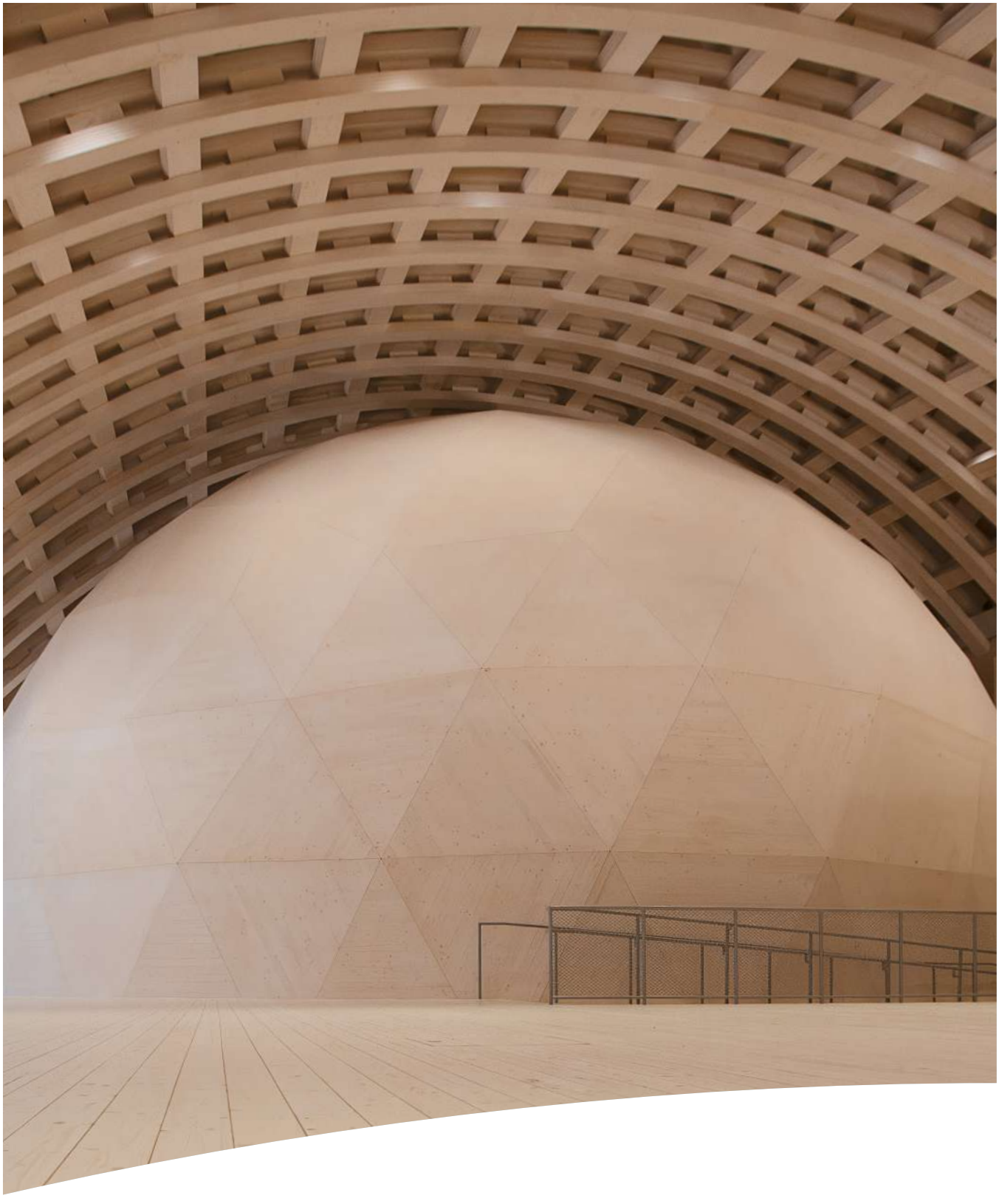


Wood Products 2024/2025

StoraEnso

Cover image:
Wisdome Stockholm
Stockholm, Sweden

Architect:
Elding Oscarson

Developer:
Sweden's National Museum of Science and Technology

Main partner:
Stora Enso

Specialist timber contractor:
Blumer Lehmann

Table of contents

Visit our wood products website

The Plus is designed by Bjarke Ingels Group as a global showcase for sustainable manufacturing

The Plus // Vestre Color & Wood Factory Magnor, Norway

Architect:
Bjarke Ingels Group

Stora Enso partner:
Woodcon

The rise of timber buildings

Timber continues to inspire and shape how we build. On the following pages, you'll see how the world's oldest building material is transforming our cities from concrete jungles into sustainable carbon sinks.

All of the projects showcased here are built with Sylva™ by Stora Enso or with wood products from our sawmills throughout Europe. That is to say, the roots of these buildings are in biodiverse, sustainably managed forests, harvested with silviculture practices and produced, ensuring no part of the tree went to waste.

By the time you finish reading this brochure, all of the wood will have grown back and contributed to the flourishing and expanding European forests. And while they do, we invite you to ask yourself this: *What if my next building was made with wood too?*

The Plus // Vestre
Color & Wood Factory
Magnor, Norway

Why build in wood?

There are many compelling, smart, green and beautiful reasons to build with wood.

This chapter succinctly encapsulates how wood addresses climate change, boosts health, increases sales, acts as a successful market differentiator, slashes construction times, and transforms where we live, work and play for the better.

Take a look for yourself and add to the trending list of reasons why wood works. Share how wood benefited your project on social media #thewoodhouseeffect.

Benefits of building with wood

It's a material world
Wood is the only commercially available building material with such a high load-bearing capacity and durability that it can replace steel and concrete in mid to large-scale building projects. Making it particularly sought after as the world grapples with climate change.

Wood seizes the climate-heating and damaging greenhouse gas carbon dioxide (CO_2) while growing in the forest and safely stores it as carbon in the building, making it the most efficient way to reduce your carbon footprint immediately. While others research alternatives for 2030 or 2050, mass timber offers a viable climate solution today.

Made-to-order and ready-to-go industrialised construction
Design for manufacturing and assembly (DfMA) is a modern way to enable and optimise manufactured products and prefabricated assemblies by design. Dramatically reducing a project's cost, time, complexity, uncertainty, and environmental impact, DfMA is rapidly changing how everything is built. Wood adapts very well to this way of building, and you can create an entire building today from a kit of parts.

Ultra-rapid
Prefabrication results in ultra-rapid assemblies. It's common for an entire floor of a building to be installed within a day. Precut walls and floors can arrive coated and with lifting devices already preinstalled. Lightweight cranes can position into place in a matter of minutes. The results are 30% faster construction than with concrete, fewer (expensive) tradespeople as the technical work and CNC cutting have been done in safe factory-controlled settings already, less worksite injuries, higher quality control and minimal onsite inspections.

Entire schools can be built with wood over the summer holidays, and large-scale factories erected during the winter months, as you can build year-round in all climates with minimal downtime due to bad weather.

Raw deal
Add a unique selling proposition to your portfolio with natural and aesthetically pleasing architecture. Developers report higher sales, rentals, and lease rates for wood buildings than non-wood structures as the climate-conscious generation increasingly chooses beautiful and natural wood architecture.

Reduce construction costs with:
- a high degree of pre-design and prefabrication.
- lower logistics costs. Wood requires 80% fewer deliveries.

Reduce energy bills
As energy costs remain high in 2024/5, energy-efficient buildings continue to be in high demand. Wood's excellent thermal conductivity and precise prefabrication, exterior envelopes fit perfectly, resulting in airtight buildings.

Wood can take the heat
Engineered wood products are extremely durable. Modern wood buildings have comparable structural performance in fire conditions to steel and concrete buildings and meet the same building code standards.

Breathe new life
Reuse of existing building stock is outpacing new buildings in some regions and, in doing so, cutting enormous amounts of carbon emissions and tonnes of demolition waste while drastically extending the lifetime of buildings. Wood is the material of choice for retrofits because it is low carbon, five times lighter than concrete and incredibly workable with other materials, so it can be installed in hard-to-reach places and used to build on top of existing structures in dense urban areas.

Naturally good for you
Biophilia is the word to describe our innate human attraction to nature. Extensive research proves that exposed wood in a room has multiple positive impacts on us, from lower heart rates to improved focus and creativity.

The Plus // Vestre
Color & Wood Factory
Magnor, Norway

The Plus is designed as a global showcase for sustainable manufacturing and is recognized with the very highest environmental classification in BREEAM.

Sustainability

Spectacular wooden buildings and biodiverse forests breathe hope that fossil fuel use can be reduced by simply cutting demand for them.

We're witnessing more and more innovative and ambitious examples of low-carbon design. Many are built using wood because wood is the one material that can deliver instant climate benefits on any scale.

Wood does what competing materials can't: wood grows back. Strong and durable enough to replace steel and concrete, wood has the unique ability to safely store climate-damaging carbon dioxide during the building life cycle while also removing that greenhouse gas from the atmosphere as trees grow. No other commercially available building product can do all that.

With the deadline to cut emissions by half only six years away in 2030, we can expect to see more circular solutions with wood construction in 2024/5. Individual architects, planners, developers and builders cannot mitigate this global challenge alone but together an incredible impact can be achieved. The images on these pages are living proof we already are.

The Royal Institute of British Architects (RIBA) Stirling Prize winner 2023

Morden College
London, UK

Architect:
Mae Architects

Developer:
Morden College

Stora Enso partner:
Eurban

Many buildings today have passed their intended use and use excessive heat, water, and electricity with outdated materials and equipment. But when buildings are demolished, they produce millions of tonnes of waste and pollution.

Renovating existing buildings to meet modern emission standards is often the most cost-efficient and sustainable solution. Retrofits that extend, fill gaps or heighten the existing fabric of buildings is fast becoming the norm. Lightweight wood is often the perfect solution, particularly in dense urban neighbourhoods and hard-to-reach rural locations.

Stora Enso's long-term, vetted management plans for successional regeneration and biodiversity are a key reason those involved in constructing and producing buildings turn to us for their sustainability needs.

We know those making daily decisions about the development of our built environment and striving to keep our planet in mind need to know with utter certainty that the wood they're sourcing is truly sustainable.

Stora Enso is an internationally trusted sustainability partner you can count on. As one of the world's largest private forest owners with mills throughout Europe, we uphold the highest standards so you can be confident you'll reach your corporate climate responsibilities and ambitions.

Healthy biodiverse forests
We know the origin of all the wood we use: 100% comes from sustainable sources. We use silvicultural practices that ensure we plant more than we harvest, so the wood is regenerated.

We use various tools and methods to ensure this, including forest certification and third-party traceability systems such as the Forest Stewardship Council's (FSC® trademark nr. C125195) Chain of Custody/Controlled Wood scheme, the Chain of Custody/Due Diligence System of the Programme for the Endorsement of Forest Certification (PEFC), and the ISO 14001 environmental management standard.

Approximately 80% of our total wood supply originated from third-party certified forests, while 100% of the wood origin was covered by third-party certified traceability.

The heavier the building, the larger your footprint. You can immediately reduce the overall weight of a building by simply choosing lightweight and sustainable wood.

Our mills and ways of working
No wood goes to waste at Stora Enso. By following the cascading principle, we utilise every part of the tree in the most valuable way possible.

All our raw materials are carefully selected and scanned using x-rays and visually graded to guarantee the best possible material quality for each end-use. Each time you choose our wood, you replace a fossil-intensive product whose production and use release enormous amounts of CO_2.

We apply ISO-based management systems to ensure responsible, efficient, clean and safe working environments, (ISO 9001 quality, ISO 14001 environment, ISO 45001 health and safety and ISO 50001 energy efficiency).

Low-emission transport and logistics
We deliver prefabricated wood in optimised loads. Wood is five times lighter than concrete, so deliveries are reduced by as much as 80%. Because you can install wood with mobile cranes instead of heavy tower cranes, transportation and logistics create less noise and air pollution. Businesses and neighbourhoods usually continue to operate throughout construction.

Assess the life cycle impacts of your building
We offer Environmental Product Declarations (EPDs) for most of our wood product providing transparent, third-party verified information about the environmental performance throughout its life cycle and are in line with relevant ISO and EN standards. You'll find all the important and relevant information you need on our EPDs to assess the life cycle impacts of your construction projects. You can also use them for applying for building certification schemes, awards and ecolabels.

Our wood products comply with strict indoor air quality standards. If you plan to certify your building according to a green building certification program, we provide the necessary documentation.

Accurate analysis at your fingertips
With initiatives and legislation constantly updating, it can be challenging to stay informed. Stora Enso actively participates and engages with leading non-governmental organisations (NGOs) and trade associations to advance industry practices related to building sector decarbonisation, carbon storage, circular bioeconomy, and sustainable and biodiverse forestry. We can equip you with our analysis of the issues affecting your work.

Stora Enso Pavilion at FIS Nordic World Ski Championships Planica, Slovenia

Architect:
Studio Abiro

Stora Enso partner:
CBD

Want to specify sustainably but unsure where to start?

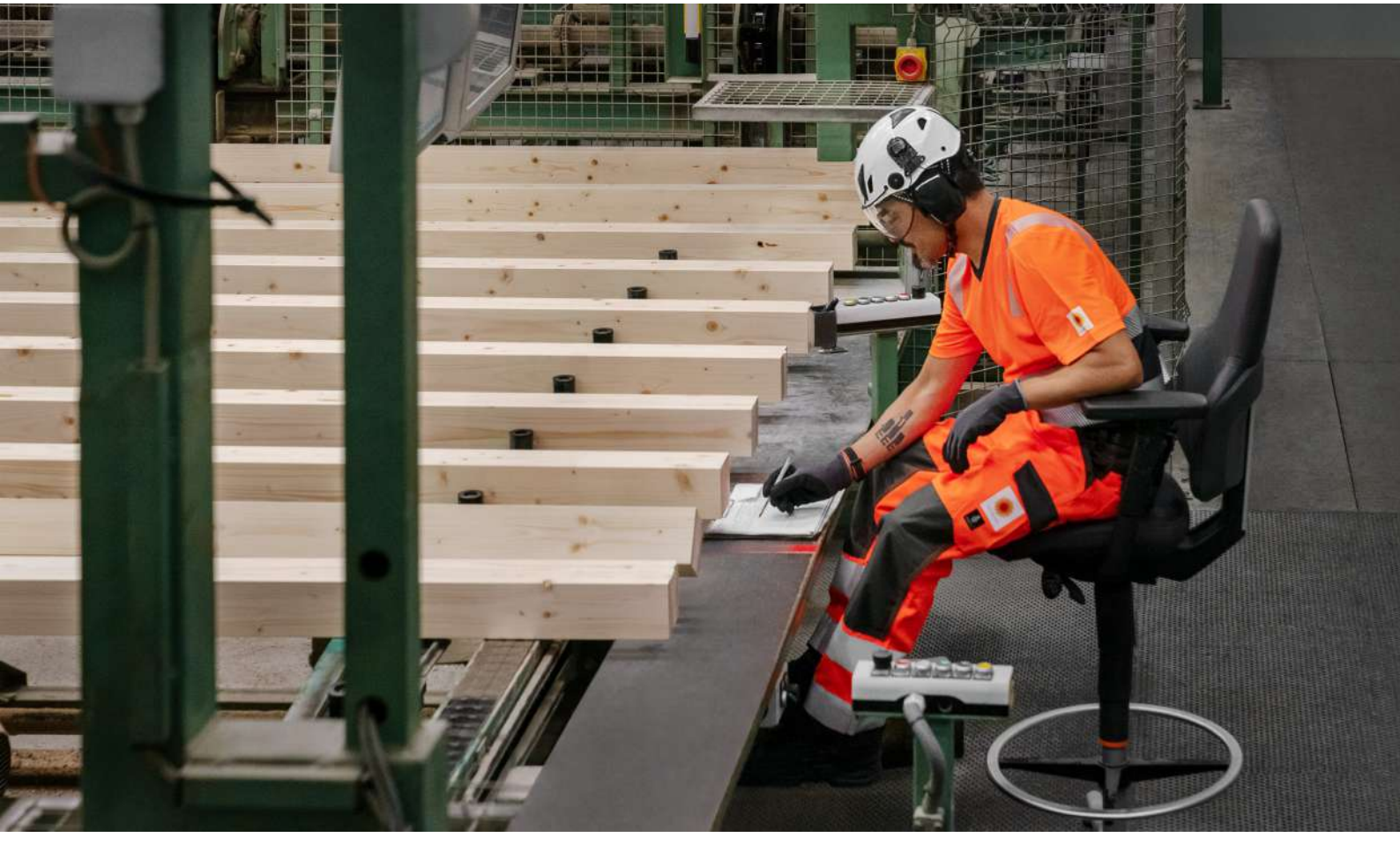
Would you like reliable and standardised product information to make informed decisions about your construction project's overall carbon footprint?

