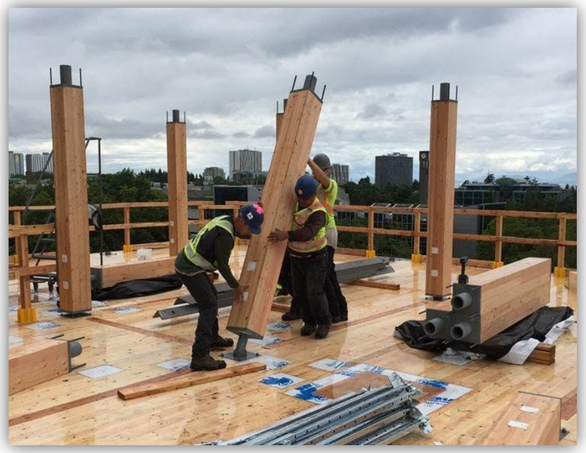
MASS TIMBER IN INDIA

JACKHAMMER
WOODEN-STEEL

ABOUT US

Jackhammer (India) Private Limited, headquartered in Mumbai, operates two state-of-the-art manufacturing units in North Bengal, specializing in the production of GLT Beams adhering to European Standards. With a maximum length of 18 meters and a height of 1.2 meters, these beams are crafted using high-quality Indian and Canadian timber species, available in various shapes including straight or curved. Our in-house Seasoning and Treatment Plant ensures durability and longevity through proper seasoning processes and treatment using Arsenic-Free and Environment-Friendly Preservatives. Our skilled in-house Engineering Team guarantees structural integrity and precision in the installation and construction of Mass Timber Buildings. Guided by the visionary leadership of our founder, Mr. Mahabir Agarwal, we are driven by a passion to reduce global warming and decarbonise the construction sector through sustainable wood solutions. Inspired by his vision, we utilize sustainably harvested high-quality timber to store carbon throughout the product's service life and promote a greener future. Our production process includes seasoning, preservation, finger joints, adhesive and primer application, assembly pressing, slicing, coating, and surface finishing, reflecting our commitment to quality, sustainability, and innovation.



SOURCE OF TIMBER

We procure premium timber from renowned sources, including sustainably harvested Douglas Fir from Canada. This species is globally recognized and established for its excellence in mass timber products. Our sourced timber is certified by esteemed agencies such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). These certifications ensure that the timber is harvested responsibly from sustainably managed forests, adhering to the highest environmental and social standards.

