Metal-Asia

Technical Specifications: CLT (Cross-Laminated Timber) Production Lines

Adhesive-Bonded Technology — ExpoAsia Engineering Equipment Series

Date: June 18, 2026 **Document Status:** Working Document for Engineering Review **Classification:** Confidential

---

TABLE OF CONTENTS

---

1. CLT TECHNOLOGY OVERVIEW (ADHESIVE-BONDED)

1.1 Operating Principle

CLT (Cross-Laminated Timber) consists of multiple layers of boards stacked perpendicular to each other and bonded with polyurethane adhesive (PUR). Unlike MHM (Massiv-Holz-Mauer) technology where layers are connected with aluminium nails, CLT uses one-component polyurethane adhesive (1K PUR), cured under pressure at ambient wood moisture content.

1.2 Standard Panel Parameters

Parameter	Standard Value
Max. panel length	up to 18,000 mm
Max. panel width	up to 3,600 mm
Max. panel thickness	up to 400 mm (12 – 14 layers)
Single layer (lamella) thickness	20 – 40 mm
Number of layers	3 – 12 (odd for symmetry)
Wood moisture before bonding	12% ± 2%
Adhesive type	PUR 1K (one-component polyurethane, moisture-cured)
Pressing pressure	0.6 – 0.8 N/mm²
Press temperature	20 – 25°C (cold pressing)
Pressing time	10 – 25 min (depends on thickness and technology)
Post-CNC accuracy	±1.0 mm

1.3 Panel Layer Structure

```
Layer 1 (top):  ←←←←←  longitudinal boards
Layer 2:         ↑↑↑↑↑  transverse boards
Layer 3:         ←←←←←  longitudinal boards
Layer 4:         ↑↑↑↑↑  transverse boards
...
Layer N (bottom):  ←←←←←  longitudinal boards
```

Each layer is bonded to adjacent layers through PUR adhesive applied to the flat surface of lamellas. Transverse layers are trimmed to panel width after assembly.

1.4 CLT Production Stages

```
1. Raw material preparation          → EXA-1
2. Finger jointing                   → EXA-2
3. Lamella planing                   → EXA-3
4. PUR adhesive application          → EXA-4
5. Layer lay-up                      → EXA-5
6. Pressing                          → EXA-6
7. CNC machining                     → EXA-7
8. Dust/chip removal                 → EXA-8
9. Pneumatic supply                  → EXA-9
10. Line control                     → EXA-10
```

---

2. EXPOASIA PRODUCTION SERIES

2.1 Company Profile

ExpoAsia is a major systems integrator and supplier of technological lines for engineered wood production, based in the Qingdao–Yantai industrial corridor (Shandong Province), China. The company unites manufacturing capacities of several specialized machine-building plants in the region under a unified quality control and configuration management system.

ExpoAsia does not function as a brand of standalone machine manufacturers but operates as a general contractor for the design, assembly, and turnkey supply of complete CLT lines. Equipment within the series is coded with the **EXA** (ExpoAsia Assembly) prefix followed by sequential unit numbering.

Parameter	Details
Base location	Qingdao – Yantai, Shandong Province, China
Profile	Complete CLT, GLT, LVL lines — turnkey
Quality management	ISO 9001, CE (upon request)
Line control system	Unified SCADA (EXA-10)
Unit integration	Full compatibility of all EXA modules
After-sales service	On-site engineer (visa, flights — at Buyer's expense)

2.2 EXA-1: Raw Material Preparation System

Purpose: Primary processing of sawn timber. Ripping unedged boards into blanks of specified width, wane removal, cross-cutting, quality grading. Preparation of raw material for jointing and planing operations.

Operating Principle: Unedged boards are fed onto a roller conveyor and pass through a multi-blade disc saw unit with electronic width setting. An automatic measuring system determines blank width and optimizes the cutting pattern to minimize waste. Defective edges are removed by trim saws. Boards are then fed to a cross-cut saw for end trimming and defect removal.