We've made it easier than ever for architects, designers, and developers to meet their sustainability goals by ensuring our wood products have Environmental Product Declarations (EPDs). All of our EPDs confirm that our wood products have some of the smallest footprints on the market today.

What are EPDs?
EPDs provide unbiased product information based on objective scientific analysis you can trust. They include details on a product's environmental impacts, use of resources and waste production during its life cycle.

The information is internationally recognised and verified by independent third parties.

All of Stora Enso's EPDs for wood products are available in Stora Enso's Download Centre at storaenso.com and the International EPD system.



Building concepts

Inspiration and design ideas for building with Sylva™ by Stora Enso

Thinking about building in wood and want to know how to get started? Our pre-designed Building concepts will put you on the right path with a simple, practical, low-carbon, cost-effective solution. When paired with your imagination, our Sylva kit and concepts give you the right parts and pieces, design ideas and tools to bring your ideas to life. They show you ideas and options for different building types, layouts, scales, needs and spatial requirements. And provide you with key facts on carbon emissions and costs to help your decision-making process.

In the project's concept design phase, many critical factors can positively (or negatively) impact the construction process and overall carbon footprint. Our Building concepts have been refined and improved along the way for the optimal outcome using the Stora Enso Sylva kit and platform to point you in the right direction.

At this pivotal point in the construction planning, our building concepts help you to:

- Imagine the ideal mass timber building in an intuitive, immersive experience for your needs.
- View how Sylva products work best together.
- Get a better understanding of how to configure your building design to create a customised Sylva kit.
- Visualise the many possible ideal designs based on scalable, adaptable modular solutions.

- Experiment with a variety of designs based on our Sylva standardised kits to solve challenging projects with various scales, needs, contexts and requirements.
- Show you where to find detailed technical solutions that work with the concept for different performance requirement levels or countries and find up-to-date technical content, guidelines and manuals via our Knowledge hub etc. Our concepts are developed to be adapted to different specific regulatory considerations for Germany, Austria, Sweden, France, the UK and Finland.

- Streamline trial and error. Save time and effort, especially during your project's design and procurement phase. Track and see from the beginning the top solutions for effective collaboration to incorporate points of view from different disciplines.
- Mix and match the best products for different architectural and structural types for the most advantageous structural, environmental, and economic performance.
- Understand the implications of different materials and design choices by visualising how they look and perform in a finished design.
- Value engineering – make informed design choices by seeing our concepts and the end costs with different design alternatives.
- Price examples: reference cost estimates for various plan options so you can make informed decisions.
- Showcase to other stakeholders in a way that everyone can understand for a more informed, holistic and transparent decision-making process of the impacts and outcomes of different design options.

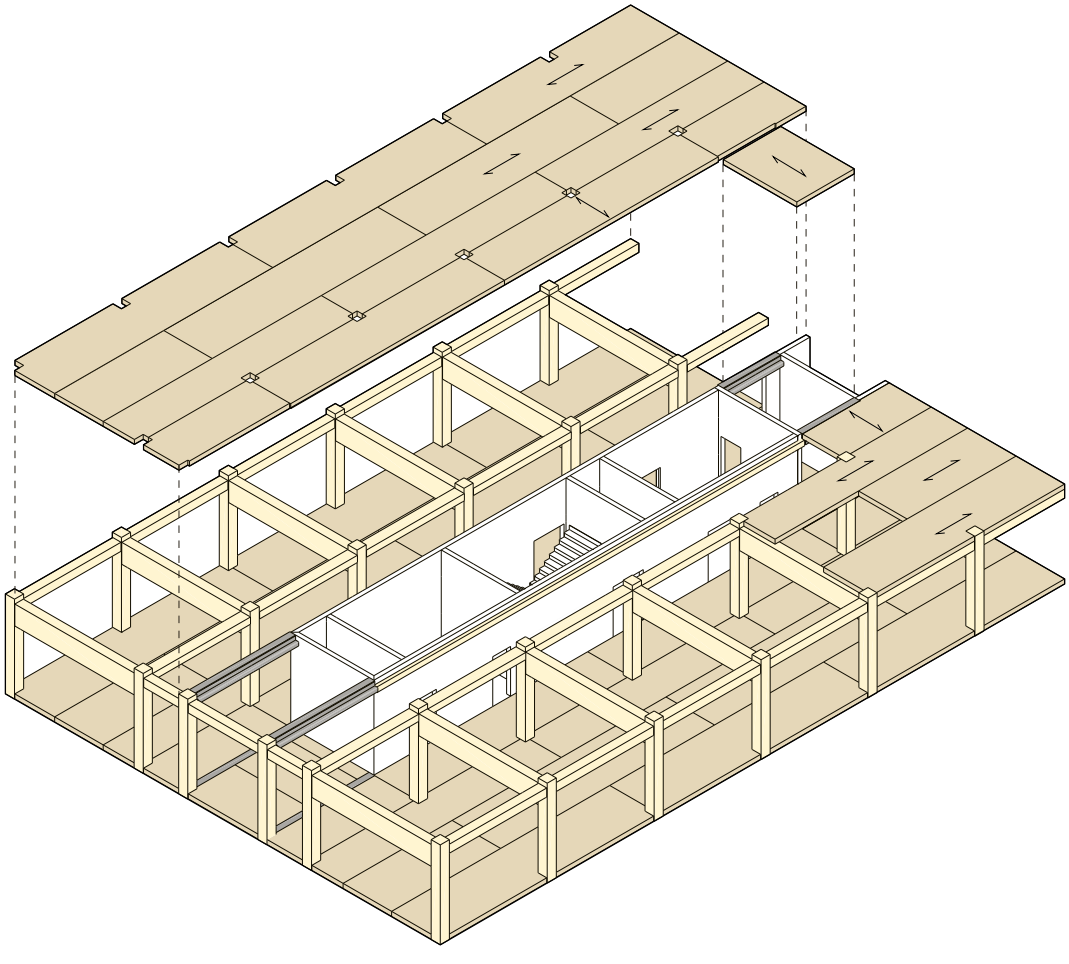
- Understand the potential size of your project´s carbon footprint from the beginning. Our concepts can also help you identify areas and gaps so you can further reduce emissions for the overall design.
- Freely consider the inherent characteristics of materials in your design palette and how they can mitigate or expand your carbon footprint before things get too technical.
- Quantify carbon emissions and carbon storage advantages and how they vary with slight changes to your design.
- Envision end-of-life scenarios for repurposing flexible building structures or disassembly.

Our concepts work online, and you can access them on any device. No apps or downloads required.

On the following pages, you'll see buildings inspired by our concepts and how we've used their best features and lessons to apply to your project. We've studied the key architectural typologies and listened to thousands of customer requirements to develop designs that get the best from our Sylva kit with an optimal DfMA process.

Get inspired and start designing immediately
Select a concept you´d like to adapt and customise.

Find your concept

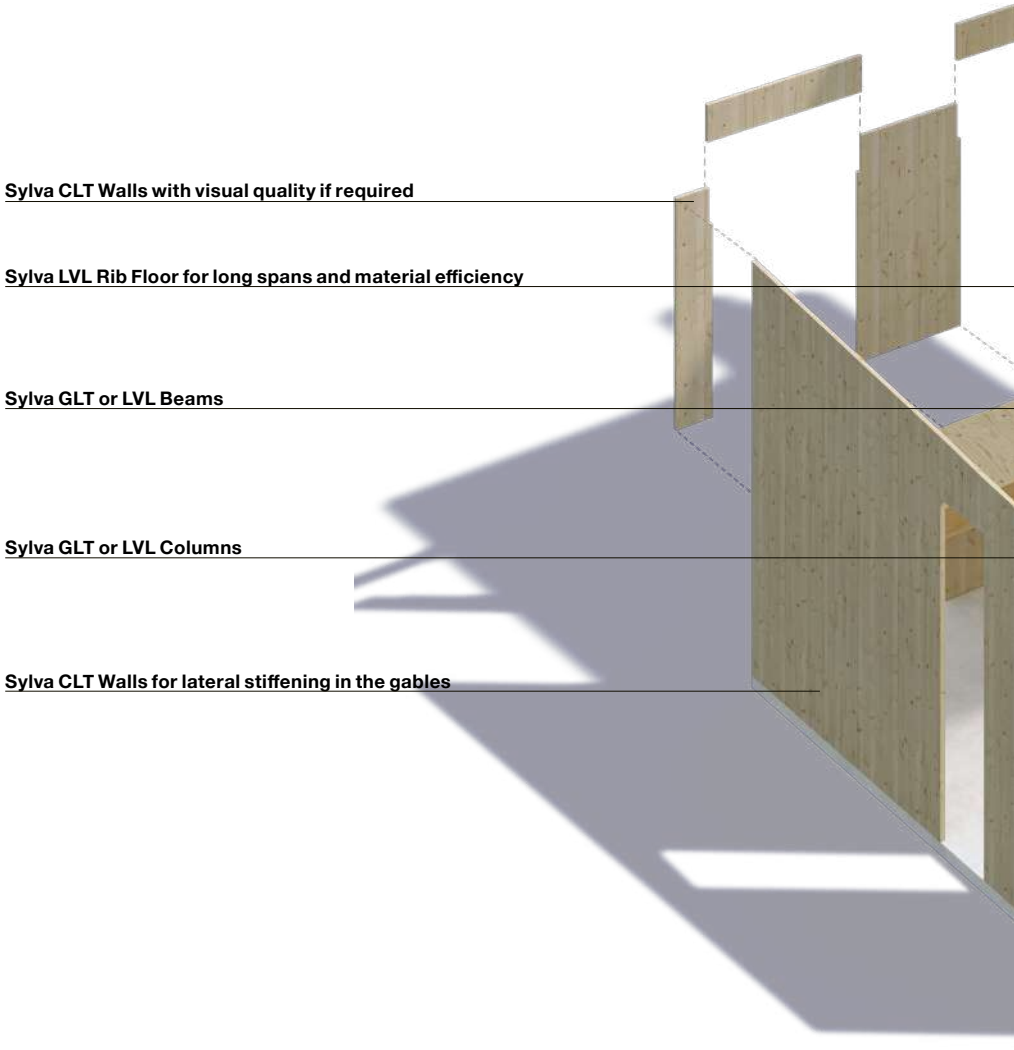


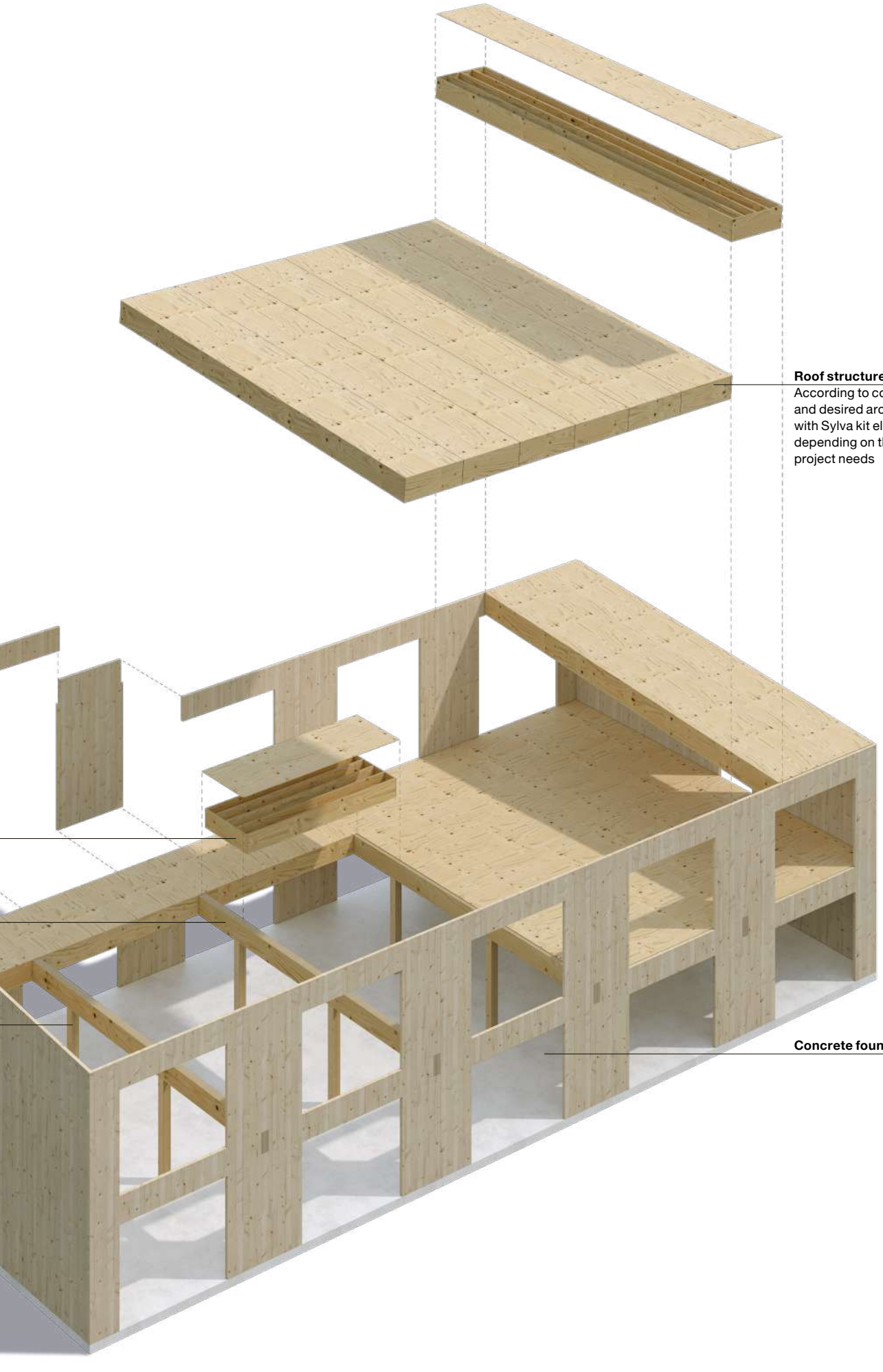
School

This school concept is based on a 600 m² mass-timber modular system and can be adapted for different educational typologies and sizes by adding and combining modules in various configurations from approximately 100–1 000 students.

The Sylva Beam and Column structure used here (without any internal structural walls) creates wide open-plan rooms that maximise flexibility in use. It can be adapted easily for different teaching methods and programs in many learning spaces.

Sylva CLT Walls are used in this layout to create a robust timber envelope with the necessary lateral stability. You have the option to leave wood surfaces exposed for an organic look and feel. An internal beam and column structure is possible with our long-spanning Sylva LVL Rib Floors and Roofs to further maximise space flexibility.





