



Accelerating the Future of Sustainable Building Materials!

Henkel Engineered Wood Adhesives Reference Projects Brochure

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Mass timber technology is emerging from its European origin finding more adopters the world over. Today, it is being interpreted and expressed in so many different ways that Henkel Engineered Wood decided to showcase a selection from our customers' portfolios.

Mass timber might be made in factories using standardized, quality-controlled processes, and shipped in a prefabricated format, but there are countless variations in the way that can be applied.

Here we present 35 examples of how our customers' products are used in award-winning commercial and residential buildings. Be inspired by how mass timber is making its way into resort hotels, schools, flagship corporate headquarters, student housing, luxury condominiums, sport facilities, and even parking garages and manufacturing plants.

Our customers make Cross Laminated Timber, Glulam and Finger Jointed Timber products from wood that is sourced from sustainably managed forests and bonded with Henkel Loctite structural adhesives.

Their processes create a solid wood material with the strength of concrete but a lower carbon footprint and a lighter weight. In turn, architects and engineers use it to fulfil green building strategies, overcome construction site challenges, or simply create beautiful iconic designs.

Sustainable Construction Materials for Today and Tomorrow

The projects here demonstrate exhibit some of the benefits of using our customers' mass timber. These include the ability to store CO₂ in the building, healthier indoor air quality, desirable thermal and acoustic properties, and safer, cleaner construction sites with shorter timelines.

Henkel is committed to supporting our customers in the quest to enable taller, safer, affordable sustainable buildings with their own unique brands of high-quality engineered wood solutions.

Whether it is delivering adhesives with productivity and performance benefits, proactive certification, and transparent life cycle assessment activities, or sharing decades of industrial process know-how, Henkel Engineered Wood strives to be the partner of choice around the world.

Accelerate the era of more sustainable building materials with Henkel Engineered Wood!

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GlaxoSmithKline Head Office

Quebec, Canada, 2011

The Canadian headquarters of GlaxoSmithKline, a multinational pharmaceutical company, has outstanding environmental credentials (LEED-NC Gold certification) and an iconic design enabled by the skillful combination of glass and mass timber materials. Employees have a pleasant workplace with natural lighting, optimized ventilation, atriums, and glowing exposed wood in the form of precisely turned columns, beams, and decking. Various sizes of glulam and CLT were used to create interior spaces with productivity-enhancing features. Wood was integral to the acoustic and air-quality standards, which would have been difficult to reach using conventional building materials.

- Awarded the 2013 Prix D'Excellence Cecobois and the Lauréat Du Prix Fidéides 2012
- FSC-certified mass timber materials
- CLT elements are manufactured with LOCTITE HB X202 and glulam was made with LOCTITE HB X602, HB X202, GT20

Year	2011
Type	Commercial office
Location	Quebec, Canada
Area	2,700 m ²
Timber Manufacturer	Chantiers Chibougamau
Segment	CLT, glulam
Architect	Coarchitecture
Adhesive	CLT: LOCTITE HB X202; glulam: LOCTITE HB X602, HB X202, GT20
CO₂ savings	460 tons of CO ₂ stored in the structure



GlaxoSmithKline (GSK) Building, University of Nottingham

Nottingham, United Kingdom, 2015



The GSK Building presented a challenge: design a pleasant, healthy workplace for scientific research teams and build to the highest environmental and sustainability standards. The result is the GSK Carbon Neutral Laboratory for Sustainable Chemistry. Built primarily with mass timber, the two-storey building includes teaching and research laboratories, offices, seminars, and a winter garden. With its own photovoltaic plant and energy-efficient infrastructure, it is built to be carbon neutral over its assessed life cycle.



- First higher education project to achieve BREEAM Outstanding and LEED Platinum
- Timber-to-timber dowel connections minimized use of steel
- PEFC- and FSC-certified timber
- CLT elements are manufactured with LOCTITE HB S109, HB S409 and HB S049



Year	2015
Type	Institutional education
Location	Nottingham, United Kingdom
Area	4,500 m ²
Timber Manufacturer	Binderholz
Segment	1,420 m ³ CLT
Architect	The Fairhursts Design Group
Contractor	Morgan Sindall Group
Adhesive	LOCTITE HB S109, HB S409, HB S049



Pomerleau Regional Office

Lévis, Canada, 2016

When Pomerleau, one of Canada's leading construction companies, commissioned its regional offices in Lévis, Quebec, it presented a design challenge with a site that is located between a busy highway and pristine forests. Fortunately, there was no limitation on choice of materials. The result is a unique, light-filled design featuring mass timber. But it also features polished concrete flooring, plate steel furniture, and railings. Mass timber components unify the interior and exterior with the surrounding forests. Natural pine in ceiling and roof elements is exposed, creating warmth. The building's three wings each have stunning forest views, improving wellness and productivity of the office staff. Large, fully glazed windows in meeting rooms and the dining area face onto an intimate courtyard with the forest just beyond.

- Recipient of Prix d'Excellence Cecobois 2019 in the exterior finishing category
- CLT elements are manufactured with LOCTITE HB X202; glulam with LOCTITE HB X602, HB X202, GT20

Year	2016
Type	Commercial office
Location	Lévis, Canada
Area	12,552 m ²
Timber Manufacturer	Chantiers Chibougamau
Segment	CLT, glulam
Architect	Lemay
Wood species	Pine
Adhesive	CLT: LOCTITE HB X202; glulam: LOCTITE HB X602, HB X202, GT20