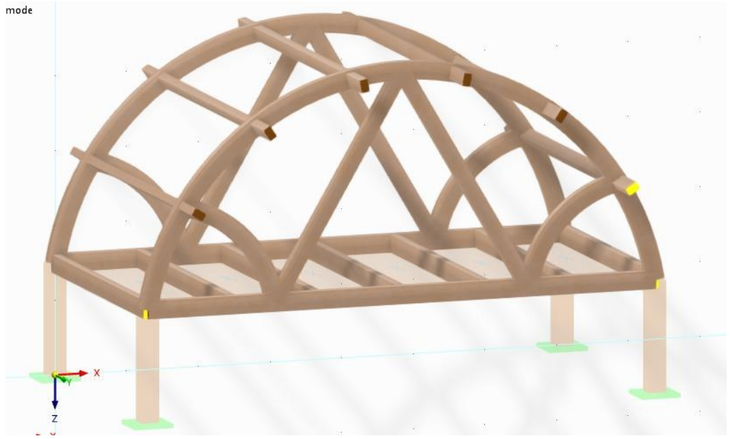
OUR MANUFACTURING UNIT

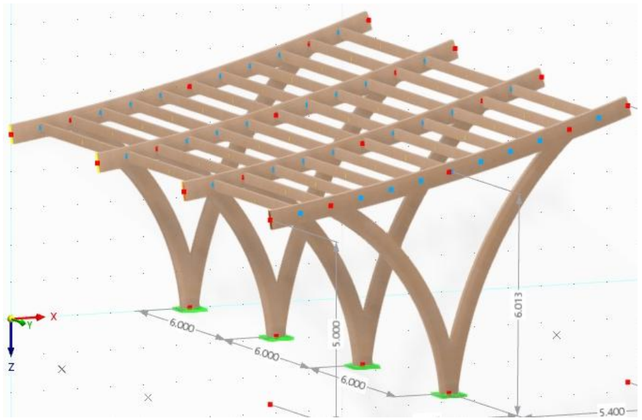
Our state-of-the-art glulam manufacturing unit is equipped with cutting-edge technology and staffed by skilled professionals, ensuring precision, quality, and reliability in every product. With a focus on sustainability and innovation, our factory produces high-quality glulam products that meet international standards,.