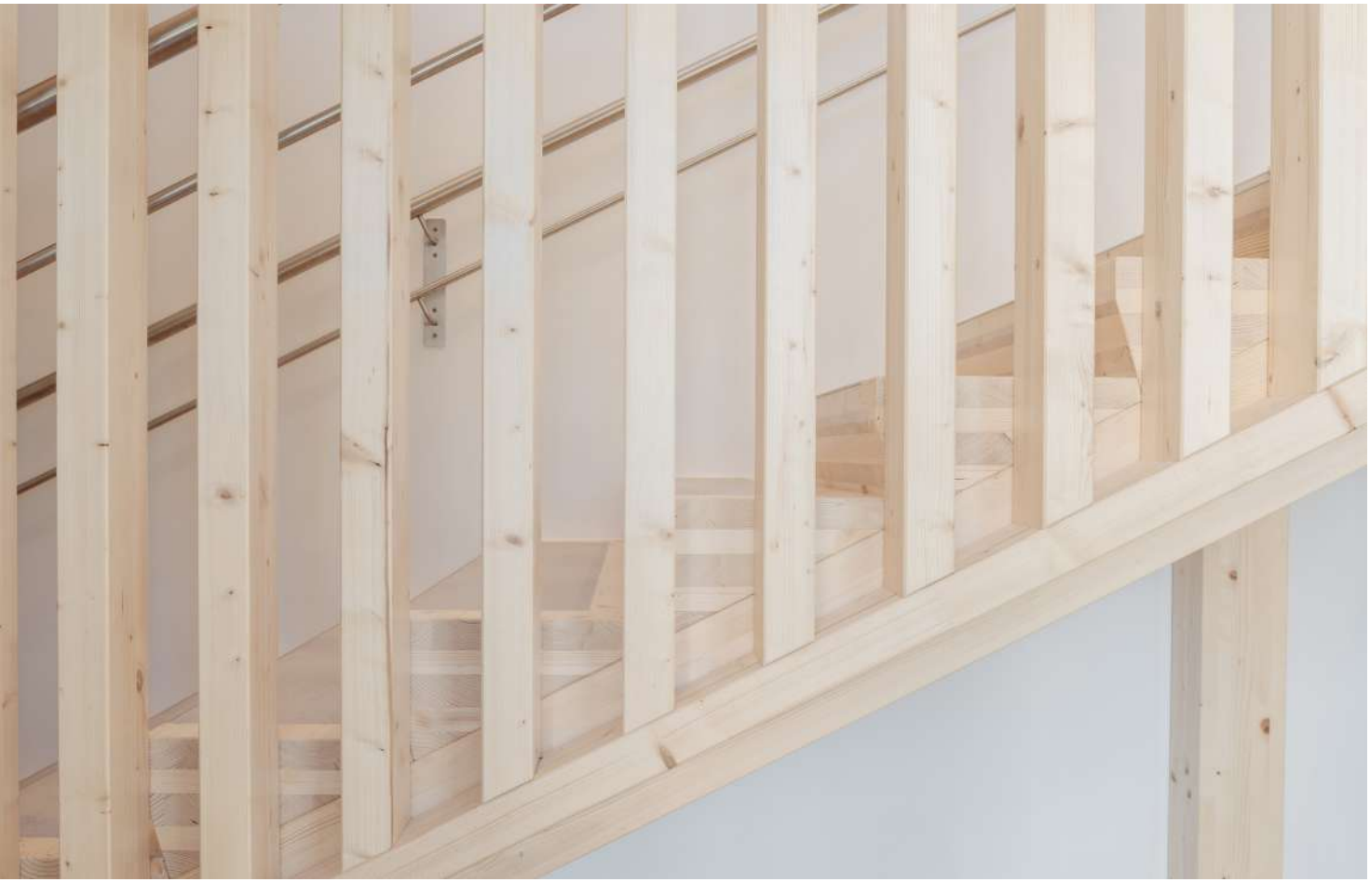
Roof structure
According to context and desired architecture with Sylva kit elements depending on the project needs

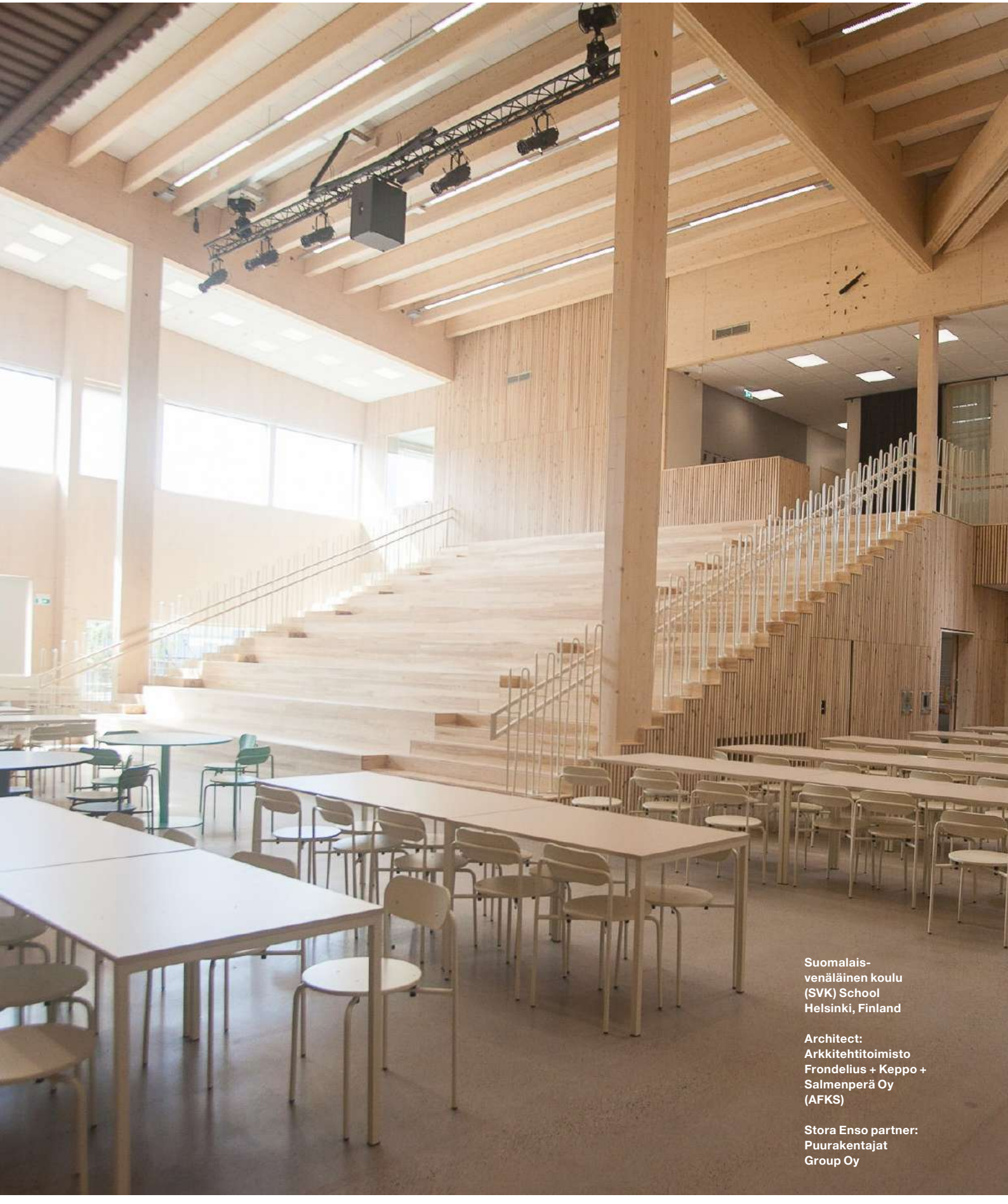
Concrete foundation and floor

Bad St. Leonhard Kindergarten Extension
Bad St. Leonhard, Austria

Stora Enso partner: Raimund Baumgartner GmbH

Bad St. Leonhard Kindergarten Extension
Bad St. Leonhard, Austria





Suomalais-venäläinen koulu (SVK) School
Helsinki, Finland

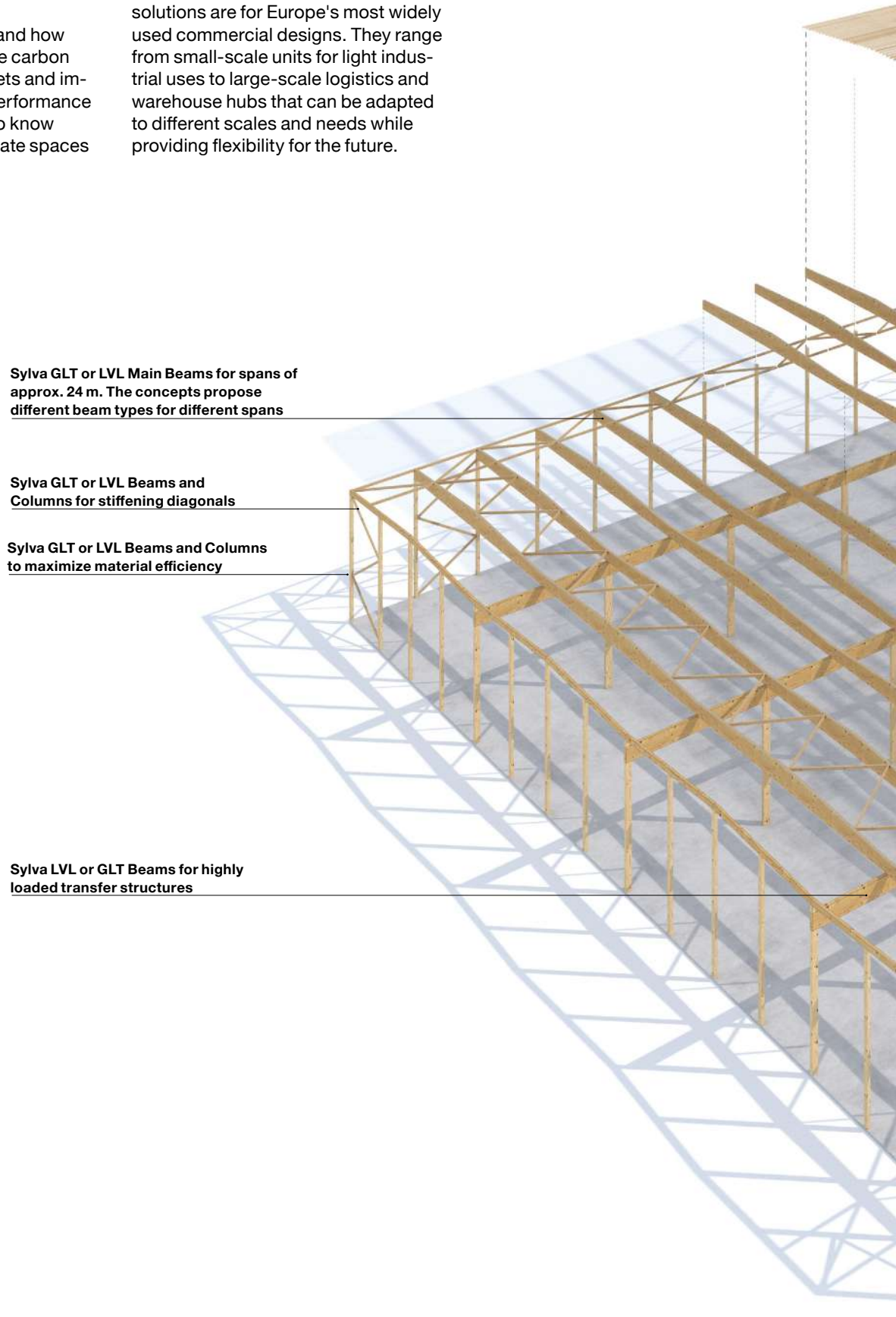
Architect:
Arkkitehtitoimisto Frondelius + Keppo + Salmenperä Oy (AFKS)

Stora Enso partner:
Puurakentajat Group Oy

Industrial

Choose a low-carbon Industrial concept and customise it!

At Stora Enso, we understand how important it is to reduce the carbon footprint of real estate assets and improve the environmental performance of your operations. We also know how much it matters to create spaces where employees are inspired to work, connect, and create. Our concept solutions are for Europe's most widely used commercial designs. They range from small-scale units for light industrial uses to large-scale logistics and warehouse hubs that can be adapted to different scales and needs while providing flexibility for the future.




LVL 75 mm rafters to
maximize cost efficiency

The Plus // Vestre
Color & Wood Factory
Magnor, Norway

The Plus // Vestre
Color & Wood Factory
Magnor, Norway

Agricultural centre
Maishofen
Maishofen, Austria

Architect:
SPS Architekten zt
gmbh

Stora Enso Ybbs Mill
Automated coating line
Ybbs, Austria

Multi-storey residential

Our versatile multi-storey concepts propose simple and smart solutions to create low-carbon residential buildings that appeal to a new generation of eco-minded residents.

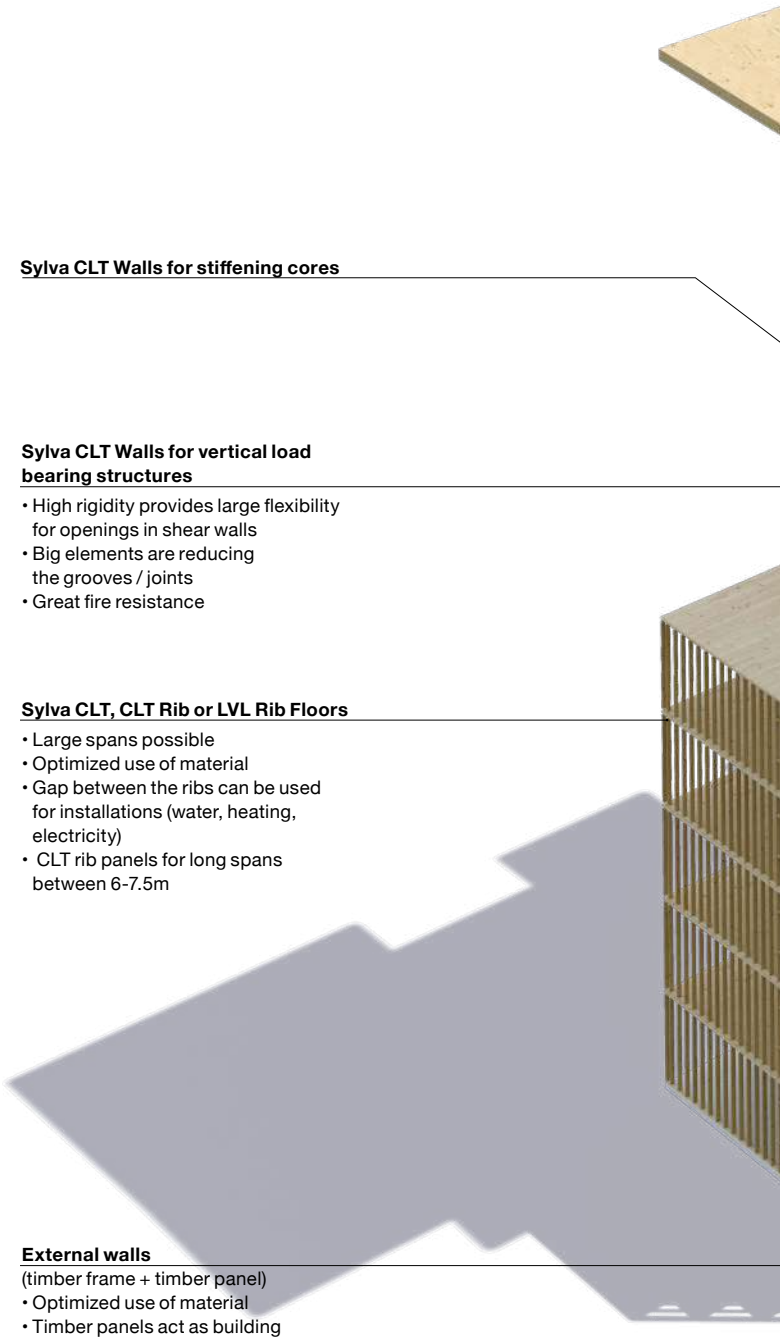
Sylva CLT Walls for stiffening cores

Sylva CLT Walls for vertical load bearing structures

- High rigidity provides large flexibility for openings in shear walls
- Big elements are reducing the grooves / joints
- Great fire resistance