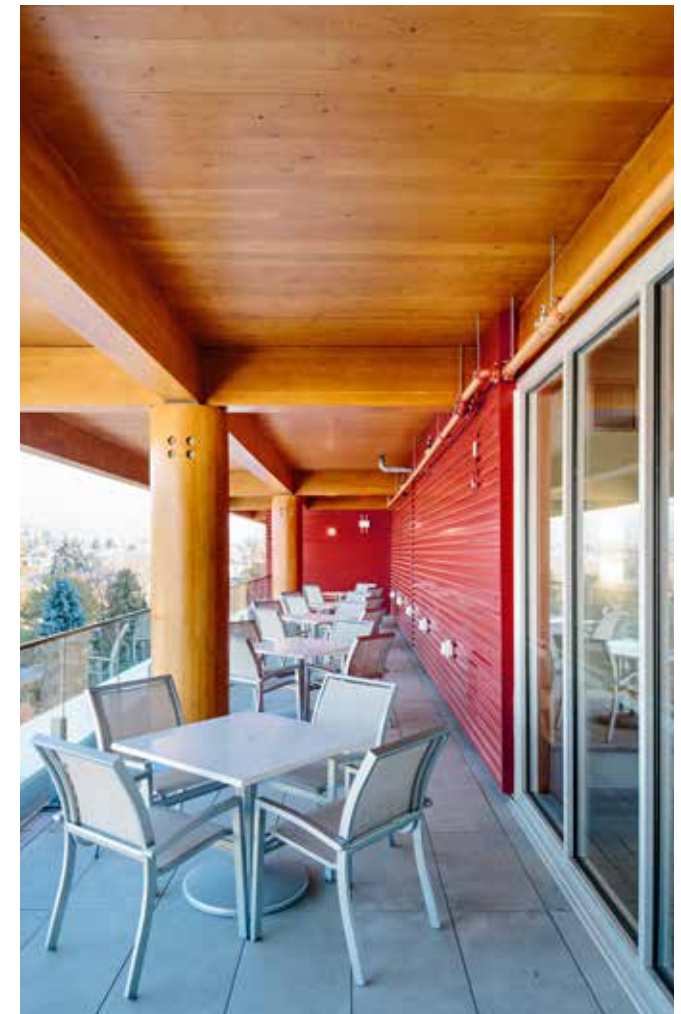
Penticton Lakeside Resort

Penticton, Canada, 2017

Overlooking the shores of Lake Okanagan, a popular vacation spot in Western Canada, is a mass timber six-storey addition to the Penticton Lakeside Resort. The award-winning hotel is made with mass timber sourced from certified forests and produced locally by Structurlam. Despite it being unusual for a taller building, the owners of the resort chose mass timber for the 70-unit annex because renewable wood matched their sustainability and aesthetic values. The CLT elements are structural, but they also serve as warm decorative finishing in the hotel suites, corridor ceilings, columns, and atrium walls. Using mass timber meant a smaller construction crew and substantial financial savings, such as a lower cost foundation (because the weight of the building is significantly lower than traditional materials), while prefabrication led to a shorter construction time compared to conventional materials.

- Winner of 2018 Wood Design Awards, Commercial category, and the Hospitality Award of Excellence, Thompson Okanagan Commercial Building Awards 2017
- CLT elements are manufactured with LOCTITE HB X202

Year	2017
Type	Commercial hotel
Location	Penticton, Canada
Area	11,849 m ²
Timber Manufacturer	Structurlam
Segment	CLT
Architect	HDR
Contractor	Greyback Construction
Wood species	Douglas fir
Adhesive	LOCTITE HB X202
CO₂ savings	The building stores the equivalent of CO ₂ emissions from 1,000 cars for one year



Shane Homes YMCA at Rocky Ridge

Calgary, Canada, 2017

Natural wetlands and rolling foothills are the backdrop of the Shane Homes YMCA at Rocky Ridge, a stunning community center that features mass timber. The three-storey center measures 26,385 m², housing multiple fitness and sport facilities as well as a public library, theater, youth center, and meeting rooms. One of its outstanding features is the curvilinear shape and undulating roof, inspired by the surrounding geography. The exterior is covered in brass panels that will weather to match the countryside. The structural system features exposed, curved long-span glulam beams and cross-bracing with steel supports. Despite the design's complexity, the prefabrication of the glulam elements and the use of parametric and BIM software brought significant cost savings to the project, while simplifying material shipping and storage requirements.

- LEED Gold certification
- Awarded the 2019 Wood WORKS! Prairie Wood Design Award, 2018 Canadian Wood Council Award, and 2018 Prairie Design Award of Excellence
- CLT elements are manufactured with LOCTITE HB X202

Year	2017
Type	Institutional leisure
Location	Calgary, Canada
Area	26,385 m ²
Timber Manufacturer	Structurlam
Segment	2,750 m ³ glulam
Architect	GEC Architecture
Contractor	PCL Construction
Wood species	Douglas fir
Adhesive	LOCTITE HB X202
CO₂ savings	2,537 tons of CO ₂ stored in the wood



Tallwood House, Brock Commons, University of British Columbia

Vancouver, Canada, 2017

In 2013, the University of British Columbia began a strategy to demonstrate, monitor, and study wood-based solutions for buildings in Canada. So, when it needed a student residence, it specified a tall mass timber building. It is so tall that special regulations were formulated to ensure comfort, safety, and durability. The 18-storey, 53-meter-high residence is now home to 404 students each year. With concrete in the foundation, ground floor, stairwells, and elevator cores, it is a hybrid mass timber construction. The designers praise engineered wood's lighter structure, which required a smaller foundation and fewer materials, enabled quick construction time, and has good recycling potential.

- North American forests grow the amount of wood used in the project in about 6 minutes
- Designed to meet LEED Gold standard
- 679 tons of greenhouse gas emissions avoided
- CLT elements are manufactured with LOCTITE HB X202

Year	2017
Type	Residential institutional
Location	Vancouver, Canada
Area	15,115 m ²
Timber Manufacturer	Structurlam
Segment	CLT
Architect	Acton Ostry Architects Inc.
Contractor	Urban One Builders
Wood species	Douglas fir
Adhesive	LOCTITE HB X202
CO₂ savings	1,753 tons of CO ₂ stored in the building



Creaform Head Office

Lévis, Canada, 2017

Creaform develops advanced 3D scanning systems for the world's leading aerospace and automotive manufacturers. It wanted a workplace that nurtures creativity and well-being, but also one that harmonizes with the landscape of rolling green hills, bicycle paths, and woods on the shores of the Saint Lawrence River. Mass timber was chosen for structural components, such as roof beams and ceiling panels. It was an environmental choice, but also a practical one. It enables easier installation, as well as access to ventilation ducts and lighting infrastructure. And the wood's acoustic properties can be engineered to create an enjoyable and productive workplace.

- Forest Stewardship Council (FSC)-certified mass timber components
- The building received the Prix d'Excellence Cecobois 2019 for interior design
- CLT elements are manufactured with LOCTITE HB X202
- The glulam uses LOCTITE HB X602, X202, GT20

Year	2017
Type	Commercial office
Location	Lévis, Canada
Area	7,060 m ²
Timber Manufacturer	Chantiers Chibougamau
Segment	CLT
Architect	Coarchitecture
Adhesive	CLT: LOCTITE HB X202; glulam: LOCTITE HB X602, X202, GT20



25 King

Brisbane, Australia, 2018

At 45 meters in height, 25 King is one of Australia's tallest wooden office buildings. The nine-storey tower was built to promote the well-being of its occupants. It also sets high environmental performance targets for the construction. In the meantime, 25 King has achieved a six-star Green Star rating and an As-Built v1.1 rating, a Platinum WELL Core and Shell Certification. Both CLT and glulam elements were used throughout, enabling prefabrication before shipment, resulting in less time and fewer resources required for construction. The project team also benefited from less waste,



less noise, lower CO₂ emissions, and less dust generated during the build period.

