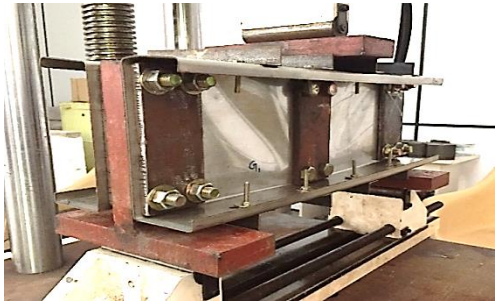
(2) Structural Behaviour of Stainless Steel Beams Subjected to Shear, Bending, and Combined Bending and Shear Actions

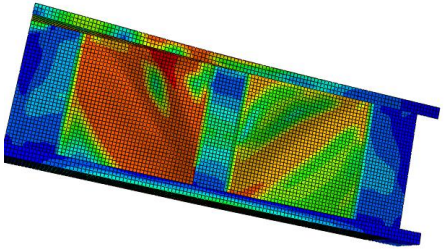
PhD Student : Madhushan Dissanayake

Overall Aim

To investigate the shear, bending, and combined behaviours of stainless steel channel members, to provide safe and efficient design guidelines for their applications in order to **maximise their structural efficiency** and **increase their range of applications** in the construction industry.

Methods: Full scale experimental analysis
Detailed Finite Element analysis



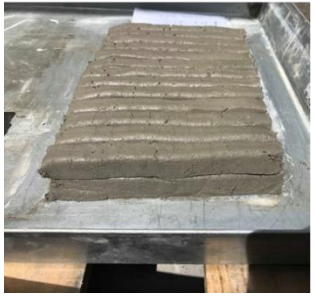


(3) Development of a Novel Concrete Mixture for Extrusion based 3D Concrete Printing with Increased Structural Integrity

PhD Student : Thadshajini Suntharalingam

Overall Aim

To introduce a novel extrusion based 3D Printable Concrete mixture by investigating the Structural Performance and Inter-layer bonding characteristics of 3D Printed Concrete, along the printing direction



(4) Fibre Reinforced Self Compacting Concrete in Precast Lift Core Walls Application

PhD Student : Jeffri Ramli

Overall Aim

Investigate the structural behaviour of reinforced concrete shear walls incorporating Fibre Reinforced Self Compacting Concrete (FRSCC) subjected to constant axial load and lateral loading.

Methods:
Experimental and numerical analyses.

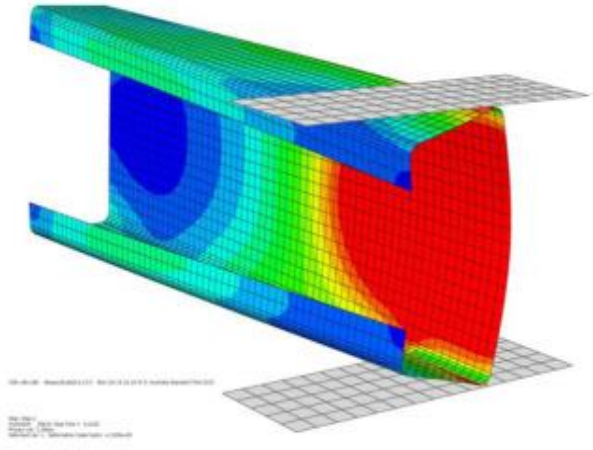
(5) Web Crippling Design of Optimised Cold-Formed Channel Beams

PhD Student : Alex McIntosh

Overall Aim

The overall aim of this research is to investigate the web crippling behaviour of optimised Cold-formed carbon steel, stainless steel and aluminium channels through experimental work and finite element analysis.

This project will enable developing a new design procedure. This could ultimately provide a contribution to design standards for lightweight carbon steel, stainless steel and aluminium members and enhance their commercial use.

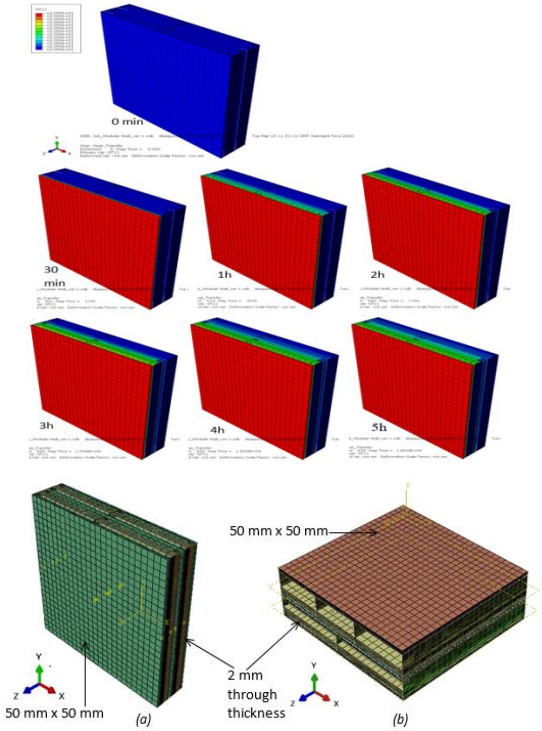


(6) Fire Performance of Affordable and High Quality Modular Building Systems

PhD Student: Dilini Perera

Overall Aim

The aim of the research is to advance the knowledge on fire performance of affordable and high quality modular building systems through thermal and mechanical tests, 3D Finite Element Analysis (FEA) (advanced computer modelling).