Technical Specifications:

Parameter	Value
Max. width of raw board	350 mm
Max. thickness of raw board	100 mm
Min. blank length	1,000 mm
Max. blank length	6,500 mm
Number of saw discs	3 – 6 pcs. (adjustable)
Disc diameter	305 – 400 mm
Main motor power	18.5 kW
Feed motor power	3 kW
Feed speed	5 – 50 m/min (stepless)
Cutting accuracy	±0.5 mm
Cross-cut accuracy	±1.0 mm
Working table height	850 ± 50 mm
Control system	PLC with 10" touchscreen
Dust extraction	Flange Ø 150 mm, 3,500 m³/h
Dimensions (L × W × H)	4,200 × 2,000 × 1,600 mm
Weight	2,400 kg
Installed power	22 kW
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Welded frame with heat treatment
- Multi-blade saw unit with 6 mounting positions
- Feed mechanism with pneumatic clamp (6 rollers)
- Electronic width measuring system (2 laser sensors)
- Cross-cut saw (1 disc Ø 400 mm)
- Optional defect marking system
- Touchscreen control panel with 100 program memory
- Set of saw discs (6 pcs., carbide-tipped)
- Safety guards per EN ISO 12100

2.3 EXA-2: Finger Jointing Machine

Purpose: Longitudinal jointing of boards on finger joint (micro-finger) to obtain lamellas of unlimited length. Ensures strong adhesive bonding with load distribution over a large contact area.

Operating Principle: Individual boards are end-cut to form finger joint teeth. D4 adhesive is applied to the end surface, boards are pressed together at 10–20 MPa and held until full cure (15–30 seconds with high-frequency drying, or 2–4 hours at ambient temperature).

Technical Specifications:

Parameter	Value
Max. jointed lamella length	16,000 mm
Board width	50 – 300 mm
Board thickness	20 – 60 mm
Joint type	Finger joint, pitch 6 – 20 mm
Tooth angle	45° or 90° (adjustable)
Tooth depth	12 – 40 mm
Cutter spindle power	11 kW
Spindle speed	6,000 rpm
Press power	15 kW
Pressing force	10 – 20 MPa
Feed speed	10 – 30 m/min
Productivity	up to 6 pcs./min
Adhesive type	D4 (water-resistant polyurethane)
Control system	PLC with CNC control
Dimensions (L × W × H)	5,500 × 2,200 × 1,800 mm
Weight	3,800 kg
Installed power	28 kW
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Welded frame with anti-vibration feet
- Cutter spindle with swivelling head (2 tooth profiles)
- Hydraulic pressing unit
- Automatic adhesive application (2-component, dosing)
- High-frequency curing unit (option)
- Servo-driven feed mechanism
- Automatic board feeding system
- Touchscreen control panel
- Set of cutters (4 pcs.)

2.4 EXA-3: Four-Side Planer

Purpose: Simultaneous processing of all four sides of a lamella — bottom, top, and both edges. Thickness calibration, dimensioning, and surface preparation for adhesive application. Key unit for ensuring bonding quality.

Operating Principle: The lamella is fed by an automatic feeder and sequentially passes through four spindle units: bottom planing (base plane leveling), right and left edge planing, top planing (final thickness). All spindles are equipped with swivelling knife heads with carbide inserts.