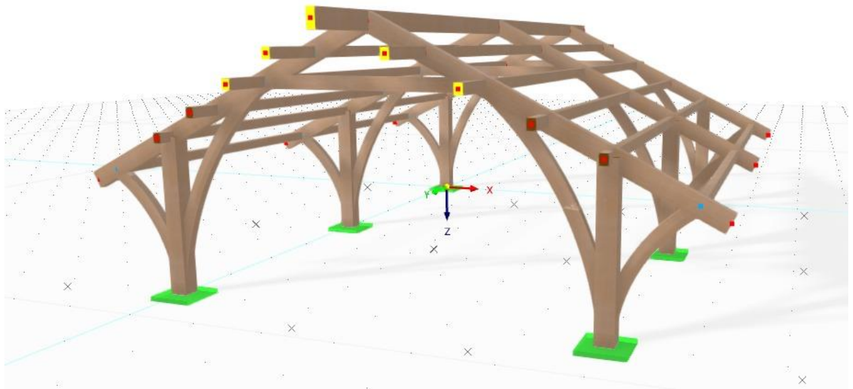
OUR MANUFACTURING UNIT

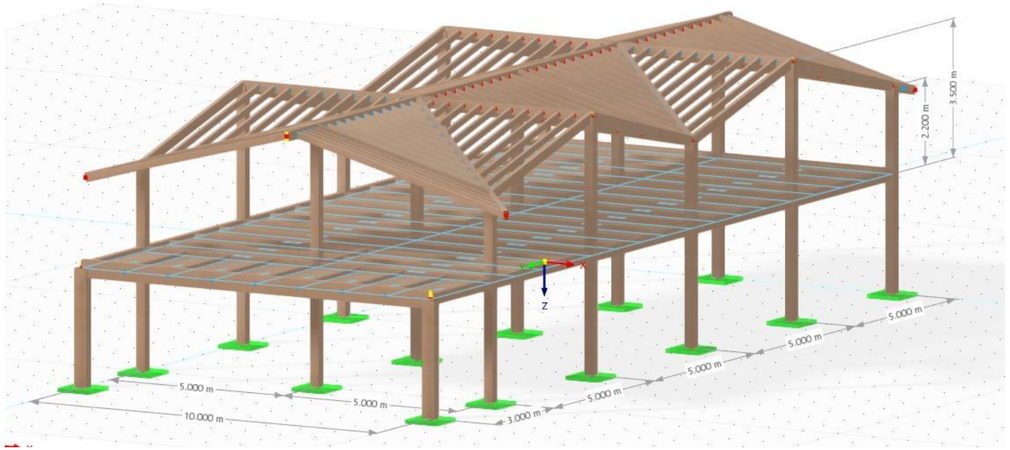
TECHNICAL EXPERTISE

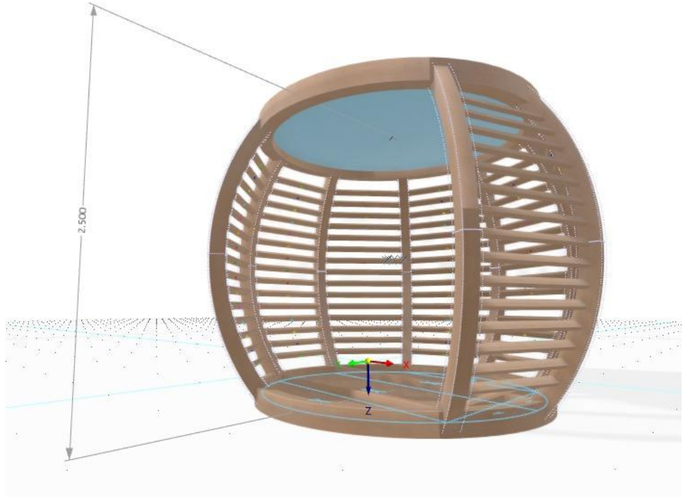
Our team of experienced architects and engineers provide innovative and functional designing solutions, blending aesthetics with technical expertise. From concept to completion, we deliver tailored designs that meet our clients' unique needs and exceed their expectations.