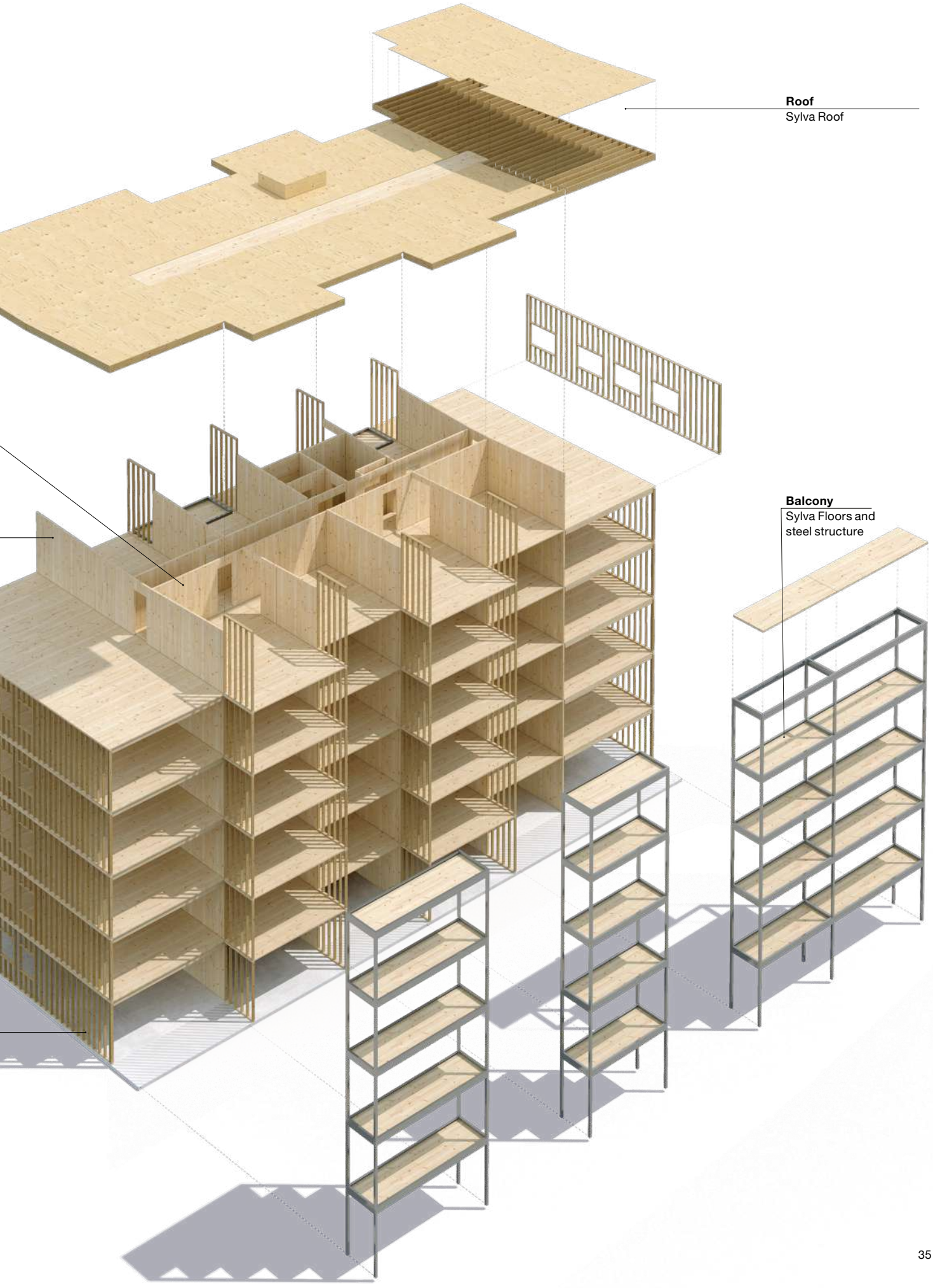
Sylva CLT, CLT Rib or LVL Rib Floors

- Large spans possible
- Optimized use of material
- Gap between the ribs can be used for installations (water, heating, electricity)
- CLT rib panels for long spans between 6-7.5m



External walls
(timber frame + timber panel)

- Optimized use of material
- Timber panels act as building phase protection


Roof
Sylva Roof
Balcony
Sylva Floors and
steel structure

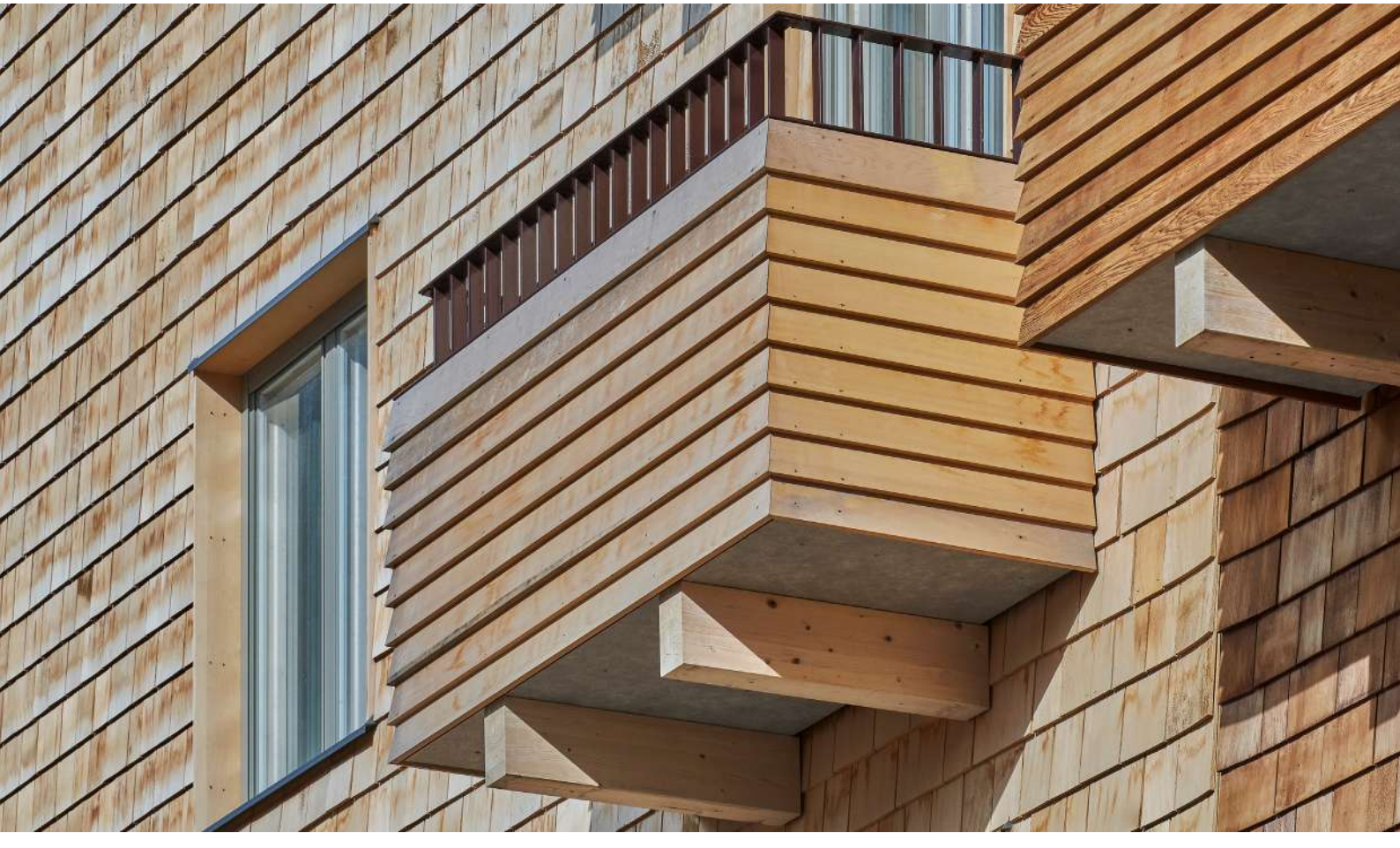
Humboldt
Cederhusen
Stockholm, Sweden

Architect:
General Architecture

Developer:
Folkhem

Stora Enso partner:
ByggPartner

Lightweight and robust Sylva™ enabled high-rise construction above the E4 highway that would not have been possible to engineer with concrete to the same height.



Mélia is the first residence in France to be awarded the highest level of excellence by the BBCA.

Mélia Residence
Taverny, France

Architect:
Atelier M3

Developer:
Woodeum

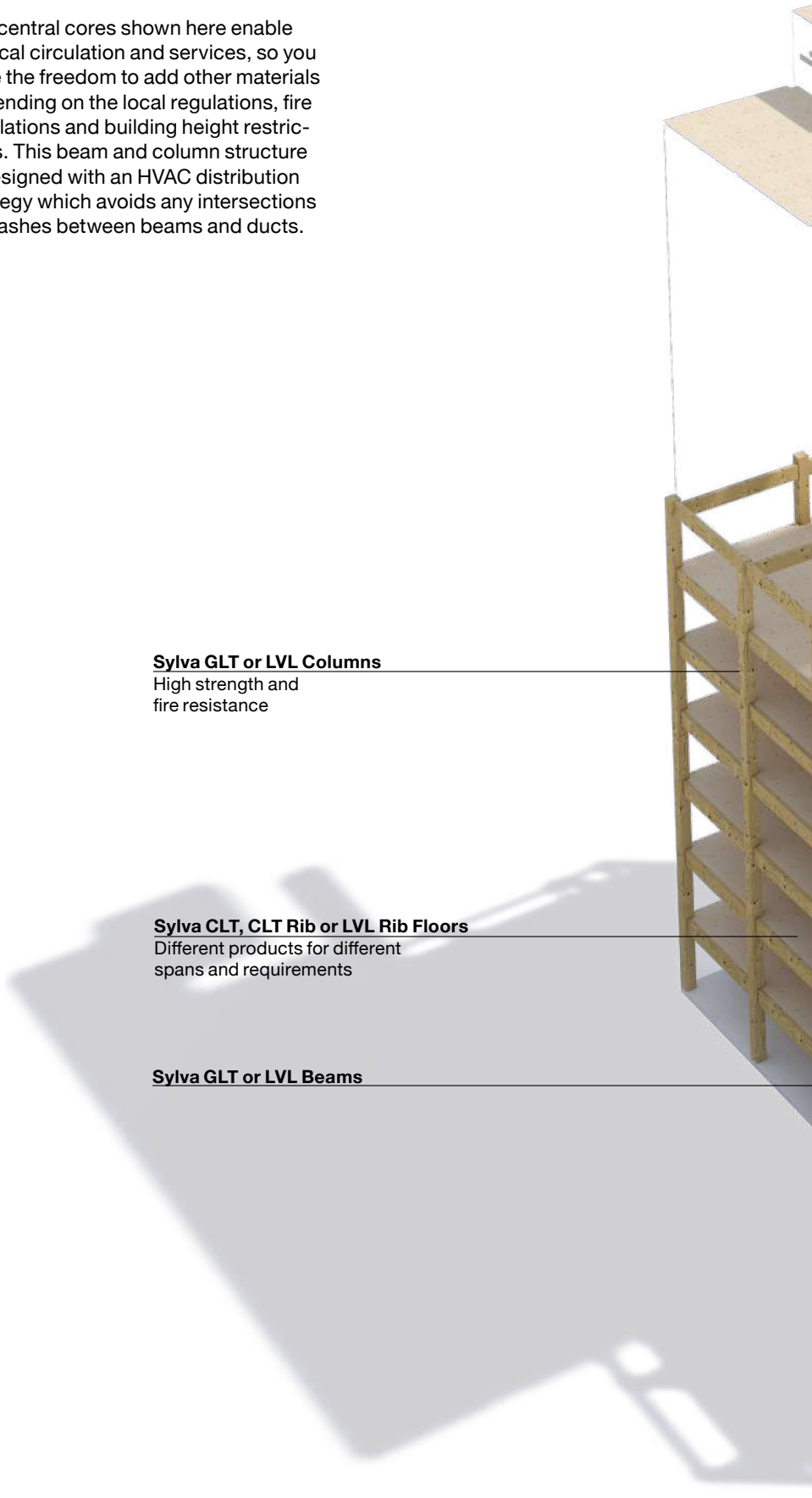
Stora Enso partner:
Woodeum

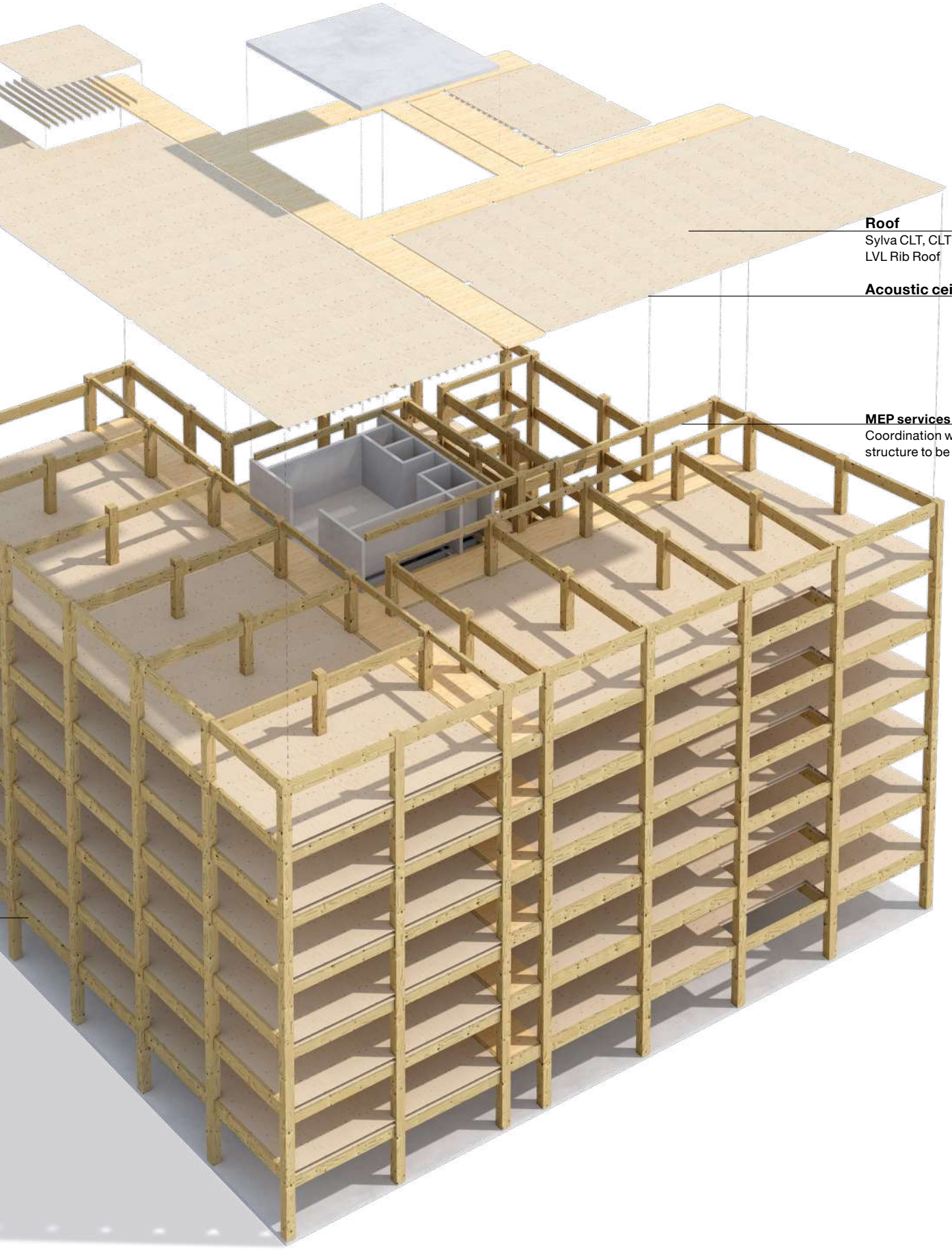
Office

Organisations seeking to inspire their employees to connect, create and collaborate in their offices are increasingly turning to our office concepts. After all, well-designed biophilic offices that connect workers with nature are scientifically proven to increase well-being by 13% and productivity by 8%. Building with sustainable Sylva kits is also an immediate way to reach corporate responsibility goals this year (not in 2030 or 2050).

