BNZ Technology Clinics
Cross Laminated Timber

5 September 2011

Robin Jack
www.jacks.co.nz

Specialist suppliers of woodworking technology

Jacks (W & R Jack Ltd)
Auckland, Wellington & Christchurch
65 year track record

Solutions for manufacturing in solid wood
Scanning, planing, optimised crosscutting and ripping, finger jointing, lamination, moulding, frame and truss, window & door joinery.

★ Cross Laminated Timber

Solutions for panel based manufacturing
Panel dividing, surface, core and edge lamination, CNC machining centres, materials handling equipment, prefab building systems.

★ Modular Timber Framed Panels

www.jacks.co.nz
Timber Industry: Manufactured Products

Appearance Products

Glulam & Engineered Wood Products

Frame & Truss Products

Industrial Products

Cross Laminated Timber (CLT) (XLAM)

- 3, 5, 7 or more layers of wood laminated together with grain direction of each layer alternating
- Layers usually from 19mm to 45mm thick, assembled symmetrically
- Any thickness up to 400mm, depending on strength characteristics needed.
- Any length (12m = max truck deck, un-piloted)
- Any width (normally 2.5 – 3m depending on wall height)
- Walls, roof or floor elements - can combine with timber, glulam or LVL to build box beams etc

Workflow for CLT (simplified)

- Drying: 10-14% is required
- Pre-planing (optional)
- Grading (appearance &/or strength)
- Cross cutting (defecting & optimising)
- Finger Jointing
- Buffer Storage or Just in Time
- Cut to length
- Lamella planing + profiling Accurate thickness is essential
- Assembly of Elements
- Application of PUR glue (eg Purbond) 20°C is ideal
- Pressing
- Finishing – squaring, edge profiling, openings, drilling/routing for services, etc
- Lining or cladding if required
Continuous Finger Jointing for Cross Laminated Timber

Mechanical Pressing of CLT

Systems for assembling and pressing of -
- individual lamella (no edge gluing)
- edge jointed leaves
Mechanical Pressing of CLT - Minda

Vacuum Press for CLT
Vacuum Pressing of Cross Laminated Timber
Vacuum Pressing of CLT Roof Elements

Vacuum Pressed Floor-Ceiling Element
Vacuum Pressed CLT Box Beam Element – Tests

Cross Laminated Timber Panels ready for CNC Machining
CNC Multi-Function Bridge for CLT
Cross Laminated Timber – Key Benefits

- Carbon sequestration = sustainability
- Relocatable & recyclable buildings
- Can “hide” low grade material in core layers
- Increased utilisation of existing plant = lower costs
- High value:volume ratio = economic export shipping
- Slashed site time = big labour & finance savings
- Elimination of variations = predictable costs
- Consistent & easily verified quality standards
- Energy efficient structures = lower occupancy costs
- Healthy buildings – reduced public health costs
- Usable attic spaces = more efficient use of land
- Flexible – unique designs cost little extra to make
House in a Day

www.jacks.co.nz
Rapid assembly on site depends on:

- Accurate manufacturing off site
- Good connections

- Made in Austria
- Proven world wide
- Over 50 connection systems
- Posts, beams, walls
- Connections to steel & concrete
- Upload to CAD-CAM
- German & European Technical Approvals
- Patented

WALCO V
Wall connector for multi-story prefabricated houses

4 Floors
Prefabricated House
WALCO V
Wall connector for prefabricated houses

Connecting your ideas...
Concealed | Self-tightening | Demountable

WALCO V
Wall connector for prefabricated houses

Connecting your ideas...
Concealed | Self-tightening | Demountable
WALCO V
Wall connector for prefabricated houses

Floating Houses I North Germany

Connecting your ideas ...
Concealed | Self-tightening | Demountable

RICON®
For main and secondary beam / post and beam

Connecting your ideas ...
Concealed | Self-tightening | Demountable
RICON®
For main and secondary beam / post and beam

Connecting your ideas ... Concealed | Self-tightening | Demountable

Whale I Germany
Indoor Playground

Connecting your ideas ... Concealed | Self-tightening | Demountable
RICON®
For post and beam / main and secondary beam

Les Thermes I Strassen (LUX)

Connecting your ideas...  Concealed | Self-tightening | Demountable

Hamburg House I Germany
Expo 2010 Shanghai

Connecting your ideas...  Concealed | Self-tightening | Demountable
We’ve brought some sample CLT components and connection fittings to Conference. Please come to our booth at the Expo and take a look!

Thanks for your attention.