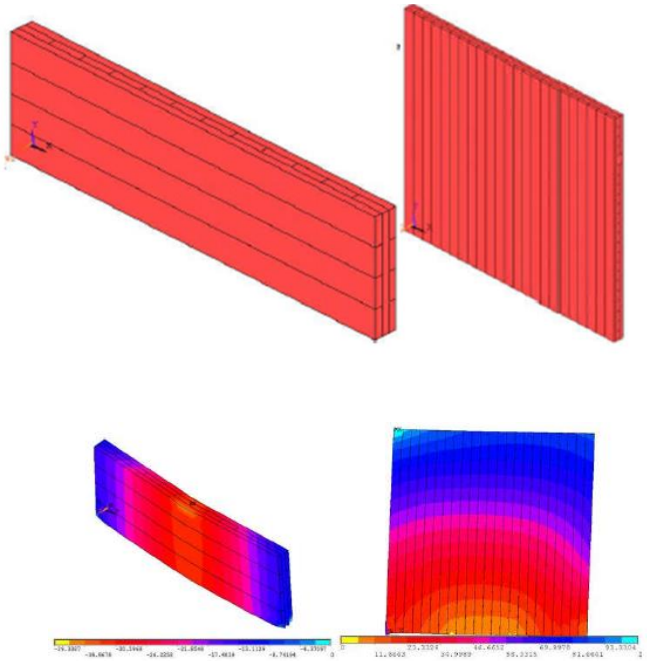


(7) Development of a Innovative Timber Panels and Connections for Non-Standard Arrangements

PhD Student: Deighton Widdowfield Small

Overall Aim

To investigate the structural behaviour of innovative timber modular panels (wall and floor panels) and advanced timber connections for non-standard arrangements under different actions through full-scale tests and finite element analysis.



(Shahnewaz et al., 2015)

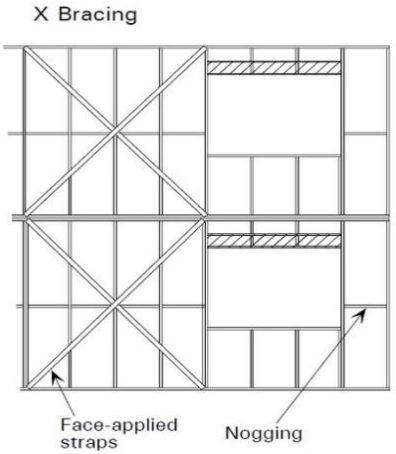
(8) Design Innovation of the Racking Systems for Modular Buildings

PhD Student: Steve Napper

Overall Aim

The overall aim of the research is to produce a wide range of data set of Modular Building Systems (MBS) through mechanical tests and numerical models and to improve the design methods of MBS.

The tests and numerical analysis will be also used to analyse the effectiveness of bracings (X-bracing and K-bracing), against in-plane shear actions (racking tests), etc.

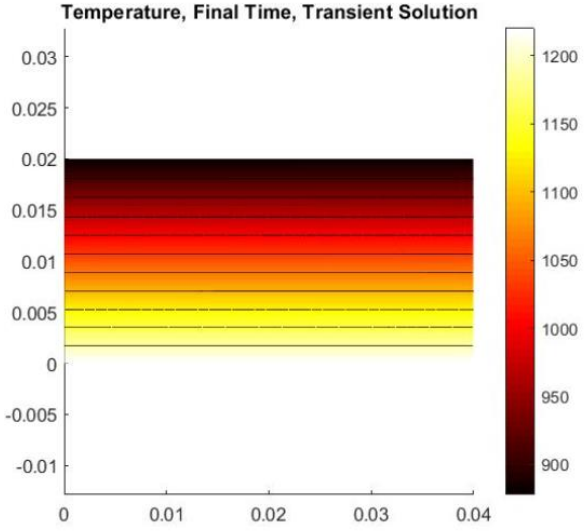


(9) Fire Performance of Prefabricated Cellular Lightweight Concrete Panels

PhD Student: Irindu Rahal Upasiri

Overall Aim

To investigate the structural and fire performance of Cellular Lightweight Concrete (CLC) panels using structural tests and advanced computer modelling.



Thank you!