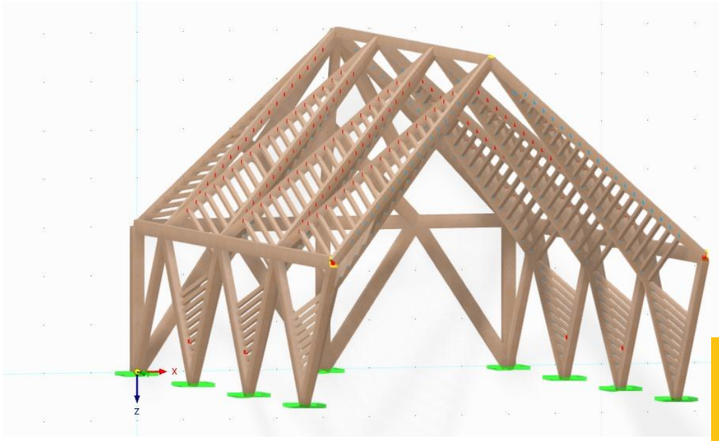






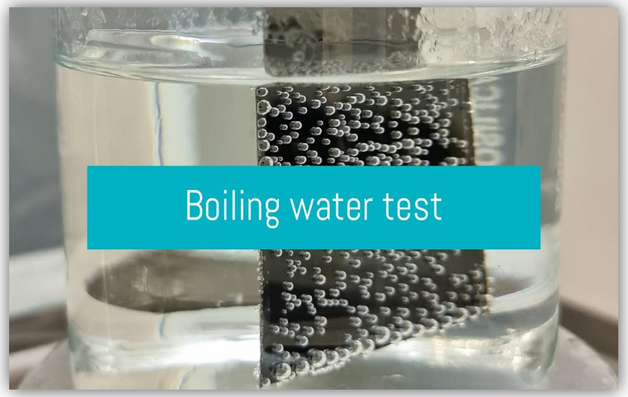






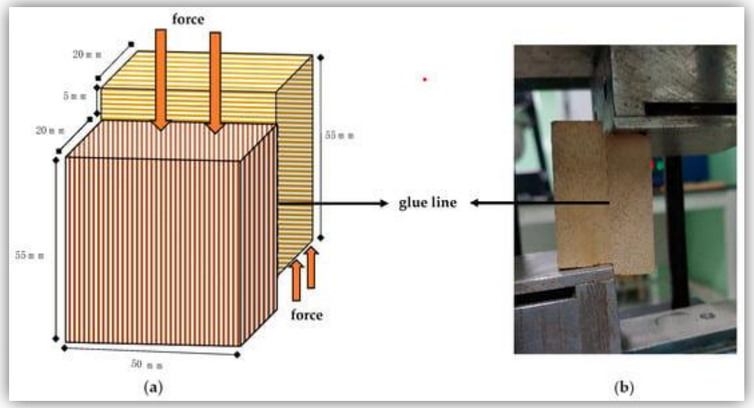
QUALITY TESTING

Grading



Boiling water tests for delamination assessment

Full scale four point bending test



Block shear test for analysing bonding strength

Moisture testing

Samples in hot air oven for delamination

TECHNICAL DATA

Property	Symbol	Glulam strength class						
		GL 20h	GL 22h	GL 24h	GL 26h	GL 28h	GL 30h	GL 32h
Bending strength	$f_{m,g,k}$	20	22	24	26	28	30	32
Tensile strength	$f_{t,0,g,k}$	16	17,6	19,2	20,8	22,3	24	25,6
	$f_{t,90,g,k}$	0,5						
Compression strength	$f_{c,0,g,k}$	20	22	24	26	28	30	32
	$f_{c,90,g,k}$	2,5						
Shear strength (shear and torsion)	$f_{v,g,k}$	3,5						
Rolling shear strength	$f_{r,g,k}$	1,2						
Modulus of elasticity	$E_{0,g,mean}$	8 400	10 500	11 500	12 100	12 600	13 600	14 200
	$E_{0,g,05}$	7 000	8 800	9 600	10 100	10 500	11 300	11 800
	$E_{90,g,mean}$	300						
	$E_{90,g,05}$	250						
Shear modulus	$G_{g,mean}$	650						
	$G_{g,05}$	540						
Rolling shear modulus	$G_{r,g,mean}$	65						
	$G_{r,g,05}$	54						
Density	$\rho_{g,k}$	340	370	385	405	425	430	440
	$\rho_{g,mean}$	370	410	420	445	460	480	490

Property[a]	Symbol	Glulam strength class						
		GL 20c	GL 22c	GL 24c	GL 26c	GL 28c	GL 30c	GL 32c
Bending strength	$f_{m,g,k}$	20	22	24	26	28	30	32
Tensile strength	$f_{t,0,g,k}$	15	16	17	19	19,5	19,5	19,5
	$f_{t,90,g,k}$	0,5						
Compression strength	$f_{c,0,g,k}$	18,5	20	21,5	23,5	24	24,5	24,5
	$f_{c,90,g,k}$	2,5						
Shear strength (shear and torsion)	$f_{v,g,k}$	3,5						
Rolling shear strength	$f_{r,g,k}$	1,2						
Modulus of elasticity	$E_{0,g,mean}$	10 400	10 400	11 000	12 000	12 500	13 000	13 500
	$E_{0,g,05}$	8 600	8 600	9 100	10 000	10 400	10 800	11 200
	$E_{90,g,mean}$	300						
	$E_{90,g,05}$	250						
Shear-modulus	$G_{g,mean}$	650						
	$G_{g,05}$	540						
Rolling shear modulus	$G_{r,g,mean}$	65						
	$G_{r,g,05}$	54						
Density[b]	$\rho_{g,k}$	355	355	365	385	390	390	400
	$\rho_{g,mean}$	390	390	400	420	420	430	440

[a] Properties given in this table have been calculated according to 5.1.5 on the basis of the layups given in Table 2. If different layups for a certain strength class lead to different characteristic values the lowest values are given here.

[b] Calculated as the weighted mean of the densities of the different lamination zones, see 5.1.5.3, 5th paragraph.

PRODUCTS RANGE

Wood species	We use imported timber from sustainably managed forests, certified by organizations such as FSC and PEFC. We are using worldwide proven timber species.
Quality	Visible and Non visible quality.
Strength classes	**Homogenous** GL 24 h, GL 28 h, GL 30 h, GL 32 h **Combined** GL 24 c, GL 28 c, GL 30 c, GL 32 c
Surface and finger joint gluing	Structural grade one component polyurethane adhesive.
Width	Up to 220 mm.
Height	Up to 1500 mm (straight) and up to 1700 mm (curved).
Length	Up to 18 metres.