You can quickly adapt our flexible open-plan and modular building concepts based on the type of tenants and their business needs. Our range of office typologies includes beam and column structures for working spaces in grids optimised for the most common working spaces.

The central cores shown here enable vertical circulation and services, so you have the freedom to add other materials depending on the local regulations, fire regulations and building height restrictions. This beam and column structure is designed with an HVAC distribution strategy which avoids any intersections or clashes between beams and ducts.





Roof
Sylva CLT, CLT Rib or LVL Rib Roof

Acoustic ceilings

MEP services
Coordination with structure to be considered

Arboretum is Stora Enso's largest delivery to a project (32 400 m³) and, at the time of publishing, one of the largest solid wood complex in Europe.

Arboretum
Nanterre, France

Architect:
Nicolas Laisné Architectes, Dimitri Roussel, Leclercq Associés

Developer:
Ivanhoe Cambridge Icamap

Stora Enso partner:
WO2

Mixed-use

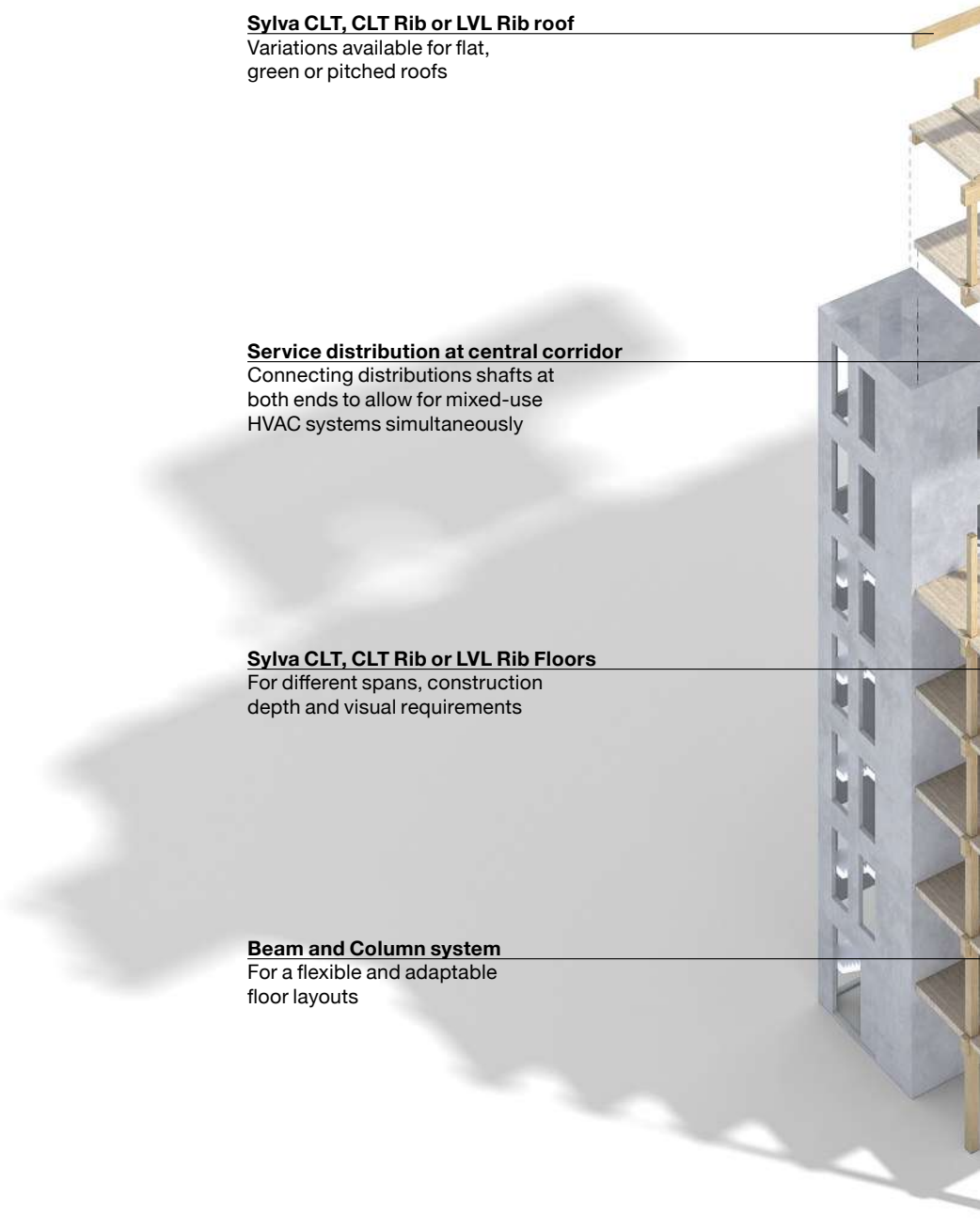
Increasingly urban planners are looking for multipurpose building structures that can serve different uses: a hotel, for instance, that could be offices tomorrow or used as both today.

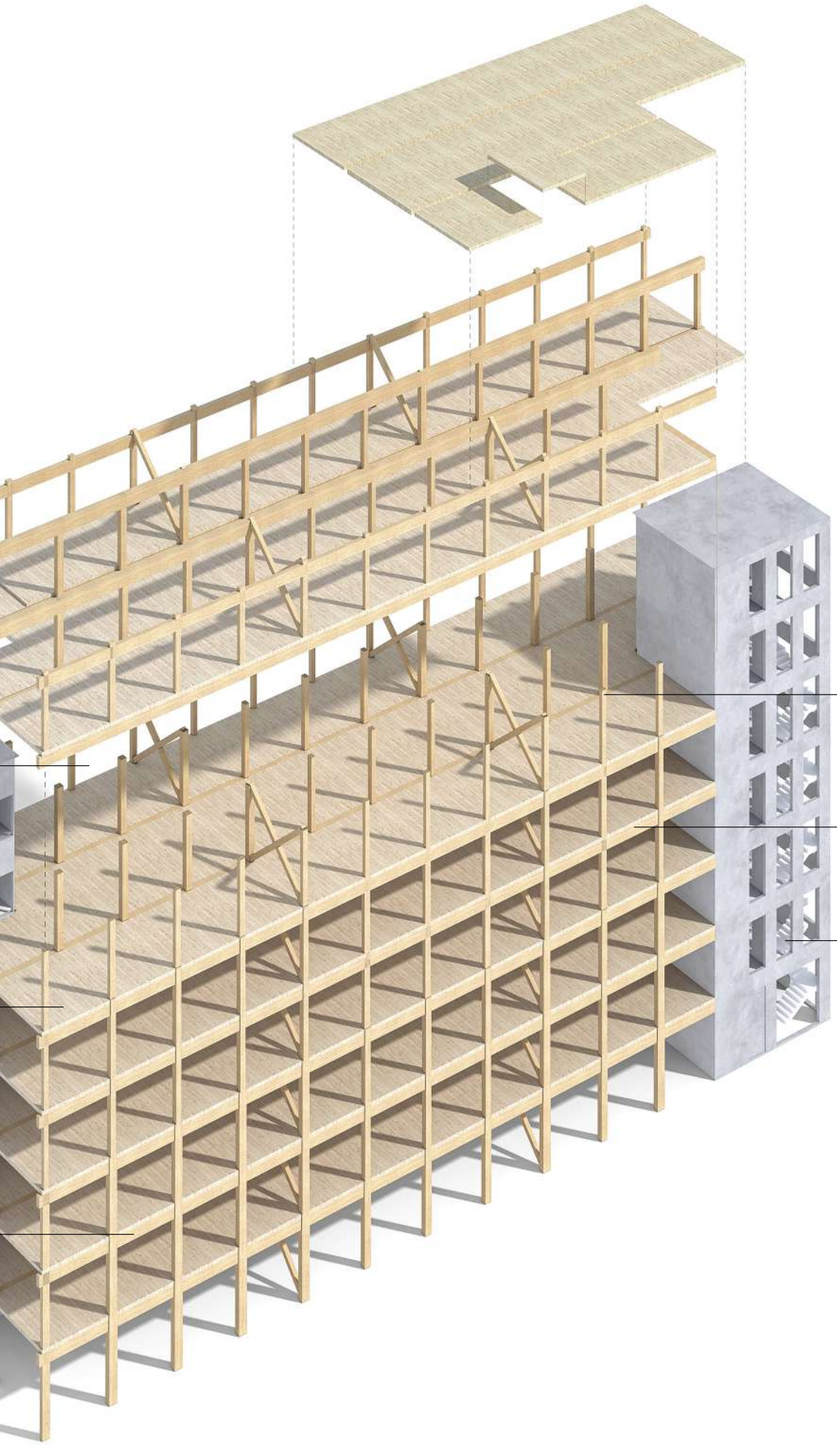
Designing for adaptability and anticipating the market needs and tenants´ use of a building are not just climate-smart; they also increase the property's future value as an asset.

When buildings outlive their initial purpose, they continue to utilise the resources invested in the initial development and extend their service life, reducing construction waste and climate-damaging emissions.

Our concepts also lend well to increased circularity because the buildings don't have to be demolished; they can be reused or upcycled with relative ease.

This modular concept uses a flexible beam and column system with a central heating, ventilation, and air conditioning (HVAC) distribution strategy. Depending on the overall architectural look you want and the local environment and planning requirements, you are free to scale these concepts and adapt them for a building that fits exactly what you know you need today and for what you don't even know you will need tomorrow.





Sylva GLT or LVL columns
Designed for fire resistance
without additional protection

Sylva GLT or LVL beams
For grids up to 7.5 x 9.0 m

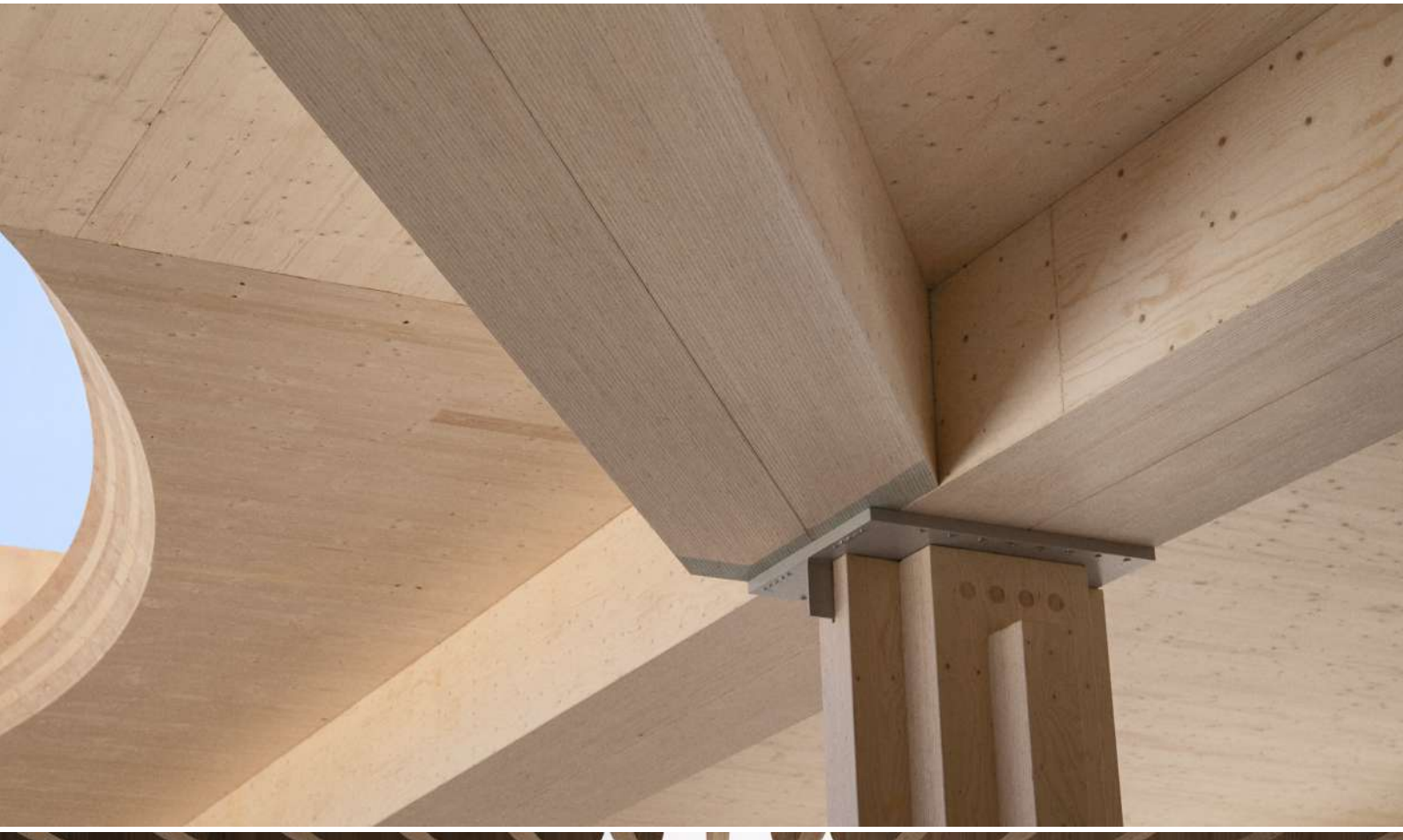
Concrete core
For fire escape routes and
lateral stability

Stora Enso
Headquarters
Katajanokan Laituri
Helsinki, Finland

Architect:
Anttinen Oiva
Architects

Developer:
Varma

Stora Enso partner:
Puurakentajat



Sylva™ by Stora Enso
at BAU Trade Fair
for Architecture,
Materials, Systems
Munich, Germany

Stand design:
Note Design Studio

Sylva™ by Stora Enso

Find the right solution for every application

Sylva is Stora Enso's range of prefabricated wood-based products for low-carbon buildings. The Sylva kit includes everything needed to create a modern, sustainable wood structure. Our custom-made elements, (Sylva Walls, Sylva Floors and Roofs, Sylva Stairs and Sylva Beams and Columns) optimise the use of sustainable wood to suit any application and requirement. And of course, we ensure your delivery arrives on-site ready to install.

Experience how easy it can be to construct with wood and choose Sylva for your next building project!

Read more on our website

Sylva Beams and Columns
An advanced wood product developed for the demands of today's construction industry

Stronger than conventional timber with a higher strength-to-weight ratio than steel, Sylva Beams and Columns offer unlimited flexibility in design opportunities while reducing your project's overall carbon footprint.