Technical Specifications:

Parameter	Value
Working width	30 – 300 mm
Working thickness	10 – 160 mm
Min. blank length	1,200 mm
Max. blank length	6,500 mm
Number of spindles	4 (bottom, top, right, left)
Bottom spindle power	7.5 kW
Top spindle power	11 kW
Right spindle power	7.5 kW
Left spindle power	7.5 kW
Spindle speed	6,000 rpm
Feed speed	6 – 40 m/min (stepless)
Thickness accuracy	±0.1 mm
Width accuracy	±0.1 mm
Tool bore diameter	40 mm
Max. tool diameter	140 mm
Feed mechanism	6 rollers, pneumatic clamp
Control system	PLC with 10" touchscreen
Dust extraction	4 flanges Ø 120 mm, 6,000 m³/h
Dimensions (L × W × H)	3,500 × 2,000 × 1,850 mm
Weight	3,600 kg
Installed power	37 kW
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Welded frame with anti-vibration feet
- 4 spindle units with swivelling knife heads
- Automatic feed mechanism (6 rollers)
- Electronic thickness measuring system (2 digital sensors)

- Automatic table height adjustment
- Touchscreen control panel with 50 program memory
- Set of knife heads (4 pcs.) with carbide inserts (12 pairs)
- Safety guards with microswitches
- Centralized bearing lubrication system

2.5 EXA-4: PUR Adhesive Application System

Purpose: Application of one-component polyurethane adhesive (1K PUR) onto the flat surface of lamellas prior to lay-up in the CLT panel. Uniform distribution of the adhesive layer with controlled thickness and width.

Operating Principle: Planed lamellas are conveyed on a roller conveyor. The adhesive application system (roller or spray type) applies a layer of PUR adhesive onto the top surface of each lamella. Layer thickness is controlled by dosing rollers in the range of 120–200 g/m². The glue system includes a heated tank for maintaining optimal viscosity (40–60°C).

Technical Specifications:

Parameter	Value
Application width	300 – 3,500 mm (adjustable)
Glue layer weight	120 – 200 g/m²
Adhesive type	1K PUR (one-component polyurethane)
Tank temperature	40 – 60°C (thermostat-controlled)
Tank capacity	50 L
Application type	Roller (rubber rollers) or spray
Tank heating power	3 kW
Roller drive power	1.5 kW
Feed speed	5 – 30 m/min (synchronized with line)
Dosing accuracy	±5%
Control system	PLC with doser
Dimensions (L × W × H)	3,000 × 1,500 × 1,600 mm
Weight	850 kg
Installed power	5 kW
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Heated glue tank 50 L (stainless steel)
- Roller application system (3 rollers)
- Thermostat with ±1°C temperature control
- Dosing pump
- Roller feed conveyor
- Anti-dry protection system for rollers
- Touchscreen control panel

2.6 EXA-5: Vacuum Lay-Up Table

Purpose: Formation of multi-layer CLT panels by laying planed lamellas layer-by-layer in crosswise orientation. Ensures accurate positioning of each layer, panel geometry control, and preparation for pressing.

Operating Principle: The operator (or automated system) lays the first layer of lamellas longitudinally on the assembly table. The vacuum system fixes lamellas in position. The second layer is laid crosswise (perpendicular to the first) using a vacuum gripper. The process is repeated until the target panel thickness is reached. Side and end stops ensure accurate panel dimensions.

Technical Specifications:

Parameter	Value
Max. panel length	6,000 mm (option: 12,000 mm)
Max. panel width	3,250 mm (option: 3,600 mm)
Max. panel thickness	400 mm (up to 14 layers)
Min. panel size	2,000 × 2,000 mm
Single layer thickness	20 – 40 mm
Lay-up type	Manual / semi-automatic
Number of layers	3 – 14 (adjustable)
Layer fixation system	Vacuum (8 zones, sectional)
Vacuum pump power	7.5 kW
Side stops	Motorized, adjustable
End stops	Pneumatic, 2 pcs.
Positioning accuracy	±1.0 mm
Working table height	850 ± 50 mm
Table surface	Steel frame + aluminium with PE coating
Dimensions (L × W × H)	8,500 × 4,500 × 1,200 mm
Weight	9,500 kg
Installed power	10 kW
Supply voltage	380 V / 50 Hz / 3-phase
Operators required	2 – 3 persons

Scope of Supply:

- Assembly table with aluminium surface (2 sections)
- Vacuum fixation system (8 independent zones)
- Vacuum pump 7.5 kW
- Motorized side stops with CNC control
- Pneumatic end stops (2 pcs.)
- Panel thickness measuring system (laser sensor)
- Industrial control panel with 12" display

- Set of vacuum cups (16 pcs.)
- Safety guards

2.7 EXA-6: Hydraulic CLT Press

Purpose: Pressing of multi-layer CLT packages under controlled pressure to ensure uniform adhesive distribution and full contact between layers. Cold pressing with holding time until full cure of PUR adhesive.