- More than 6,000 m³ of CLT and glulam were used, an amount of timber that grows in Austria sustainably managed forests in less than two hours
- Biophilic design principles include the warmth of exposed timber surfaces, natural light, and abundance of living greenery
- CLT elements are manufactured with LOCTITE HB S109 and HB S049



Year	2018
Type	Commercial office
Location	Brisbane, Australia
Area	14,921 m ²
Timber Manufacturer	Stora Enso
Segment	CLT
Architect	Bates Smart
Contractor	Lendlease
Wood species	Spruce
Adhesive	LOCTITE HB S109, HB S049
CO₂ savings	CO ₂ stored in the building is equivalent to taking 1,600 local automobiles off the roadways



Carbon12

Oregon, USA, 2018

Carbon12, a mid-rise condominium with 14 units on eight floors, exudes elegant natural luxury. At 26 meters, Carbon12 is also the tallest mass timber building in the USA, as of January 2020. It is a unique blend of glass and timber, with interior spaces featuring exposed structural beams and columns. Wood is also visible in the ceilings and floors, bringing warmth and comfort to occupants. Designed with sustainability as the guide, it features a solar-ready roof, high-performing insulation, an automated underground parking garage, and retail space on the ground floor that brings the residence effectively into the local community.

- Ability to withstand earthquakes (or other natural forces) thanks to a steel buckling-restrained braced frame core
- CLT elements are manufactured with LOCTITE HB X202

Year	2018
Type	Residential multifamily
Location	Oregon, USA
Area	3,902 m ²
Timber Manufacturer	Structurlam
Segment	CLT
Architect	Path Architecture
Contractor	Kaiser Group
Wood species	Douglas fir, spruce, pine,
Adhesive	LOCTITE HB X202
CO₂ savings	132 tons CO ₂ stored in the building



Hardman Square Pavilion

Manchester, UK, 2018

Contrasting with the glass and metallic urban architecture in Manchester's Spinningfields district, the Hardman Square Pavilion is a four-storey timber design featuring a facade in multiple materials, hanging plants, and greenery. It accommodates several high-end food and drink venues, including a semi-enclosed rooftop terrace for events. An innovative mix of steel, glulam and CLT was used for the structural and load-bearing elements throughout, a combination that produces a stunning visual design. The effect of the new building softens the neighborhood with its inviting organic look amidst the urban setting. The project has been awarded with RIBA Regional Awards North West 2020 and Wood Award 2019 Commercial & Leisure award.

- Volume of spruce used is equivalent to 0.04 hours of Forest Stewardship Council (FSC)-certified Austrian forest growth
- CLT elements are manufactured with LOCTITE HB S109 and HB S049

Year	2018
Type	Commercial restaurant
Location	Manchester, UK
Area	1,150 m ²
Timber Manufacturer	Stora Enso
Segment	290 m ³ CLT
Architect	Sheppard Robson
Contractor	BAM Construction
Wood species	Spruce, larch
Adhesive	LOCTITE HB S109, HB S049
CO₂ savings	373 tons of CO ₂ stored in the building



Hurstpierpoint Performing Arts Centre

Hurstpierpoint, UK, 2018



The Hurstpierpoint Performing Arts Centre is a mass timber three-storey auditorium that seats up to 370 guests. Located at Hurstpierpoint College, a boarding school in West Sussex serving 700 students, the building is designed to support a thriving program of arts with optimized acoustic, atmospheric, and aesthetic standards. It is flexible enough to host drama, dance, music, theater, and school assemblies. The CLT and glulam elements are used in the frame and structure. Glulam trusses span the full width of the auditorium, supporting the technical equipment and access decks. Glulam columns support the gallery loges. An excellent thermal performance,

insulation, and air tightness were achieved. The building outperforms conventional theaters. For example, its estimated energy consumption is 64 kWh/m² per annum versus 78 kWh/m² for comparable structures.

- Awarded the 2020 Structural Timber Award, Wood Award 2020, and Sussex Heritage Trust 2019, Public and Community Award
- CLT elements are manufactured with LOCTITE HB S049, HB S509 and HB S179/FlexA

Year	2018
Type	Institutional cultural
Location	Hurstpierpoint, UK
Timber Manufacturer	KLH
Segment	CLT
Architect	Burrell Foley Fischer
Contractor	MCS Construction
Wood species	Spruce, cedar, maple, poplar
Adhesive	LOCTITE HB S049, HB S509, HB S179/FlexA

Stora Enso CLT Mill

Gruvön, Sweden, 2019

One of the leading suppliers of wood products in the world, Stora Enso, decided to build its third CLT plant, with an annual production capacity of 100,000 m³, using its own mass timber building solution. In one of the world's largest and most modern CLT manufacturing plants, the employees have a workplace filled with light and the warm organic atmosphere created by wood interior. The halls feature visible CLT elements throughout, generous use of skylights, and exposed beams in the ceiling/roof area. The modern plant, a result of a collaboration between Tengbom, Skanska, and Stora Enso, was inaugurated in 2019.

- Construction of the timber superstructure took 10 weeks
- CLT elements are manufactured with LOCTITE HB S089 and HB S049

Year	2019
Type	Industrial manufacturing
Location	Gruvön, Sweden
Area	15,000 m ²
Timber Manufacturer	Stora Enso
Segment	4,425 m ³ CLT
Architect	Tengbom
Contractor	Skanska
Wood species	Spruce
Adhesive	LOCTITE HB S089, HB S049