Sylva Stairs
Cut to your design with precision

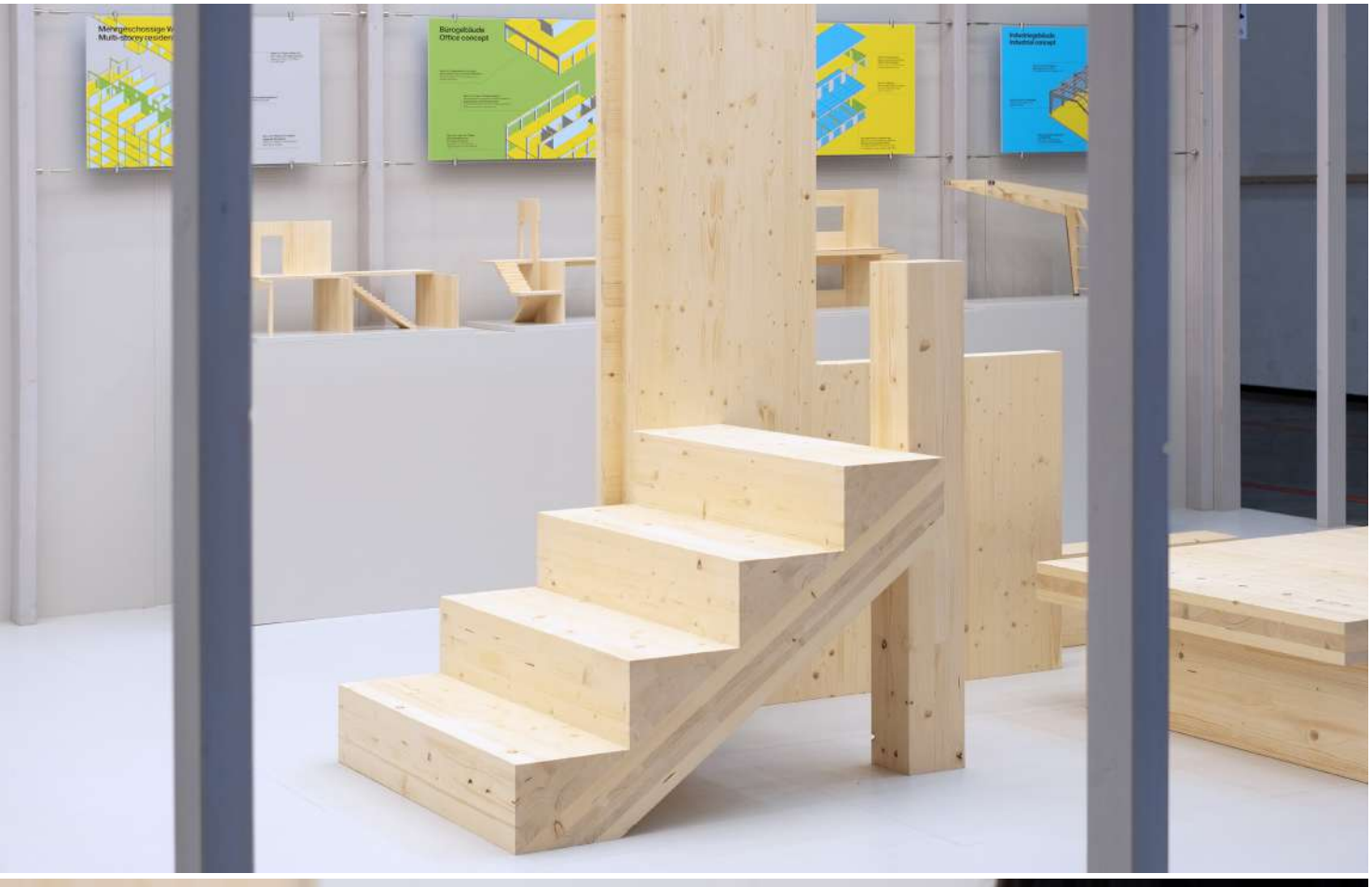
Are you in search of high-quality, easy-to-install stairs for your next building project? Sylva Stairs are custom designed and come ready to install on-site with no need for specialised tradespeople. Better yet, you can use Sylva Stairs during the construction phase eliminating the need for temporary stairs.

Sylva Floors and Roofs
Experience how easy it can be to build with wood

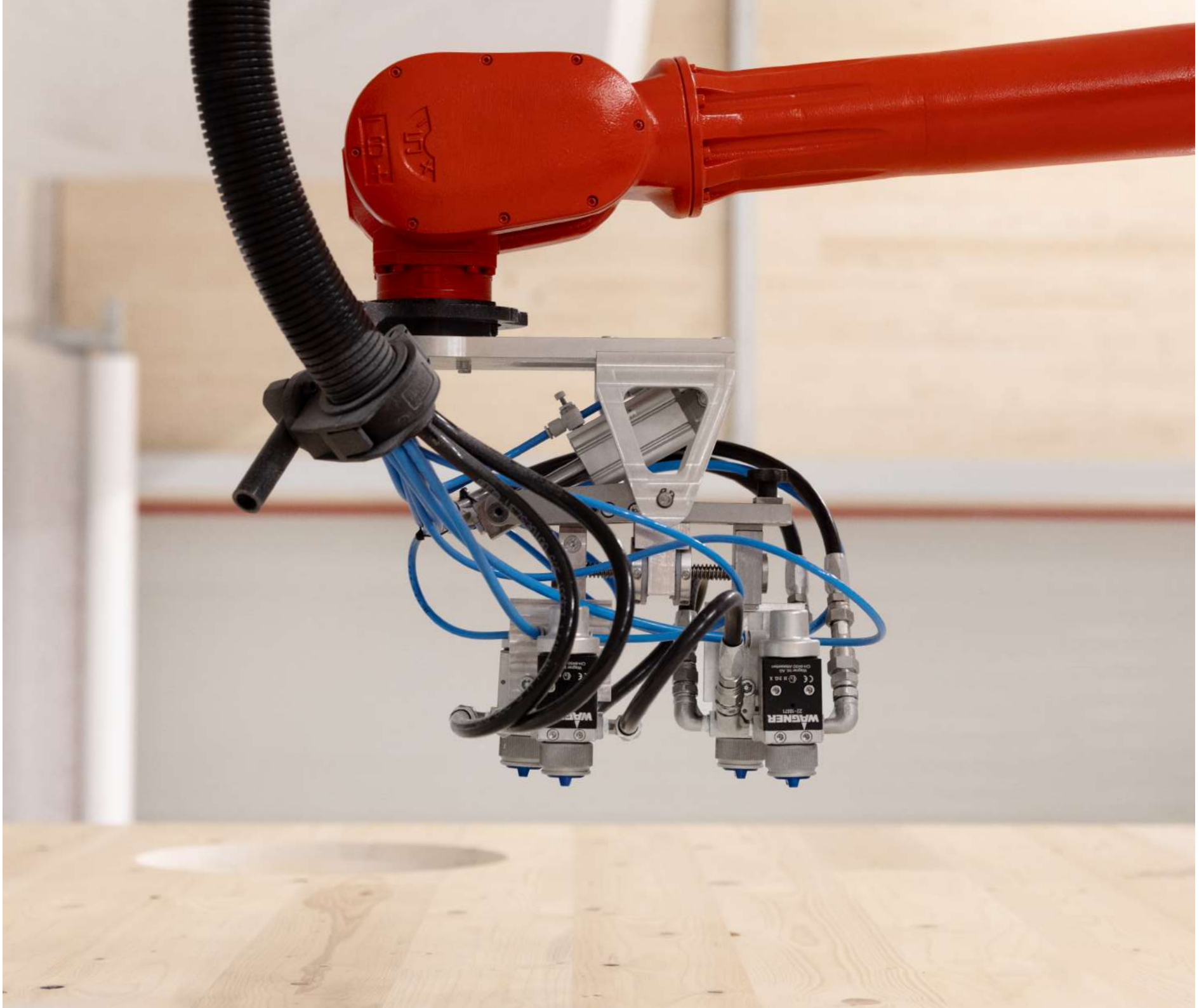
Sylva Floors and Roofs are custom-made, and prefabricated structural elements that can span short or long distances. View our wide range of floor and roof solutions and see how easy it is to design efficiently for all circumstances without any requirement for additional beams or support.

Sylva Walls
Ready-to-fit walls

Sylva Walls can be delivered with openings for windows, and doors pre-cut and ready for installation. Shorter set-up times and lower construction costs will make your next project a breeze.


Bürogebäude
Office concept

Stora Enso
Headquarters
Katajanokan Laituri
Helsinki, Finland


WAGNER

Sylva™ Services

If you are involved in the conception and planning of buildings, our smart services support you before and during your construction, both online and in person. Discover the wide range of services to help save you time and keep your business at the forefront as the industry pivots to a high-performance, precision-engineered, prefabricated kit-of-parts approach to building.

Whether you are a seasoned planner, architect, engineer, or involved in making decisions about the materials for expanding our built environment, you will quickly see the benefits of our aids and services. Read more to discover how they simplify mass timber construction from design to delivery to construction with sustainable and long-lasting results.

Sylva Services

Calculatis

The popular service to optimize materials based on your design
Let Calculatis by Stora Enso help you specify the optimal materials for your designs based on your parameters and structural requirements. Over twenty thousand registered users worldwide access our free, professional online design tool. Structural engineers particularly enjoy the design modules for floors, roofs, columns, beams, headers, supports, and connections for structures made from CLT, LVL, GLT and solid timber. It also lets you conduct hygrothermal and fire design analysis according to Eurocode and Swiss building code (SIA).

BIM Library

Download BIM objects of our Sylva™ range with all the know-how of the production process parametrically integrated so you can design for the most material and cost-efficient way. Find recommended build-ups for compartment walls/floors, and external walls, available for download in CAD and PDF and classified according to the acoustic and fire certification.

Knowledge Hub

Instantly locate expert knowledge, best practices, and research updates on mass timber construction on our web-based platform, where you can filter, search, and export what you need to know.

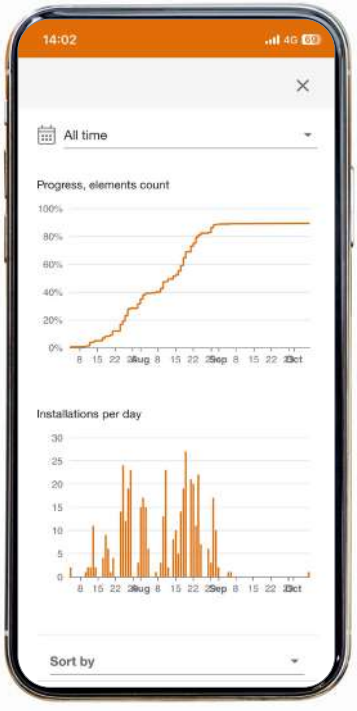
CNC processing

With the assistance of modern CNC technology, we produce custom Sylva™ kits to enable fast and economical assembly on the construction site with a high degree of prefabrication.

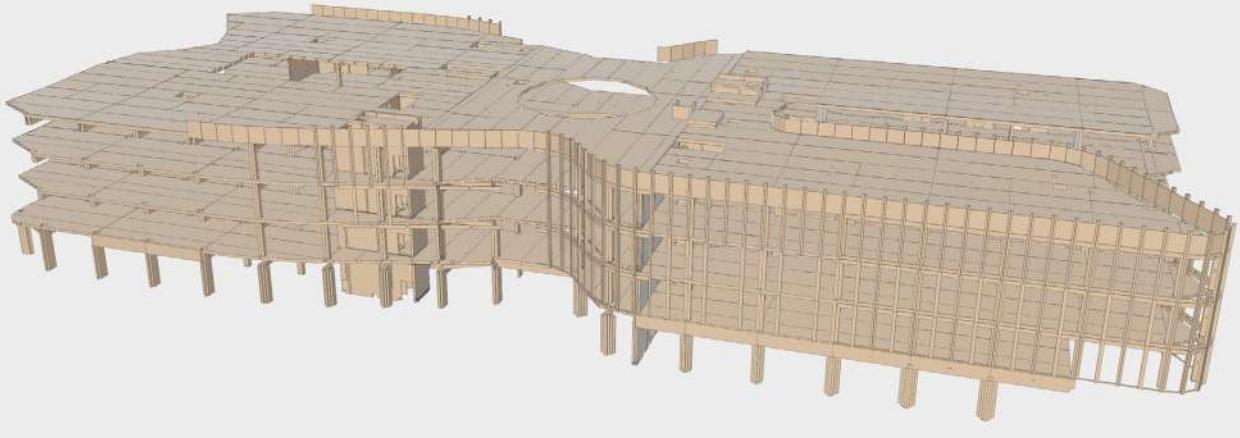
Sylva360™

Your digital assistant for efficient assembly
Accelerate construction time, minimise on-site errors and streamline your mass timber installation process with our leading-edge project management tool. Connect 3D models with your on-site crew to quickly identify building elements and their location from delivery to final assembly by scanning the product label QR code. Track your project's progress and access vital information in a user-friendly system available to everyone on the project team with any device or browser, be it a smartphone, tablet or laptop.

Sylva360™
by Stora Enso



CAD drawing
Stora Enso
Headquarters
Katajanokan Laituri
Helsinki, Finland



Our fully automated coating line applies high-quality water-based coatings to 500 000 m² of Sylva CLT Walls and Floors every year.

Hydrophobic coatings help stabilise moisture content during the construction phase.

Protect

Rain or shine
Multi-functional coatings and membranes increase construction speed on-site and deliver outstanding results during and after construction. Our experienced technicians offer a comprehensive service to advise you on the proper protective measures. We operate a fully automated state-of-the-art coating line to apply the highest quality water-based coatings.
Ask us about our UV Hydrophobic coatings, end grain sealer, temporary membranes and insecticides.

Connect

Let us do the heavy lifting for you
Reduce risks (and headaches) by preinstalling reusable or non-reusable lifting devices in factory-controlled settings with computer-aided design and precision. Our technical team of experts advise on the best equipment and oversees every detail for a smoother overall construction process with a quick and efficient installation.

Logistics, load planning and delivery

When you order from Stora Enso, we provide an extensive range of logistics services to ensure your deliveries arrive promptly and precisely when you need them anywhere in the world. Ask us about our various methods of transportation, 3D load plans, custom packaging, just-in-time delivery, and flexible intermediate storage solutions.

Expert support

Do you or your team need project support or assistance? Consult one of our experts on design, moisture management, fire safety, building physics, and structural engineering assistance to gain optimal use of raw materials. We are here for you every step of the way and invite you to ask us questions or have us check your planning process.

Stora Enso Headquarters
Katajanokan Laituri
Helsinki, Finland

Hotel Reimar,
Sant Antoni de Calonge, Spain

Architect:
Jordi Tió

Developer:
Hotel Reimar

Stora Enso partner:
Madergia

Bad Sankt Leonhard
Kindergarten
Extension
Bad Sankt Leonhard,
Austria

Building products

We sell a wide variety of products including:

- Cross-laminated timber (CLT)
- Laminated veneer lumber (LVL)
- Rib Panels
- Glued laminated timber (GLT/Glulam)
- Sawn and planed wood
- Cladding and decking
- KVH structural timber (Konstruktionsvollholz)
- Window and door components
- ThermoWood
- Pellets

The Ritz – Carlton Maldives
Fari Islands, Male, Maldives

Architect:
Kerry Hill Architects Pte Ltd

Developer:
Timber Concept GmbH

Main contractor:
Sanken Overseas (Pvt) Ltd

Cross-laminated timber (CLT)

CLT is a solid wood construction product consisting of at least three bonded single-layer panels arranged at right angles to each other. Sizes of up to 3.45 x 16 metres can be produced. CLT panels are made up of several layers and are available in different panel thicknesses. The layers are bonded with carefully selected adhesives that are suitable for their respective purpose.

CLT products are long-lasting and safe to use and recycle. They are continuously tested to ensure that they meet the strictest requirements in terms of indoor air emissions. CLT also offers virtually boundless possibilities in terms of construction concept, style and architecture. It is suitable for internal and external walls and for floors and roofs.

GAIA, Nanyang Technological University (NTU) Singapore, Asia

Architect:
Toyo Ito & Associates, RSP Architects Planners & Engineers (Pte) Ltd
RSP Architects Planners & Engineers (Pte) Ltd

Developer:
Nanyang Technological University

Eurban/Steeltech Industries PTE Ltd

Earth Observatory/ Geological Research Base, Svalbard, Norway

Architect:
LPO arkitekter

Developer:
Norwegian Mapping Authority

Stora Enso partner:
Woodcon

Heyne Tillett Steel's Offices, Chart Street London, U.K.