Operating Principle: The assembled lamella package (with applied adhesive) is loaded into the press via a roller conveyor. Hydraulic cylinders (top and side) create uniform pressure up to 0.8 N/mm² across the entire panel surface. The press holds the package for a set time (10–25 min depending on thickness). After adhesive cure, the press opens and the finished panel is discharged.

Technical Specifications:

Parameter	Standard	Option
Max. panel length	6,000 mm	12,000 mm
Max. panel width	3,250 mm	3,600 mm
Max. panel thickness	400 mm	400 mm
Specific pressure	0.6 – 0.8 N/mm²	0.6 – 0.8 N/mm²
Top cylinders (qty)	8 – 12 pcs.	12 – 16 pcs.
Top cylinder diameter	Ø 100 mm	Ø 120 mm
Side cylinders (qty)	4 – 6 pcs.	6 – 8 pcs.
Side cylinder diameter	Ø 80 mm	Ø 100 mm
Hydraulic station power	22 kW	30 kW
Working pressure	21 MPa	25 MPa
Cycle time	15 – 25 min	20 – 30 min
Adhesive type	PUR 1K	PUR 1K
Control system	PLC with HMI	PLC with HMI
Dimensions (L × W × H)	7,500 × 4,000 × 3,500 mm	13,500 × 4,500 × 3,500 mm
Weight	18,000 kg	35,000 kg
Installed power	25 kW	35 kW
Supply voltage	380 V / 50 Hz / 3-phase	380 V / 50 Hz / 3-phase

Scope of Supply:

- Welded press frame with heat treatment
- Pressing platens (steel, ground)
- Hydraulic cylinders (top and side)
- Hydraulic station with accumulator
- Hydraulic oil filtration system
- Roller loading/unloading conveyor
- Safety system (photocells, guards)

- HMI control panel
- Set of seals and spares for hydraulics

2.8 EXA-7: Portal CNC Machining Center

Purpose: Final multi-operation machining of finished CLT panels after pressing. Performs: trimming to length and width, cutting openings (doors, windows), grooving for MEP services (electrical, plumbing), drilling for fasteners, surface sanding.

Operating Principle: The finished CLT panel is placed on the machining table and fixed by the vacuum system and mechanical stops. The CNC portal moves the working aggregates in three coordinates (X, Y, Z) with spindle rotation (4th axis) and saw tilt (5th axis). The CNC system controls all operations according to the programmed sequence.

Technical Specifications:

Parameter	Standard	Option
Working Area		
Max. machining length (X)	6,500 mm	13,000 mm
Max. machining width (Y)	3,600 mm	3,600 mm
Max. machining height (Z)	400 mm	400 mm
Max. panel thickness	360 mm	360 mm
Traverse Speeds		
Rapid traverse X	30 m/min	35 m/min
Rapid traverse Y	35 m/min	40 m/min
Rapid traverse Z	30 m/min	35 m/min
Positioning accuracy	±0.05 mm	±0.03 mm
Repeatability	±0.02 mm	±0.01 mm
Spindle Unit		
Spindle power	22 kW	30 kW
Spindle speed	1,000 – 18,000 rpm	1,000 – 24,000 rpm
Tool interface	ISO 40 / HSK 63	HSK 63F
Cooling	Air	Air + water
Chain Saw (option)		
Saw motor power	11 kW	15 kW
Saw disc diameter	450 mm	600 mm
Rotation angle (4th axis)	±180°	±180°
Tilt angle (5th axis)	0 – 90°	0 – 90°
Circular Saw Unit		