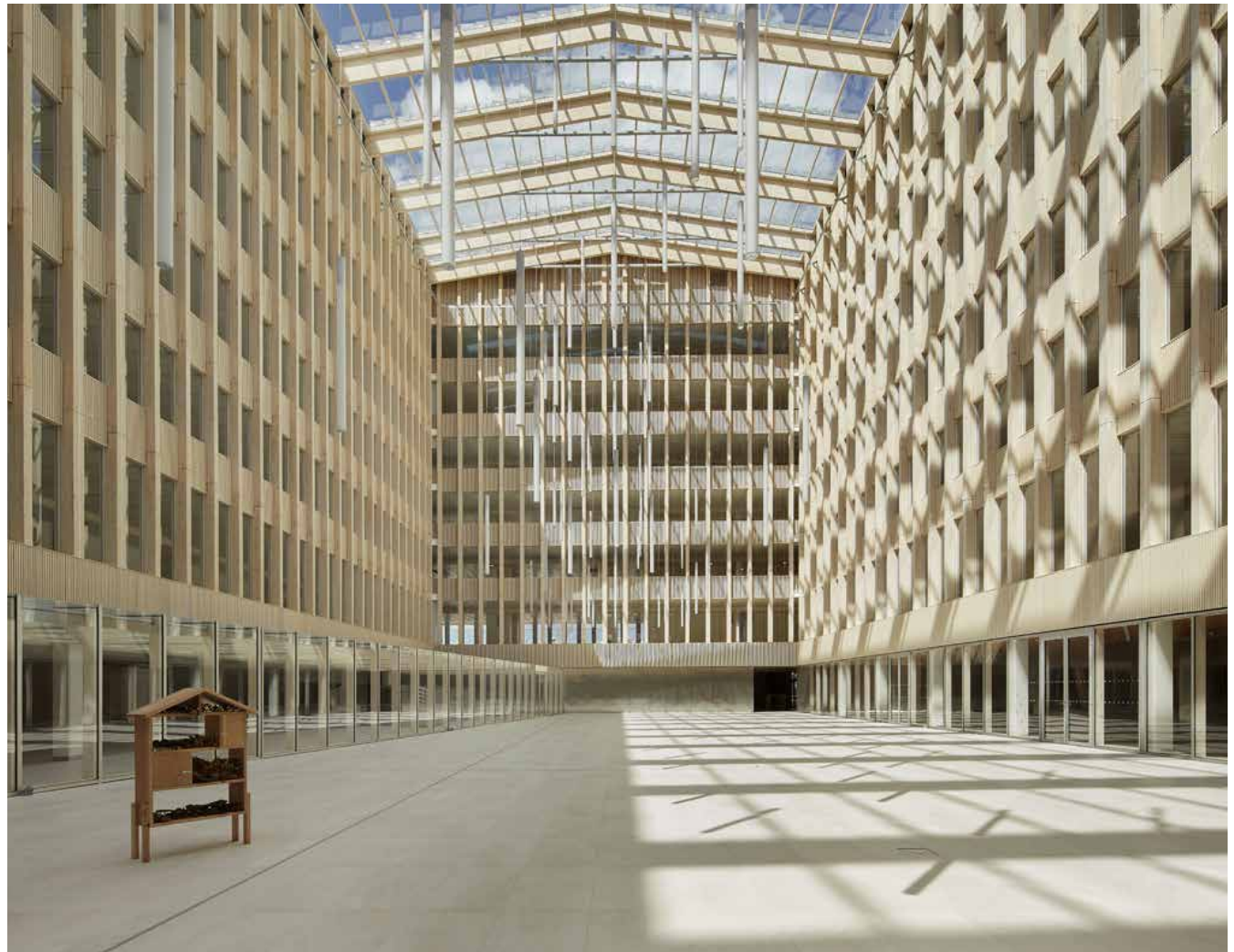
The Pulse

Saint-Denis, France, 2019

The Organising Committee for the Paris 2024 Olympic and Paralympic Games recently moved into its stylish and comfortable new offices in the Pulse. Located in the Portes de Paris business park, the Pulse is a seven-storey hybrid mass timber office building with a concrete core and a structural CLT facade. One of the building's most striking features, besides its low-carbon credentials, is a vast atrium with a glass roof letting in natural light and an interior space where wood

elements are visible in the walls, floors, ceilings, columns, and beams. Exterior aluminum slats in three different colors protect the building's wooden frame, but they also reflect sunlight to help control interior temperatures.

- Certifications include BREEAM Excellent, HQE Excellent, and BBCA Excellent (low carbon building)
- CLT elements are manufactured with LOCTITE HB S089 and HB S049



Year	2019
Type	Commercial office
Location	Saint-Denis, France
Area	28,869 m ²
Timber Manufacturer	Stora Enso
Segment	2,880 m ³ CLT
Architect	BFV Architectes
Contractor	ICADE
Adhesive	LOCTITE HB S089, HB S049

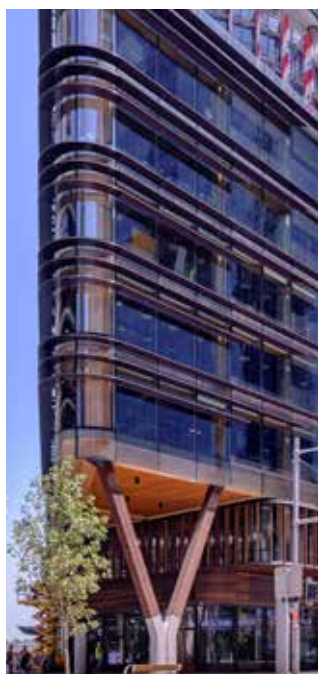


International House Sydney

Sydney, Australia, 2019

The International House Sydney is a trailblazing seven-storey mass timber office building located in Sydney's bustling Barangaroo district. As a six-star Green Star-certified office tower, it is connected to a district cooling plant and has a photovoltaic plant on the roof. It was the first mass timber commercial building in Australia, and one of the largest. Its construction in a dense urban setting proved that mass timber is simpler, quieter, safer, and quicker to build with than conventional materials. Most recently it won the World Architecture Network's Commercial Project under 50,000sqm (Silver) Award 2019 and the Wood in Architecture (Silver) Award 2019.

- Load-bearing structures: floors, columns, walls, roof, lift shafts, egress stairs, and bracing bays are constructed with timber; concrete is used at ground floor level
- The volume of spruce used is equivalent to one day of Forest Stewardship Council (FSC)-certified Austrian forest growth
- CLT elements are manufactured with LOCTITE HB S109 and HB S049



Year	2019
Type	Commercial office
Location	Sydney, Australia
Area	8,000 m ²
Timber Manufacturer	Stora Enso
Segment	2,000 m ³ CLT
Architect	Tzannes Associates
Contractor	Lendlease
Wood species	Spruce
Adhesive	LOCTITE HB S109, HB S049
CO₂ savings	2,976 tons of CO ₂ stored in the building

Roofing of Rulantica Water Park

Rust, Germany 2019

Rulantica is a seashell-shaped indoor water park in Rust, Germany, built to amaze up to 5,000 guests a day with its mystical Nordic-themed attractions and sheer vastness. Besides 17 waterslides, the biggest wave pool in Germany, a “Wild River” and a “Lazy River,” one of the water park’s outstanding features is its wooden roof arching above the play areas. The mass timber construction is functional, environmentally positive, and aesthetically pleasing. Measuring 20 meters in height and 10,500 m² in area, the roof is supported by 300 m³ of Binderholz CLT and 1,450 m³ of glulam. The roof and trusses are made to withstand the water park’s extreme climatic and technical conditions. The engineering of the main hall roof and ceiling support was designed to let natural light fill the area, and to provide an unobstructed view of a large-scale video display.