Parallel beams

Pre cambered beams

Sloped beams with straight bottom chord

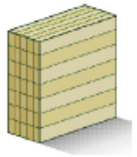
Sloped beams with arched bottom chord

Curved beams

Free shapes

Fish beams

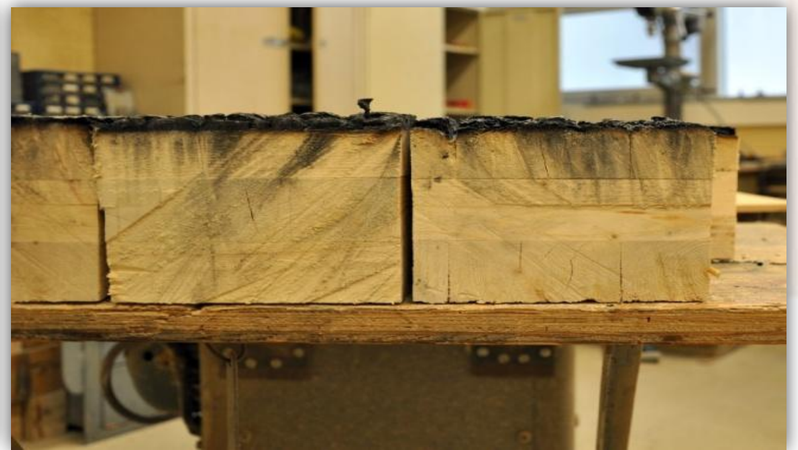
Trusses

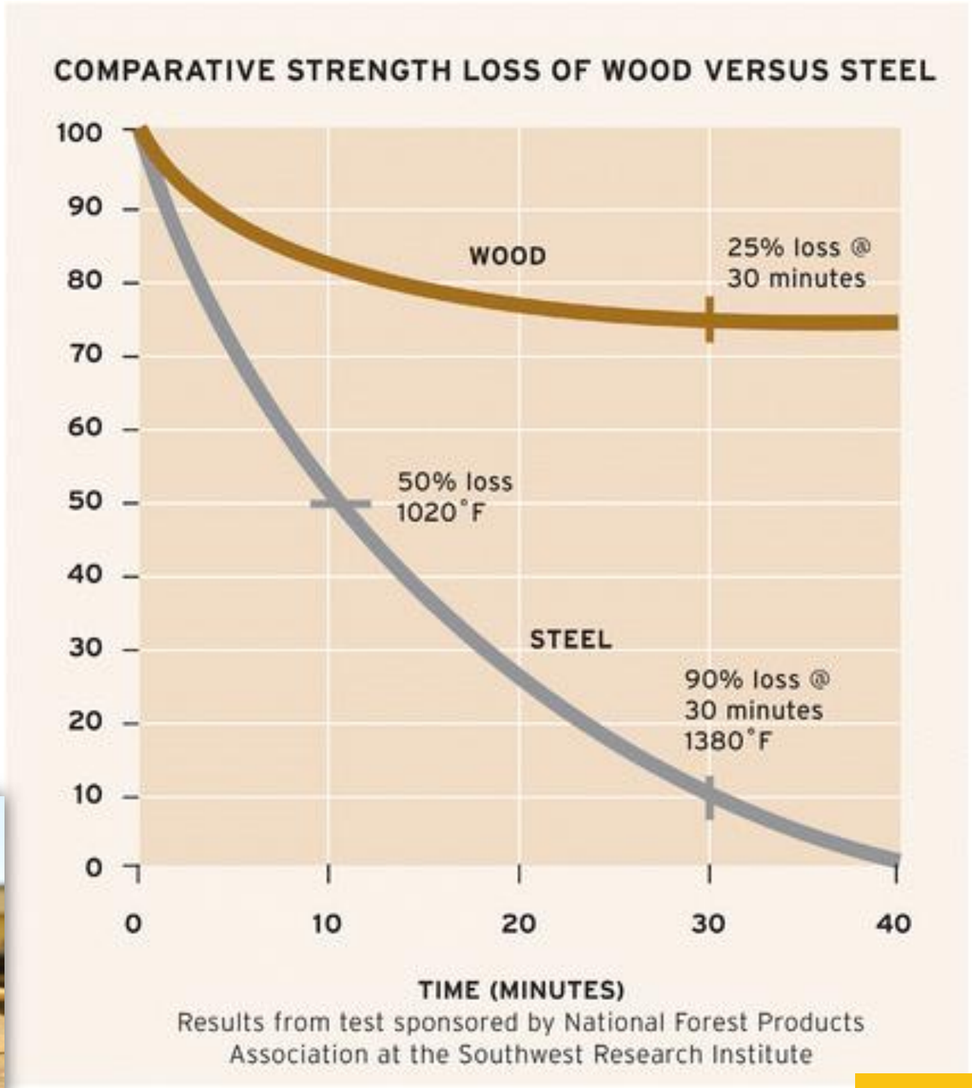


Double glued beam

MASS TIMBER & FIRE

While it's impossible to create completely fireproof buildings, certain materials exhibit inherent fire-resistant properties. Glulam, in particular, demonstrates unique characteristics when exposed to fire. Instead of igniting or melting, timber undergoes a process called "charring," where the surface layer is transformed into a carbonized, insulating barrier. This charred layer effectively protects the underlying timber from further damage, providing a crucial window of time for safe evacuation and fire fighting efforts.





CHALLENGES

Mass timber is a revolutionary building material that offers numerous benefits, including sustainability, reduced carbon footprint, and improved building performance. However, despite its many advantages, the adoption of mass timber in India faces several challenges. Some of the key challenges and barriers to the adoption of mass timber in India are:

- ✓ **Technical Challenges.**
- ✓ **Regulatory Barriers.**
- ✓ **Market and Economic Barriers.**
- ✓ **Logistic and Supply Chain Challenges**

TECHNICAL

❖ **Lack of Awareness:**

✓ Good construction practices.

✓ Sustainable forest management and scientific harvesting.

✓ Benefits of timber as a construction material.

✓ Limited awareness hinders research and development (R&D) efforts, resulting in insufficient data generation.

❖ **Absence of standardized building codes and manufacturing regulations.**

REGULATORY

❖ **Outdated laws and policies :**