Parameter	Standard	Option
Power	15 kW	18.5 kW
Disc diameter	350 mm	450 mm
Drilling Unit		
Power	2.2 kW	3 kW
Number of spindles	1	1 (option: up to 3)
Max. drill diameter	35 mm	40 mm
Tool Magazine		
Number of positions	8	12 (option: 16)
Tool change type	Automatic (ATC)	Automatic (ATC)
Tool change time	10 – 15 sec	8 – 12 sec
Working Table		
Fixation type	Vacuum (sectional) + mech. stops	Vacuum (sectional) + mech. stops
Vacuum zones	6	8
Vacuum pump power	5.5 kW	7.5 kW
Control System		
CNC system	Syntec 60WA	Syntec 60WA / Siemens 828D
Controlled axes	5 (X, Y, Z, A, B)	5 (X, Y, Z, A, B)
Interface	Ethernet, USB	Ethernet, USB
Supported formats	G-code, DXF	G-code, DXF, NC
Display	15" color LCD	19" color LCD
Dust Extraction		
Extraction flanges	2 × Ø 150 mm	2 × Ø 200 mm
Extraction capacity	6,000 m³/h	8,000 m³/h
Dimensions and Weight		
Machine dimensions (L × W × H)	9,500 × 5,000 × 3,200 mm	15,000 × 5,500 × 3,500 mm
Machine weight	12,000 kg	18,000 kg
Installed power	65 kW	85 kW
Supply voltage	380 V / 50 Hz / 3-phase	380 V / 50 Hz / 3-phase

Scope of Supply:

- Welded portal frame (steel construction) with heat treatment
- Cross carriage with servo drives (Y, Z axes)
- Spindle unit ISO 40 / HSK 63
- Automatic tool changer (ATC) 8/12 positions
- Working table with vacuum fixation (6/8 zones)

- Vacuum pump
- Syntec / Siemens CNC with control panel
- Mechanical stops and clamps (set)
- Dust extraction system
- Spindle cooling system (option)
- Starter tool set (6/8 positions)
- Safety guards with photocells
- CNC software + postprocessor
- Operating manual (EN/)

2.9 EXA-8: Dust Extraction System

Purpose: Centralized collection and removal of wood dust, chips, and shavings from all line units. Ensures air quality standards in the production facility, protects equipment from contamination, and prevents fire hazards.

Technical Specifications:

Parameter	Value
Capacity	18,000 m³/h
Vacuum	4,000 Pa
Main fan power	30 kW
Rotary valve power	2.2 kW
Filtration	Sleeve filter (polyester), 80 sleeves
Filtration class	PM10 > 99.5%
Collection bin capacity	300 L
Noise level	< 75 dB at 10 m distance
Dimensions (L × W × H)	3,000 × 1,800 × 3,800 mm
Weight	2,200 kg
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Sleeve filter in metal housing (80 sleeves)
- Centrifugal fan 30 kW
- Rotary discharge valve
- Chip collection bin 300 L
- Set of spare sleeves (10 pcs.)
- Pulse blow magnetic valve
- Control system (starter, differential pressure sensor)
- Ductwork Ø 200 mm (30 m)
- Differential pressure gauge
- Spark arrester (fire safety)

2.10 EXA-9: Compressor Station

Purpose: Production of compressed air for all pneumatic systems of the line: clamping mechanisms, planer clamps, assembly table pneumatic cylinders, safety systems.