- Despite its size and intricate design, the building was completed in 24 months
- CLT elements are manufactured with LOCTITE HB S109
- The glulam elements are made with LOCTITE HB S409 and HB S049

Year 2019

Type

Commercial tourism

Location

Rust, Germany

Area

32,600 m²

Timber Manufacturer

Binderholz

Segment

300 m³ CLT; 1,100 m³ glulam

Architect

pbr Planungsbüro Rohling AG

Wood species

Spruce

Adhesive

CLT: LOCTITE HB S109; glulam:
LOCTITE HB S409, HB S049



Mjøstårnet

Brumunddal, Norway, 2019

Located in Brumunddal on the forested shores of Norway's largest lake, the 18-storey Mjøstårnet is the world's tallest timber building, measuring 85.4 meters in height. By using locally sourced materials from sustainably managed forests for both exterior and interior structural elements, the tower exudes a natural organic beauty. It is home to a four-storey office park, 33 apartments, and a 72-room hotel. Since its construction, Mjøstårnet has been winning international awards and accolades, particularly for its sustainability achievements. Most recently, it won the New York Design Award (Gold) 2018, Structural Engineering Award 2021, and Award of Excellence, 2021 CTBUH Awards.

- Truss beams and columns are load-bearing mass timber; concrete is used in the foundation as well as in the first and top floors
- By not using steel beams, up to 12 times less fossil fuel and two to three times less energy is needed in the beam manufacturing process
- CLT elements are manufactured with LOCTITE HB S089 and HB S049

Year	2019
Type	Commercial tourism
Location	Brumunddal, Norway
Area	11,300 m ²
Timber Manufacturer	Stora Enso, Moelven Limitre
Segment	CLT
Architect	Voll Arkitekter AS
Contractor	Hent AS
Wood species	Spruce, Scots pine
Adhesive	LOCTITE HB S089, HB S049



Formula 1 Grand Prix du Canada Paddocks

Quebec, Canada, 2019

With a time budget of only 10 months between Formula 1 racing seasons, mass timber was naturally the building material of choice for Montreal's new Grand Prix Paddocks. Equipped with its own photovoltaic plant, the Paddocks can accommodate 5,000 spectators as well as broadcasters and Formula 1 teams. It features a spectacular 300-meter diamond-grid, canopy-style roof made of 1,425 m³ of engineered wood. The wooden covering provides shade to both the rooftop lounges and the loges area. It also harmonizes with the surrounding Parc Jean-Drapeau landscape. Prefabricated mass timber components were used that enabled both a short construction time and the potential to be easily dismantled and reconfigured in the future. It has won the 2018 the Award of Excellence by Canadian Architect and the Grand Prix d'Excellence 2020 from the Ordre des Architectes du Québec.

- Made with FSC-certified mass timber
- The CLT elements are manufactured with LOCTITE HB X202
- The glulam elements are made with LOCTITE HB X602, HB X202 and GT20



Year	2019
Type	Commercial special
Location	Quebec, Canada
Timber Manufacturer	Chantiers Chibougamau
Segment	CLT, glulam
Architect	Les Architectes FABG
Contractor	Geyser Group
Adhesive	CLT: LOCTITE HB X202; glulam: LOCTITE HB X602, HB X202, GT20
CO₂ savings	The mass timber roof is estimated to store 1,000 tons of CO ₂

The Green House

London, UK, 2019

The Green House in London is a remarkable renovation and extension of an office block built in the 1960s. It accommodates 50 social change, non-profit, and charitable organizations of varying sizes, so the office layout had to be flexible and adjustable. The solution to these challenges is a CLT timber frame construction that enabled both a front and a rear extension to the existing building, significantly increasing the office spaces. With an organic aesthetic, a healthy atmosphere, and strategically used wood, the carbon footprint of the Green House is minimized, making it worthy of its name. A glass facade facilitates the passive regulation of noise, heating, sunlight, and ventilation. Besides a lime and timber atrium, there is a spectacular cantilevered staircase with glulam treads with an innovative CLT spine element created by Stora Enso.

- Recipient of the 2019 AJ Retrofit Award
- CLT elements are manufactured with LOCTITE HB S089 and HB S049



Year	2019
Type	Commercial office
Location	London, UK
Area	4,600 m ²
Timber Manufacturer	Stora Enso
Segment	CLT
Architect	Waugh Thistleton Architects
Contractor	ARJ Construction
Adhesive	LOCTITE HB S089, HB S049



Bjergsted Financial Park

Stavanger, Norway, 2019

The new headquarters of Norway's SR Bank is located in an outstanding commercial mass timber property. It blends the transparency and light of a glass facade with the timeless qualities evoked by the visible wooden structural elements. Mass timber and wood are visible above ground, including glowing wood structural beams and columns, a cantilevered roof, and a spectacular staircase. Underground parking levels are constructed out of reinforced concrete. Its unique shape and building material choices enable it to span two rather different neighborhoods. On one side is the old town of Stavanger, with its picturesque nineteenth-century clapboard housing, and on the other side is the more modern urban architecture of the busy coastal city's center. Sustainability, safety, and occupant well-being drove the decision to use mass timber.

- One of Europe's largest mass timber buildings
- Designed to achieve BREEAM-NOR Excellent certification
- CLT elements are manufactured with LOCTITE HB 110 and HB S709

Year	2019
Type	Commercial office
Location	Stavanger, Norway
Area	22,600 m ²
Timber Manufacturer	Züblin
Segment	2,000 m ³ CLT
Architect	Helen & Hard, SAAHA
Contractor	Veidekke AS
Wood species	Beech, spruce
Adhesive	LOCTITE HB 110, HB S709

Swatch building complex

Biel, Switzerland, 2019

When Swatch Group Ltd, the world's largest watchmaking and jewelry company (including the brands Breguet, Blancpain, Omega, Harry Winston), commissioned star architect Shigeru Ban to design its new headquarters in Biel, Switzerland, it was bound to be an iconic collaboration. And with thousands of CLT and glulam components, it was not a small project either. The result is an unforgettable, beautifully unconventional commercial complex. It accommodates three office buildings, two museums, a conference hall, a five-storey headquarters measuring 25,000 m², and a four-storey fabrication facility for Omega watches. The honeycomb timber facade is just one of the outstanding aspects of a design that unequivocally exhibits mass timber's potential as a building material.

- Timber sourced from sustainably managed Swiss forests
- Swatch estimates that the wood used for the Omega brand's building is replenished in Swiss forests in 2.6 hours
- Glulam beams used in all three buildings were manufactured with LOCTITE HB S309 and HB 181

Year	2019
Type	Commercial office
Location	Biel, Switzerland
Area	11,000 m ² (facade only)
Timber Manufacturer	Roth Burgdorf
Segment	Glulam
Architect	Shigeru Ban
Wood species	Spruce
Adhesive	LOCTITE HB S309, HB 181





Auchan Grand Carré
Villeneuve-d'Arcy, France, 2019



When Auchan Retail International wanted to create inspiring, healthy, and modern office spaces for its head office employees as well as third-party tenants, it chose a site in Villeneuve-d'Ascq, located in Lille in the far north of France. At 15,000 m² it is one of the largest mass timber property complexes in France. The five-building complex consists of a three-storey light-filled office space, featuring spruce and larch wood, exposed support beams, high ceilings, and skylights. The angular rooftops extend over generous terraces, accessible from the office areas. CLT is used throughout, including floors and roof elements.