✓ Outdated forest regulations, including guidelines for permit, have hindered the development of India's timber market, resulting in an unorganized industry to date

❖ **Unorganized timber market:**

✓ India's unorganized timber market has led to a heavy dependence on imported timber species, which are subject to cumbersome and complex import procedures.

PROJECT COST ECONOMICS

❖ **Life cycle cost:**

✓ Reduced power bills.

✓ Lower foundation costs due to lighter structures.

✓ Minimized landscape damage.

✓ Shorter construction timelines.

✓ Lower finishing and interior designing costs.

✓ High recyclability of timber, resulting in lower overall project costs compared to other construction materials.

❖ **Lack of incentives:**

✓ Lack of government incentives and support for green building practices hinders the widespread adoption of mass timber construction.

LOGISTIC & SUPPLY

❖ **Import dependency :**

Higher dependence on imports leads to two major issues:

✓ Maintaining huge stocks to ensure availability

✓ Delayed project timelines due to waiting for shipments

❖ **Regulatory procedures:**

✓ Lengthy clearance processes exceed transportation time

❖ **Local transportation challenges:**

✓ Inadequate infrastructure hinders the transportation of longer span beams

SUGGESTIONS

❖ Awareness among stakeholders.

❖ Development of market.

❖ Inclusion of mass timber in government projects and schemes at national level.

❖ Incentivization of mass timber construction. Inclusion in schemes like LEED , GRIHA etc.

❖ Collaborative efforts between industry stakeholders, government bodies, and manufacturers to promote mass timber as a sustainable and viable construction option in India.

THANK YOU

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