Technical Specifications:

Parameter	Value
Compressor type	Screw, oil-injected
Capacity	5,000 L/min
Max. pressure	10 bar
Working pressure	6 – 8 bar
Drive	Electric, belt
Power	45 kW
Air dryer	Refrigerated (included)
Receiver	1,000 L
Line filter	0.01 µm
Noise level	< 72 dB
Dimensions (L × W × H)	2,200 × 1,300 × 1,900 mm
Weight	1,350 kg
Supply voltage	380 V / 50 Hz / 3-phase

Scope of Supply:

- Screw compressor block
- Electric motor 45 kW
- Belt drive
- Receiver 1,000 L (with pressure gauge, safety valve)
- Refrigerated air dryer
- Line filter (0.01 µm)
- Control panel with auto start/stop
- Set of pipelines and fittings (20 m)

2.11 EXA-10: SCADA Control System

Purpose: Centralized control and monitoring of all production line units in real-time mode. Ensures synchronization of machine operation, production data collection and analysis, equipment diagnostics, performance accounting, and defect tracking.

Technical Specifications:

Parameter	Value
System type	SCADA (Supervisory Control And Data Acquisition)
Base software	KingSCADA / WinCC (optional)
Connectable units	up to 16 machines (all EXA modules)

Parameter	Value
Communication protocols	Modbus TCP/IP, OPC UA, Ethernet/IP
Server	Industrial PC, Intel Xeon, 32 GB RAM, SSD 1 TB
Operator monitors	2 × 27" Full HD (IPS)
Backup	Automatic (RAID 1, daily)
Reporting	Excel, PDF (scheduled auto-generation)
Remote access	Built-in (VPN, secure channel)
CNC EXA-7 integration	Direct (G-code upload, DXF import)
Software warranty	12 months

Scope of Supply:

- Industrial control server (rackmount)
- 2 operator monitors 27" Full HD
- Managed network switch (24 ports, Gigabit)
- Set of CAT6 cables (100 m)
- SCADA license (16 tags, unlimited screens)
- Reporting and analytics software (OEE, performance, downtime)
- Configuration and integration of all EXA-1 – EXA-9 units
- SCADA operator training (3 days)
- Administrator manual (EN/)

---

3. TECHNICAL SUMMARY TABLE

3.1 Module Parameters Overview

Parameter	EXA-1	EXA-2	EXA-3	EXA-4	EXA-5	EXA-6	EXA-7	EXA-8	EXA-9	EXA-10
Function	Rip/Cut	Jointing	Planing	Glue PUR	Lay-up	Press	CNC	Dust	Compressor	SCADA
Max. length, mm	6,500	16,000	6,500	6,000	6,000	6,000	6,500	—	—	—
Max. width, mm	350	300	300	3,500	3,250	3,250	3,600	—	—	—
Max. thickness, mm	100	60	160	—	400	400	400	—	—	—
Power, kW	22	28	37	5	10	25	65	32	45	1
Weight, kg	2,400	3,800	3,600	850	9,500	18,000	12,000	2,200	1,350	80

3.2 Line Performance Parameters

Parameter	Value
Production capacity	3,000 – 5,000 m³/year (1 shift, 8 hours)
Max. panel size	3,250 × 6,000 × 400 mm (option: 3,600 × 12,000 mm)
Min. panel size	2,000 × 2,000 × 60 mm
Layer thickness	20 – 40 mm
Number of layers	3 – 14
Adhesive type	PUR 1K (one-component polyurethane)
Post-CNC accuracy	±1.0 mm
Total installed power	~270 kW
Compressed air consumption	~800 L/min, 6 – 8 bar
Facility floor area	min. 1,000 – 1,200 m² (including raw material storage)
Facility ceiling height	min. 7 m
Personnel (1 shift)	5 – 7 persons
Total equipment weight	~53,800 kg (~54 tonnes)

---

4. CLT PRODUCTION PROCESS STEPS

4.1 Stage 1: Raw Material Preparation → EXA-1

Raw material — kiln-dried edged boards of softwood species (pine, spruce) at 12% ± 2% moisture content. Boards are fed to EXA-1 for ripping into blanks of specified width (100 – 300 mm) and cross-cutting to length. Defective areas (knots, cracks) are removed. Finished blanks are graded by quality.