- The complex received a BREEAM Good certificate
- The CLT elements were manufactured with LOCTITE HB S089 and HB S049



Year	2019
Type	Commercial office
Location	Villeneuve-d'Ascq, France
Area	15,000 m ²
Timber Manufacturer	Stora Enso
Segment	3,685 m ³ CLT
Architect	JVC Architecture
Contractor	Tereneo
Wood species	Spruce, larch
Adhesive	LOCTITE HB S089, HB S049



Year	2019
Type	Institutional sport
Location	Formentera, Spain
Area	345 m ²
Timber Manufacturer	KLH
Segment	CLT
Architect	Marià Castelló Martínez
Contractor	Grupo Tragsa-SEPI
Wood species	Pine
Adhesive	LOCTITE HB S049, HB S509, HB S179, FlexA

CENF Formentera Water Sports Center Formentera, Spain, 2019

Blue skies, sparkling seas, sunshine, and warm natural pine are the hallmarks of a stunning new mass timber sailing and water sports school on the island of Formentera. Architect Marià Castelló Martínez designed the single-storey municipal building based on sustainable principles and low environmental impact materials. The mass timber pine roof, beams, flooring, and walls avoid harmful synthetic materials like PVC. An angular, natural-looking canopy connects the

space between the building's two wings and offers shade to guests using the wooden deck as a sitting area.

- The design features large (6.5 meter) structural panels
- A prefabricated and reversible foundation was used
- CLT elements are manufactured with LOCTITE HB S049, HB S509, HB S179 and FlexA



Johannson Coffee Production Plant

Vestby, Norway, 2019

When Joh. Johannson Kaffe, a leading coffee producer in Norway, decided to move production of its brands Ali Kaffe and Evergood to a new site in Vestby, Norway, it was intent on building a state-of-the-art plant able to process 12,000 tons of coffee a year. But it also wanted to use green energy sources and commission a design that is both cost-effective and energy efficient. The result is a mass timber plant, enabling the coffee company to reduce CO2 emissions by 82% compared to conventional coffee plants. CLT materials contributed to the sustainability achievement, visible in the ceiling, walls, and girders. A cantilevered roof design removed the need for disruptive struts in the production area, except where low-carbon concrete was used to support large, heavy processing equipment.

- Granted the EMIL Prize 2019 for environmental protection and energy-saving measures
- Awarded the BREEAM Excellent certification
- CLT elements are manufactured with LOCTITE HB S109, HB S409 and HB S049

Year	2019
Type	Industrial manufacturing
Location	Vestby, Norway
Area	9,450 m ²
Timber Manufacturer	Binderholz
Segment	1,100 m ³ CLT
Architect	Arkitektene Astrup og Hellern
Contractor	AF Gruppen Norge AS
Adhesive	LOCTITE HB S109, HB S409, HB S049



Gare Maritime Brussels

Brussels, Belgium, 2019



Gare Maritime is an award-winning retail and mixed property created from the remains of what was once Belgium's busiest freight station. The project is part of an amazing renewal of the Tour & Taxis warehouse district in Brussels. The design kept the best of the Belle Epoque elements, such as the steel structural columns with ornate detailing. Modern wood components are used throughout the structure, specifically 10,000 m³, making it one of the largest mass timber projects in Europe. The volume of mass timber used reduced materials-related CO₂ emissions. Its prefabricated modularity shortened construction time, while the mechanical connections will enable disassembly and repurposing in the future. Solar power and a geothermal system deliver renewable energy to the

building, while indoor green spaces, natural ventilation, and rainwater collection contributed to its BREEAM Outstanding certification.

- Awarded the ARC20 Architecture Award, the Dutch prize for high-quality architecture and sustainability
- Winner of Belgian Real Estate Society (RES) Awards 2020 for Best Commercial Development
- CLT elements are manufactured with LOCTITE HB S709



Year	2019
Type	Commercial retail
Location	Brussels, Belgium
Area	45,000 m ²
Timber Manufacturer	Züblin
Segment	6,000 m ³ CLT, 3,000 m ³ glulam, 200 m ³ LVL
Architect	Neutelings Riedijk Architects
Contractor	MBG
Wood species	CLT spruce
Adhesive	LOCTITE HB S709
CO₂ savings	3,858 tons of CO ₂ emissions avoided

SKAIO

Heilbronn, Germany, 2019

SKAIO is a residential tower providing comfort, safety, and the visual appeal of wooden construction to dozens of families. It is the tallest mass timber building in Germany and the winner of several sustainability awards. The 10-storey apartment building has 60 units, including a number of affordable and social housing flats. All apartments have floor-to-ceiling windows, balconies, access to a communal roof terrace, and ample storage space for bicycles, baby carriages, and wheelchairs. The building is a mass timber hybrid construction with some structural concrete and steel elements. CLT was the preferred material because it enables reconfiguration of the apartments in the future, enabling the conversion of several smaller apartments into larger ones.

- Awarded the 2021 German Sustainability Award for Architecture
- Diamond certification granted by the German Society for Sustainable Building
- Each floor was built in less than five days, consuming 1,000 m³ of mass timber
- CLT elements are manufactured with LOCTITE HB S709

Year	2019
Type	Residential apartments
Location	Heilbronn, Germany
Area	5,685 m ²
Timber Manufacturer	Züblin
Segment	CLT
Architect	Kaden + Lager
Adhesive	LOCTITE HB S709
CO₂ savings	1,323 tons of CO ₂ stored in CLT elements



Harris Academy Sutton

London, UK, 2019

Built to the Passive House Standard, Harris Academy accommodates 1,275 secondary school pupils and 95 staff. Mass timber structural elements in the classrooms and training facilities are visible, providing organic warmth and beauty. The thermal mass of the wooden building contributes to energy efficiency and interior air quality. The four-storey, 10,625 m² primary school is exceptionally airtight, with fourteen times lower air leakage than current UK building regulations. Set on a concrete slab-style foundation, the building has a CLT and glulam superstructure. These elements

were prefabricated in a controlled factory setting to extremely tight tolerances in order to meet strict low carbon footprint and energy efficiency standards. An added benefit is the reduction in running costs. The school achieves 80% savings compared to conventional schools.