Developer:
Heyne Tillett Steel

Stora Enso Partner:
B&K Structures

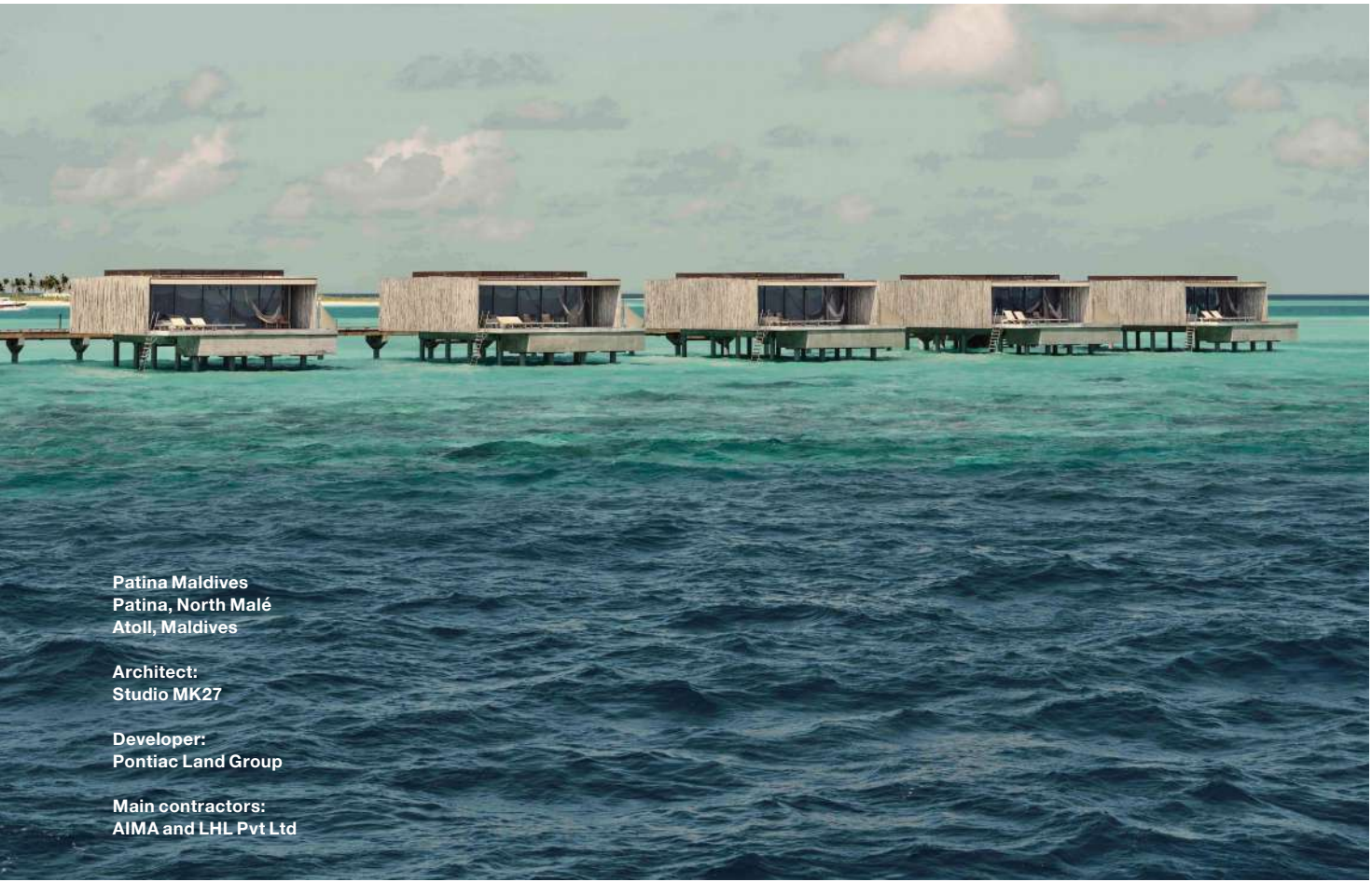
Applications

CLT is extremely versatile and can be fully combined with other building materials. Thanks to its load distribution properties in two directions, CLT sets no limits to architectural building projects. For this reason, it is becoming increasingly used for the construction of houses and apartment buildings, as well as for industrial and commercial buildings. As a high-quality structural building material with an excellent strength to weight-ratio.

Benefits

CLT offers many advantages over conventional construction materials:

- Short construction time, easy to assemble and high level of prefabrication
- Up to 10% more living space gained by using CLT
- CLT is lighter than concrete or brick which can help unlock more potential building sites
- Environmentally-friendly and sustainable construction method
- Helps to reduce global warming
- Comfortable and healthy indoor climate
- Thermal insulation properties
- Earthquake-resistant construction method
- Sustainable, certified building material



Patina Maldives
Patina, North Malé Atoll, Maldives

Architect:
Studio MK27

Developer:
Pontiac Land Group

Main contractors:
AIMA and LHL Pvt Ltd

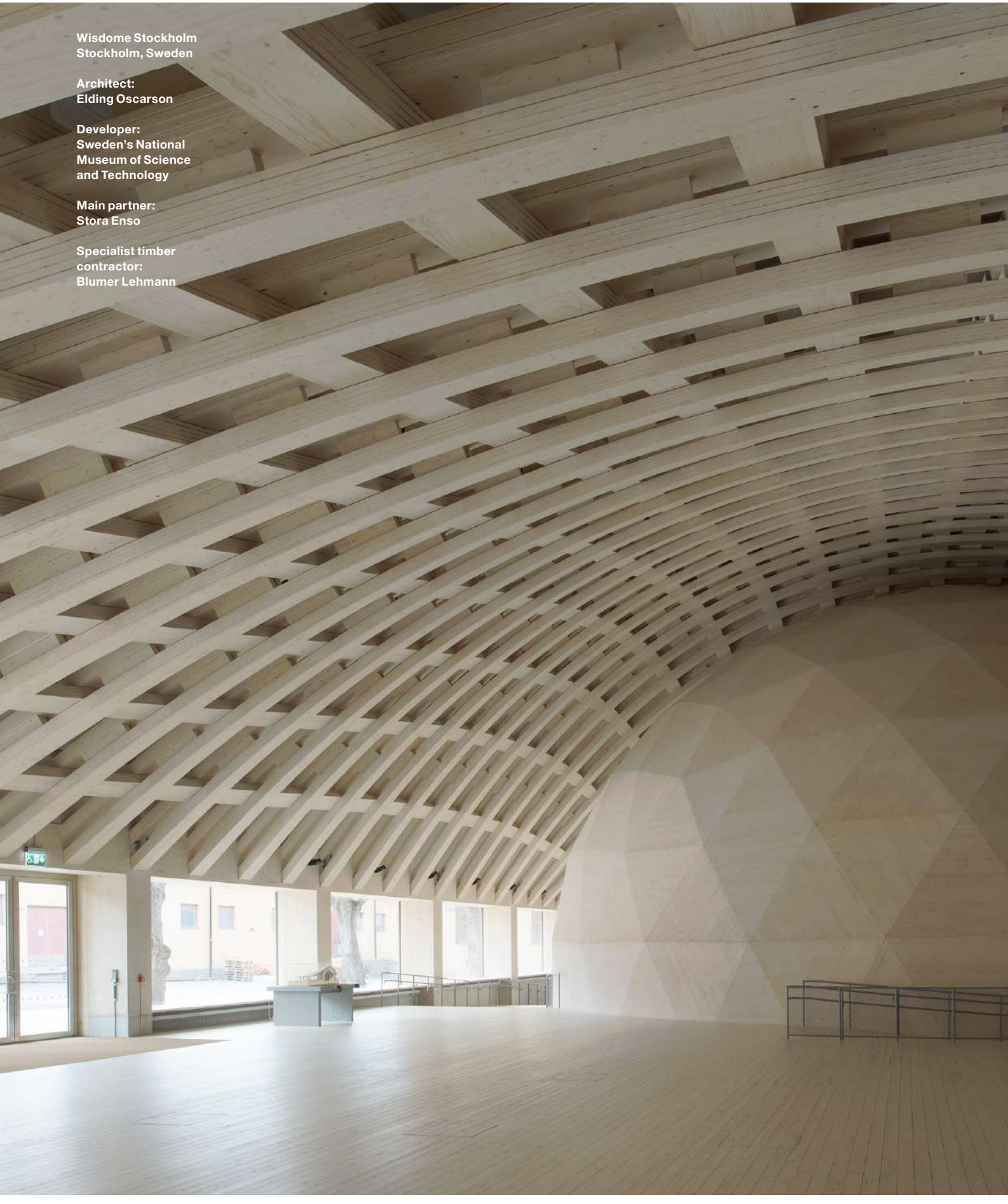
Patina Maldives
Patina, North Malé
Atoll, Maldives

Das Rad Oberländer
bicycle shop
St. Stefan im
Lavanttal, Austria

Stora Enso partner:
ZMP Holzbausysteme

CLT key data

Service class	Service class 1 and 2 according to EN 1995-1-1
Production certification	CE-marked with ETA 14/0349
Strength class	C24 maximum 10% C16 permitted according to ETA (C24 maximum 10% C16 permitted lamellas)
Moisture content	6% to 15% according to EN 13183-2
Wood species	Spruce (pine, fir, stone pine/larch and other wood types on request)
Weight/density	490 kg/m³. Please note a different density may be declared depending on the need (structural design, transportation, erection etc.)
Reaction to fire class	Sylva CLT Walls: Euroclass D-s2, d0 Sylva CLT Floors and Roofs: Euroclass D-s2, d0
Resistance to fire, charring rate	Sylva CLT Walls: Cover layer 0.63 mm/min | More than cover layer* 0.86 mm/min Sylva CLT Floors and Roofs: Cover layer 0.65 mm/min | More than cover layer* 1.3 mm/min According to ETA 14/0349 *More than cover layer 1.3 mm/min until 25 mm of charring. Afterwards, the charring rate of 0.65 mm/min on floors only applies up to the next glue line.
Airtightness	CLT is airtight according to EN 12 114
Thermal conductivity	0.12 W/mK according to ETA 14/0349
Vapour permeability	50 (dry) to 20 (wet) according to EN ISO 10456



Wisdome Stockholm
Stockholm, Sweden

Architect:
Elding Oscarson

Developer:
Sweden's National Museum of Science and Technology

Main partner:
Stora Enso

Specialist timber contractor:
Blumer Lehmann

Laminated Veneer Lumber (LVL)

LVL is an advanced wood product developed for the demands of today's building and construction industry. It consists of 3 mm spruce veneers glued together and is engineered to be relatively stronger than steel, yet lighter than concrete, while being highly workable and durable.

This massive wood product harnesses the power of Nordic Spruce. LVL has proven its value as the preferred choice for a wide range of structural applications. LVL is also one of the strongest wood-based construction materials relative to its weight, providing an ideal solution when strength, dimensional stability and high load-bearing capacity are essential. With its consistent quality and excellent workability, LVL is powering a new wave of agile, renewable construction.

Applications

LVL is the preferred choice for structural applications such as beams and columns when the ideal solution you're looking for is strength, dimensional stability, and high load-bearing capacity.

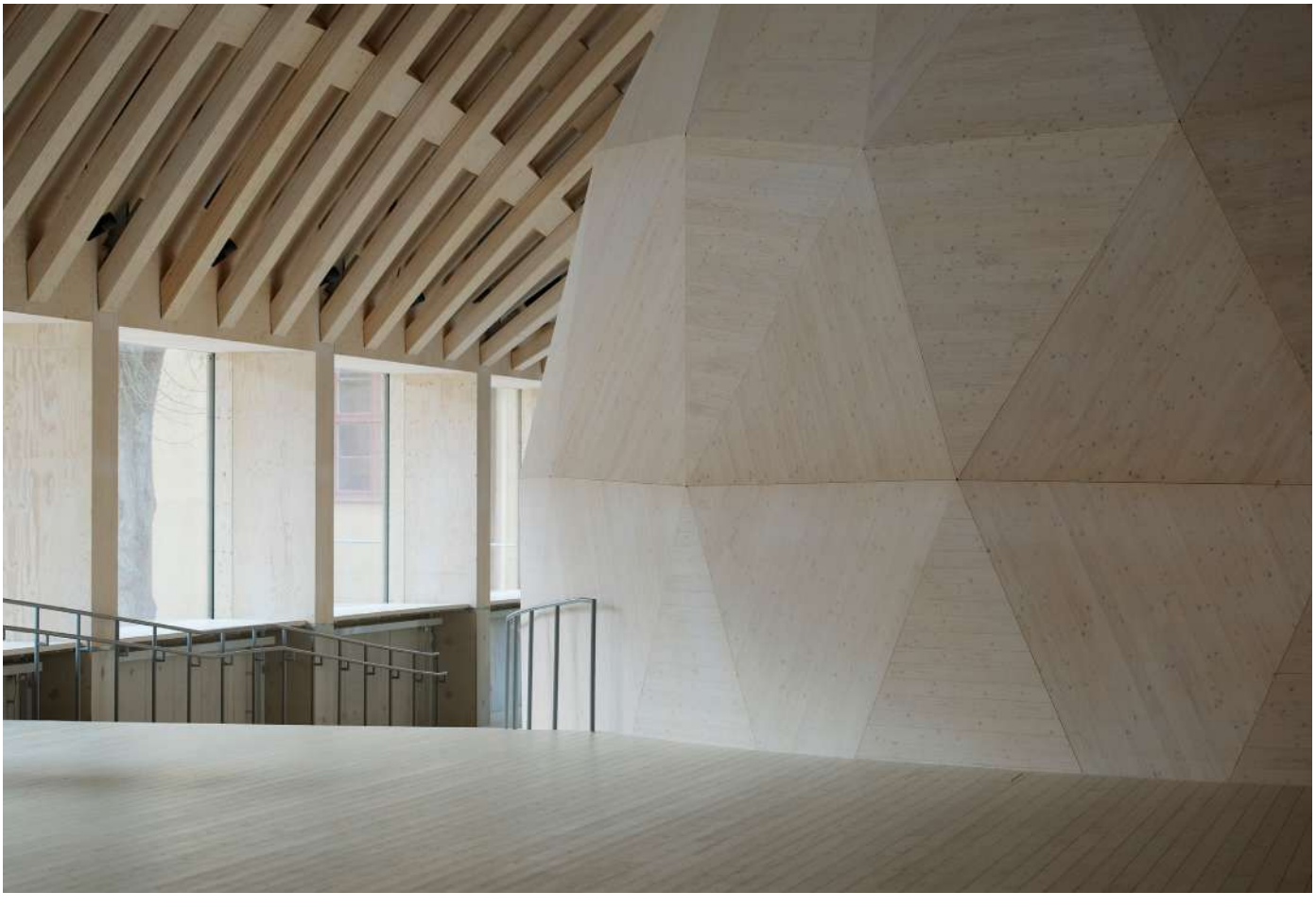
LVL delivers high technical performance and predictable results with standard woodworking tools thanks to its uniform and consistent quality.

Benefits

- Twice as strong as steel proportionate to weight
- Dimensionally stable, no warps, splinters or splits
- Homogeneous
- Easy to drill, cut, fasten and fit
- Requires only standard wood working tools
- Precision-engineered and easily tailored
- Low waste of material
- Light and highly portable
- Easily blended and bundled with other wood products
- Pre-fabrication cuts construction time

Entirely sourced from renewable, recyclable wood.

Wisdome Stockholm
(see previous spread
for details)



Types of LVL

S grade – precision beams

With S grade all the veneers run in the same direction enhancing the strength properties of the material. This feature, along with its light weight and ease of reworking, makes it the ideal choice for the construction industry in a wide range of applications – from framing to beams and roof components to form-work.

Available dimensions*
- Thicknesses (mm): 27 / 30 / 33 / 39 / 45 / 51 / 57 / 63 / 69 / 75
- Widths (mm): 200 / 220 / 240 / 250 / 260 / 300 / 350 / 360 / 400 / 450 / 500 / 600, up to 2 400 available on request
- Max length (m): 24.5

T grade – precision studs

All the veneers in T grade run in the same direction, however these are lighter veneers. As such it has all the qualities exhibited by LVL in terms of dimensional accuracy, structural rigidity and lack of twisting. Therefore, the T grade is suitable for structures requiring dimensional stability and straightness as well as lightweight. A typical application is wall studs for internal walls.