Input control: Wood moisture is checked with an electronic moisture meter. Acceptable range: 10 – 14%. If deviation — drying in kiln.

4.2 Stage 2: Finger Jointing → EXA-2

Blanks are fed to EXA-2 for finger joint profiling. D4 adhesive is applied automatically, blanks are pressed together. Jointed lamellas of unlimited length (up to 16,000 mm) are obtained. Jointed lamellas are held 2 – 4 hours until full adhesive cure (or 15 – 30 seconds with high-frequency drying).

Quality control: Joint strength is checked by destructive testing on sample pieces. Standard: tensile load > 10 MPa.

4.3 Stage 3: Lamella Planing → EXA-3

Jointed lamellas are fed to EXA-3 for four-side planing. Output: lamellas with precise dimensions (thickness 20 – 40 mm, width 100 – 300 mm) and perfectly smooth surface, ready for adhesive application.

Quality control: Thickness is monitored by digital sensors in real-time. Tolerance: ±0.1 mm.

4.4 Stage 4: PUR Adhesive Application → EXA-4

Planed lamellas are fed to EXA-4, where a layer of PUR adhesive is applied to the flat surface of each lamella at 120 – 200 g/m². Adhesive is heated to 40 – 60°C for optimal viscosity.

Quality control: Adhesive consumption is checked by weight method on sample lamellas. Standard: 150 ± 30 g/m².

4.5 Stage 5: Layer Lay-Up → EXA-5

Lamellas with applied adhesive are laid on EXA-5 layer by layer. First layer — longitudinal, second — transverse, third — longitudinal, etc. The vacuum system fixes each layer. Side and end stops ensure accurate panel package dimensions.

Quality control: Visual inspection of adhesive uniformity before laying the next layer. Package thickness checked by laser sensor.

4.6 Stage 6: Pressing → EXA-6

The assembled package is transferred to EXA-6. Hydraulic cylinders create pressure of 0.6 – 0.8 N/mm². The package is held for 10 – 25 min (time depends on panel thickness and temperature). PUR adhesive cures under pressure, forming a strong elastic bond.

Quality control: After exiting the press, the panel is checked for delamination by impact method (0.5 kg hammer from 300 mm height). Absence of delamination sounds indicates quality bonding.

4.7 Stage 7: CNC Machining → EXA-7

The finished CLT panel is placed on EXA-7. The CNC system performs cutting of openings (windows, doors), grooving for MEP services, drilling. Machining accuracy: ±1.0 mm.

Quality control: Each panel is measured after CNC. Controlled: length, width, thickness, diagonals, opening positions.

4.8 Stage 8: Sanding and Packing

After CNC, the panel undergoes calibration sanding for precise thickness. The finished panel is packed in protective stretch film, marked (number, dimensions, date), and stored.

Quality control: Final inspection: absence of chips, thickness uniformity, marking.

Document prepared by ExpoAsia Engineering as a technical cut of CLT production equipment. All parameters are indicative and are clarified in the Technical Assignment after configuration approval by the Buyer.

Maxim Vedunkov

CHIEF TECHNICAL ENGINEER, CLT EQUIPMENT, EXPOASIA

Expertise: Technical specification of CLT lines, acceptance testing of hydraulic presses, verification of CNC center parameters, development of process sheets. **Principle:** «Every EXA module undergoes factory acceptance testing in Qingdao before dispatch: pressing pressure, portal positioning accuracy, extraction cyclonicity. We do not sign the acceptance certificate until every parameter matches the specification.»

EXPERT PROFILE

CONTACT INFORMATION

ExpoAsia Client Relations Department:

- **WhatsApp:** +86 132 50100874
- **Telegram:** @China_metal_supply
- **Email:** zakaz@metal-asia.pw
- **Official Website:** www.metal-asia.pw