- Awarded the 2020 Building Awards, Building Performance Award
- CLT elements are manufactured with LOCTITE HB S049, HB S509 and HB S179/FlexA



Year	2019
Type	Institutional education
Location	London, UK
Area	10,625 m ²
Timber Manufacturer	KLH
Segment	CLT
Architect	Architype
Contractor	Willmott Dixon
Wood species	Douglas fir
Adhesive	LOCTITE HB S049, HB S509, HB S179/FlexA
CO₂ savings	726 tons of CO ₂ stored in the building

Day Care Centre Lapinmäki

Helsinki, Finland, 2019

The first mass timber kindergarten in Finland, Day Care Centre Lapinmäki, accommodates 160 children each day. The two-storey, 1,500 m² center manages to combine safety requirements, functionality, and a healthy environment with child-friendly aesthetics thanks to the choice of mass timber. The facade is a bright, light-reflecting, white-painted spruce. The load-bearing structure is made of CLT, which also serves as a decorative ceiling and wall finishing in the interior spaces. The exposed wooden surfaces provide a pleasant, stress-reducing atmosphere. Wood was chosen as a natural breathable material, enabling a fresh and healthy indoor climate for the children and staff. The prefabricated wood modules were erected in 15 months and protected throughout with a weatherproof shield.

- Winner of Finnish Architecture Biennial Review 2020 Prize
- Glulam was used in a pillar and beam structure mounted on a concrete base (concrete-structured cavity core tiles)
- CLT elements are manufactured with LOCTITE HB S089 and HB S049

Year	2019
Type	Institutional education
Location	Helsinki, Finland
Area	1,500 m ²
Timber Manufacturer	Stora Enso
Segment	400 m ³ CLT
Architect	AFKS Arkkitehdit Oy
Contractor	Rakennuspartio Oy
Adhesive	LOCTITE HB S089, HB S049



Palazzo Meridia

Nice, France, 2019

Located in Nice on the French Riviera, the 10-storey Palazzo Meridia, made with locally sourced mass timber, is the tallest CLT office building in France. A striking metal exoskeleton is an iconic design element, but it is also functional. It supports the exterior hanging gardens and extensive balcony structures across the building's 35-meter-high CLT-based facade. Exposed mass timber beams, floors, and decking in the office spaces have both functional and decorative properties and are visible in the high ceilings and offices. Because the site is located in an earthquake region, it is a mass timber hybrid structure, constructed using CLT and glulam components, as well as reinforced concrete elements.

- Rooftop photovoltaic panels (also sourced locally) contribute to the building's low carbon footprint, attested to by BBKA certification and a silver Mediterranean Sustainable Building (BDM) rating
- The use of CLT and glulam elements reduced construction time by five months
- CLT elements are manufactured with LOCTITE HB S109 and HB S509



Year	2019
Type	Commercial office
Location	Nice, France
Area	8,000 m ²
Timber Manufacturer	Schilliger Bois
Segment	1,300 m ³ CLT
Architect	AS Architecture Studio, Paris
Contractor	Nexity
Adhesive	LOCTITE HB S109, HB S509





Bundoora Student Residence, La Trobe University

Victoria, Australia, 2020

The flagship campus of La Trobe University, located in the Melbourne suburb of Bundoora, is the site of an award-winning residential mass timber complex for 625 students. Designed as twin curving buildings around a courtyard of indigenous gum trees, it is the largest mass timber construction in the state of Victoria. It features glulam and CLT elements that act both structurally and decoratively in the interior. Engineering of the wooden structural elements enabled outstanding acoustic performance with noise protection levels exceeding Australian requirements and guidelines.

- Australian Timber Design Awards: Multi-Residential 2020
- The use of renewable CLT and glulam substantially lowers the building's carbon footprint, enabling 76% lower global warming potential compared to traditional construction materials
- CLT elements are manufactured with LOCTITE HB S049, HB S139 and HB S209

Year	2020
Type	Residential
Location	Victoria, Australia
Area	18,000 m ²
Timber Manufacturer	XLam Dolomiti
Segment	4,500 m ³ CLT and glulam in total
Architect	JCB Architects
Contractor	Multiplex
Wood species	Spruce
Adhesive	LOCTITE HB S049, HB S139, HB S209
CO₂ savings	CO ₂ stored in the building is equivalent to the annual emissions of 1,600 local cars



Catalyst Building, Spokane Campus, Eastern Washington University

Washington, USA, 2020

Built as the first mass timber commercial property in Washington state, the Catalyst Building is an attractive, state-of-the-art building for students and faculty of the departments of Computer Science, Electrical Engineering, and Visual Communication Design. It is part of the Spokane campus of Eastern Washington University. Catalyst was designed to be environmentally sound and energy efficient, aspiring to Zero Energy and the Zero Carbon certification by the International Living Future Institute. The building features a rainwater recovery system, radiant heating/cooling system, and heat recovery of exhaust air, which all contribute to energy efficiency. The award-winning building is built with CLT and glulam from California-based Kattera.

- Catalyst won the American Institute of Architects Award 2020 for Holistic Design
- 4,000 m³ of mass timber components
- CLT elements are manufactured with LOCTITE HB X122 and HB X152

Year	2020
Type	Institutional education
Location	Washington, USA
Area	13,935 m ²
Timber Manufacturer	Kattera
Segment	CLT
Architect	Kattera/Michael Green Architects
Contractor	Kattera
Adhesive	LOCTITE HB X122, HB X152
CO₂ savings	3,713 tons of CO ₂ stored in the building





Hotel MalisGarten

Zell am Ziller, Austria, 2020

Situated in the Ziller Valley, surrounded by alpine forests, the MalisGarten hotel is a five-star resort featuring one of the most sustainable designs in the region. Italian star architect Matteo Thun designed the five-storey building using mass timber and wood throughout. A sophisticated heating and cooling system, geothermal energy, and pellet heating contribute to its low carbon footprint. Conservation of resources and local sourcing are hallmarks of the hotel, so it was natural to choose locally sourced renewable building materials. The project had a significantly shorter construction time thanks to prefabrication with lower noise and dust during construction. Other benefits are energy efficiency enabled by the insulating properties of wood and larger net usable interior space due to the size-to-strength ratio of the CLT components.

- CLT stairwells and lift shafts are classed at level 5—the highest rating for fire protection and fire resistance
- Furniture, parquet floors, and doors are made of walnut and oak wood from local producers
- CLT elements are manufactured with LOCTITE HB S089, HB S359 and HB S049



Year	2020
Type	Commercial hotel
Location	Vienna, Austria
Timber Manufacturer	Binderholz
Segment	CLT
Architect	Matteo Thun, Meissl Architects
Wood species	Spruce, larch, fir, pine
Adhesive	LOCTITE HB S089, HB S359, HB S049
CO₂ savings	1,500 tons of CO ₂ stored in the building

55 Southbank Boulevard

Melbourne, Australia, 2020

With its curved, sinuous high-performance glass facade, 55 Southbank Boulevard is the latest addition to the Melbourne skyline. It fits right in, but it is actually quite different to its neighboring buildings. The clue is the exposed mass timber elements and wooden fittings in the interior. The original plan was to add a new conventional six-storey vertical extension to an existing commercial office built in 1989. But a pivot to mass timber, specifically CLT, enabled a 10-storey expansion with 220 additional rental units. Choosing CLT brought the benefits of its strength-to-weight ratio and construction efficiencies.

It enabled a much larger addition atop the existing structure, more commercial space, and one of the tallest wooden extensions in the world. It also significantly reduced the costs and space associated with construction period.

- CLT is made with Forest Stewardship Council (FSC)-certified wood
- CLT elements are manufactured with LOCTITE HB S049, HB S509 and HB S179/FlexA



Year	2020
Type	Commercial hotel
Location	Melbourne, Australia
Area	27,000 m ²
Timber Manufacturer	KLH
Segment	3,675 m ³ CLT
Architect	Bates Smart
Structural Engineer	Vistek
Adhesive	LOCTITE HB S049, HB S509, HB S179/FlexA
CO₂ savings	4,630 tons of CO ₂ stored in the building

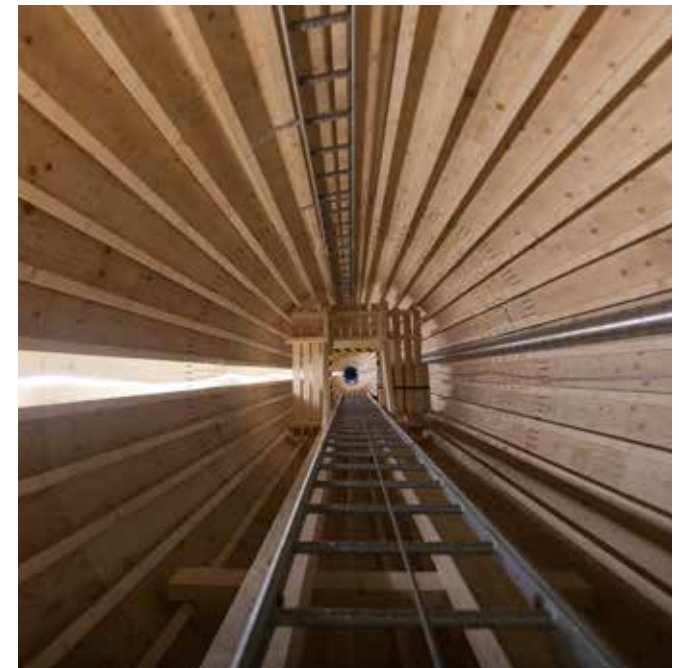


Wind Turbine Tower

Björko, Sweden, 2020

Modvion AB developed an innovative wind turbine tower made of mass timber supplied by Moelven, owner of the world's oldest glulam factory in Töreboda, Sweden. LVL forms the exterior tube for high strength and stiffness, while glulam interior columns stabilize the structure. Data gathered about the 30-meter prototype's performance in a variety of wind and temperature conditions will inform how high such towers can scale. The goal is 150 meters, which if reached, will enable taller turbines that can exploit the more stable and steady winds located higher up than conventional turbines can be built. All this has the knock-on effect of lowering the costs of renewable wind power.

- Use of wood will reduce turbine-related manufacturing emissions
- Lighter weight and stackable mass timber components make transport logistics easier, opening up hard-to-reach locations to wind power plants
- CLT elements are manufactured with LOCTITE HB 110, CR 421, CR 821 in the future



Year	2020
Type	Industrial
Location	Björko, Sweden
Timber Manufacturer	Moelven Töreboda
Segment	Glulam, LVL
Adhesive	LOCTITE HB 110, CR 421; planned CR 821
CO₂ savings	Climate neutral

Silo

Dijon, France, 2021

Known for its double UNESCO designation and a commitment to sustainable development, the city of Dijon recently added to the infrastructure of the Valmy district. The new business park, also home to the headquarters of the Caisse d'Épargne de Bourgogne Franche-Comté, required a parking facility for commuters and visitors. The parking garage will be required until more sustainable mobility solutions become available in the future. That meant the building had to be designed to be dismantled and repurposed. The result is the "silo," a



Year	2021
Type	Commercial parking garage
Location	Dijon, France
Area	10,360 m ²
Timber Manufacturer	Chantiers Chibougamau
Segment	1,100 m ³ glulam
Architect	GRAAM
Contractor	Société Est Métropoles
Wood species	Black spruce
Adhesive	LOCTITE GT20, GT205



beam-column glulam structure on a concrete foundation. The collaboration between LCDP, Forestarius, Nordic Structures, and GRAAM architecture was built in four months and is the first ever hybrid mass timber parking garage, with 565 parking spaces on multiple storeys, including charging stations for electric vehicles.

- The glulam elements are manufactured with LOCTITE GT20 and GT205





Yanqing National Sliding Centre

Beijing, China, 2021

As a part of China's promise to deliver ecological and sustainable hosting of the Winter Olympic Games in 2022, a new mass timber construction was commissioned. Named the Yanqing National Sliding Centre, the complex is home to the bobsled, skeleton, and luge competitions. Glulam was chosen for its strength and high performance in harsh conditions and extreme climatic conditions. Covering an area of 125,937 m² with a vertical drop of 127 meters, it is the world's longest track (1,931 meters long which can be extended by 300 meters for competitions). Artificial ice and snow are made with new equipment using green electricity and requiring less than 60% of resources needed for comparable ice rinks.

- The venue opened in February 2021, a year ahead of the scheduled Olympic 2022 events
- It has a capacity for 10,000 spectators
- Glulam elements are manufactured with LOCTITE HB S309 and HB S709



Year	2021
Type	Institutional sport
Location	Beijing, China
Area	125,937 m ²
Timber Manufacturer	Crown Homes/Fitwell, Haring (Tianjin)
Segment	Glulam
Wood species	Douglas fir
Adhesive	LOCTITE HB S309, HB S709

Imprint

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Henkel Engineered Wood Adhesives Reference Projects Brochure

Published by

Henkel & Cie. AG

Industriestrasse 17a

6203 Sempach Station | Switzerland

engineered-wood@henkel.com

www.henkel-adhesives.com/engineered wood

Project Manager: Olga Golgor

Copywriter: Valerie Thompson

Layout and artwork: Henkel Digital Printing

Release date: June 2021

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