Available dimensions (mm)*
- 39x66, lengths 2 550–6 000
- 39x92, length 6 000
- 45x45, lengths 2 550–6 000

* Other dimensions upon request

X grade – precision panels

Veneers regularly spaced crosswise through the element makes this ideal for construction panels and boards. The X grade has superior inherent dimensional stability which opens up a host of possibilities for how it can be used – especially where shear strength is a design driver.

Available dimensions*
- Thicknesses (mm): 24 / 27 / 30 / 33 / 39 / 45 / 51 / 57 / 63 / 69 / 75
- Widths (mm): 200 / 220 / 240 / 250 / 260 / 300 / 350 / 360 / 400 / 450 / 500 / 600
- Panels (mm): 1 200–2 400
- Max length (m): 24

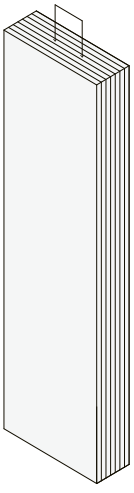
Multiple glued LVL G

Stora Enso LVL G is produced by multiple gluing LVL S or LVL X panels and together creating big dimension panels.

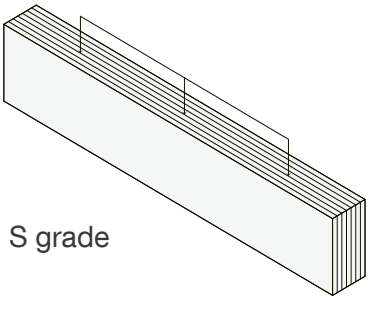
LVL G L-type

- LVL G LS and LVL G LX for beams and columns and beams structures
- LVL G LX massive panels for horizontal use in flooring or roofing applications

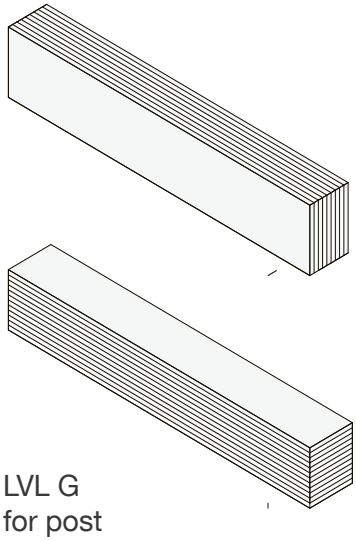
Available sizes (master panel)
- Thickness (mm): 84–500
- Width (mm): 100–2 400
- Length (m): 6.0–19 (with 100 mm increments)



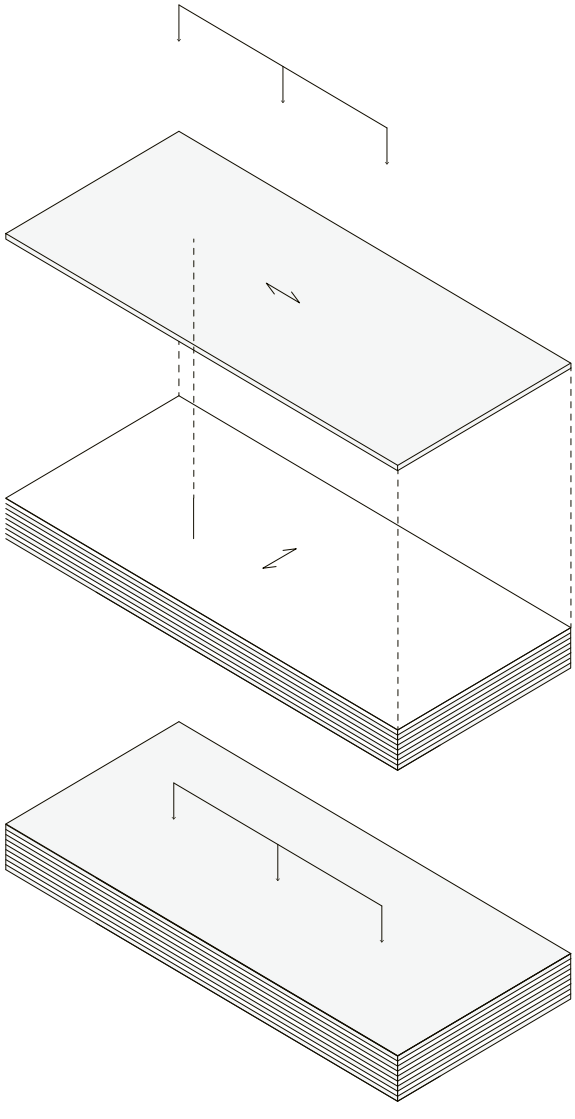
T grade



S grade



LVL G
for post
and beam



X grade

Wisdome Stockholm
(see page 74 for details)

LVL key data

Service class	Service class 1 and 2 according to EN 19951–1
Product certification	LVL is CE marked according to EN 14374 LVL G has ETA-approval ETA 20/0291
Strength class	LVL according to EN 14374 and LVL G according to ETA 20/0291
Moisture content	10% +/- 2%
Wood species	Spruce
Mean density	510 kg/m³ (characteristic density 480 kg/m³)
Reaction to fire class	Euroclass D–s2, d0
Resistance to fire, charring rate	According to Eurocode 5 βn =0.70 mm/min (notional charring according to EN 1995–1–2)
Thermal conductivity	0.13 W/mK
Water vapour resistance	Wet cup 70 Dry cup 200

Bad St. Leonhard Kindergarten Extension
Bad St. Leonhard, Austria

Rib Panels

Prefabricated Rib Panels by Stora Enso make the perfect choice for long-span structures and large open areas featuring unobstructed, column-free spaces. Made of massive wood, they are lightweight, cost competitive and environmentally sound.

We offer ready-to-install Rib Panels from CLT, GLT and LVL. Our Rib Panels can be installed quickly and easily on site and all are CE marked. Our Rib Panels are powering a new wave of visionary design.

Applications

For spans longer than 6 metres, rib panels provide an effective, economical solution. They have superior strength, stability and high load-bearing capacity, at a low weight. This provides you new possibilities in design, as well as maximum structural performance using less material.

The space between ribs can be used to route service lines or other installations. This can be ideal for public buildings that require good acoustic characteristics.

Because the rib panels are prefabricated and lightweight, you get a faster work-flow from delivery to assembly compared with other construction methods. There is no forming or curing time and no special equipment needed. Prefabrication also helps reduce construction costs.

Benefits

Rib panels create flexible, long span layouts for especially suited for commercial office buildings, residential buildings, schools, industrial buildings and structures with long span roofs.

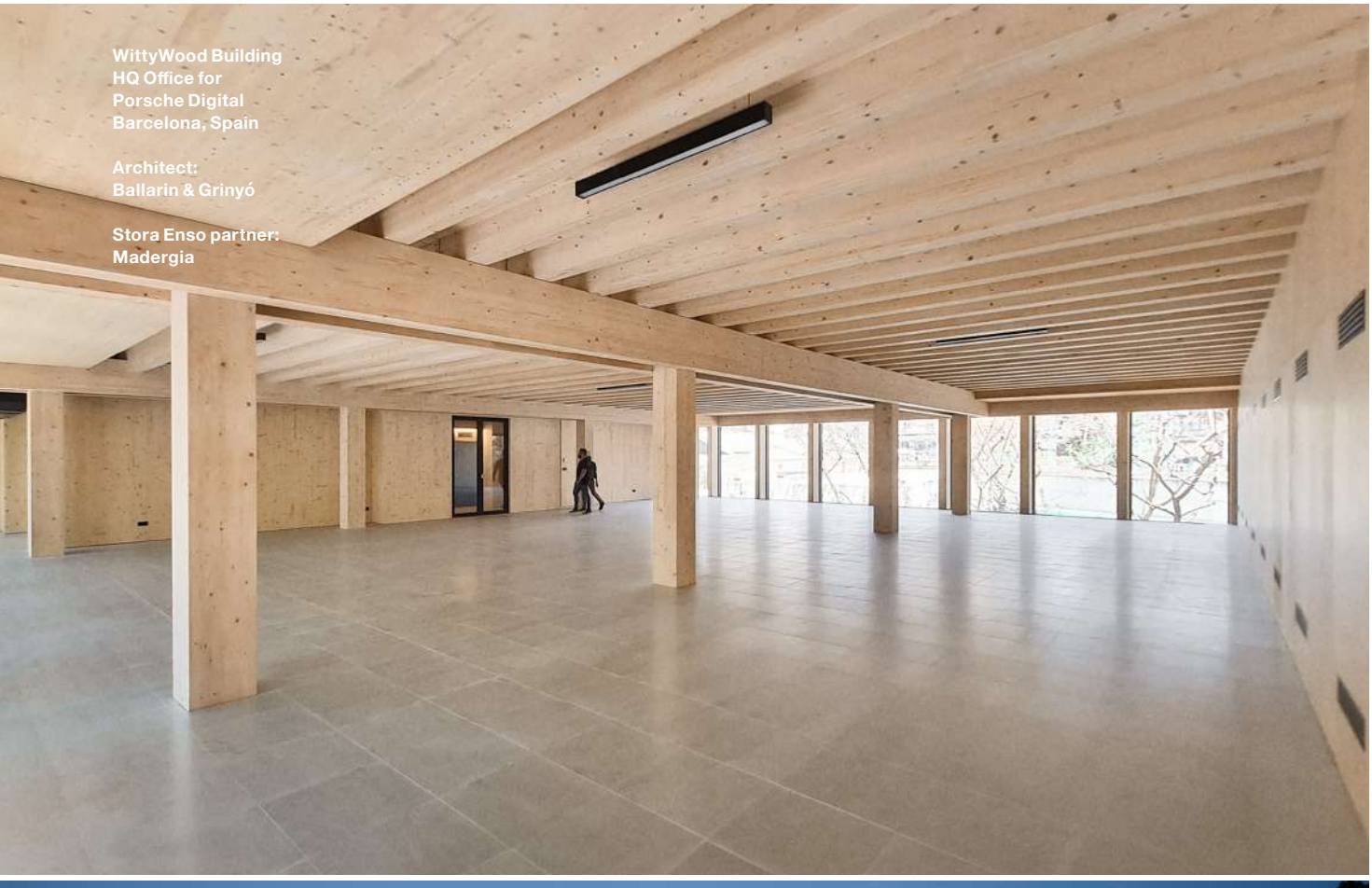
- Prefabrication allows faster construction and lower cost
- Fast installation, no need for special equipment
- Stronger structures with less material savings in foundation costs due to reduced self-weight
- Allow for long, open spans with less beams and columns for a flexible layout that can adapt over time as needs change
- Entirely sourced from renewable wood

CLT Rib Panels key data

Service class	Service class 1 and 2 according to EN 1995–1–1
Product certification	CE marked with ETA–20/0893
Strength class	According to ETA–20/0893: CLT panel according to ETA: C24 GLT ribs: GL 20h – GL 32h and GL 20c – GL 32c
Moisture content	11% ± 3%
Wood species	Spruce (pine or fir also possible)
Typical density	~490 kg/m³. Please note a different density may be declared depending on the need (structural design, transportation, erection etc.)
Reaction to fire class	Euroclass D–s2, d0
Resistance to fire, charring rate	According to ETA–20/0893 Annex 4, Fire performance classified according to EN 13501–2
Airtightness	CLT is airtight according to EN 12 114
Thermal conductivity of CLT panel	0.12 W/mK) according to ETA–20/0893
Water vapor resistance	50 (dry) to 20 (wet) according to EN ISO 10456

LVL Rib Panels key data

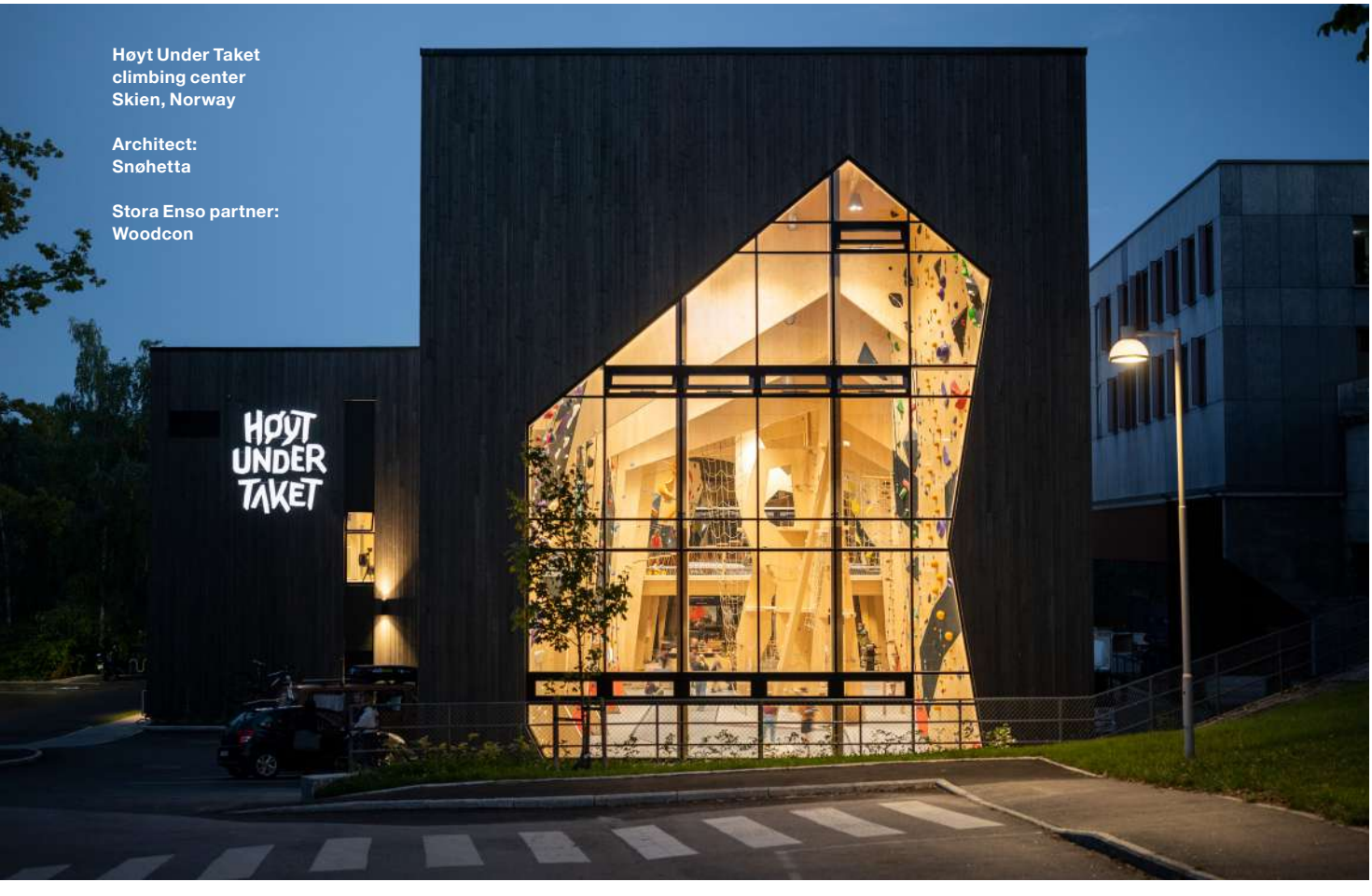
Service class	Service class 1 and 2 to according to EN 1995–1–1
Product certification	CE marked with ETA 18/1132
Moisture content	10% +/- 2% when leaving mill
Wood species	Spruce
Mean density	510 kg/m³ (LVL S and X)
Reaction to fire class	Euroclass D–s1, d0
Resistance to fire, charring rate	According to ETA 18/1132– Annex 2, Fire performance is classified according to EN 13501–2 1. Open LVL rib single fire board ceiling structure, up to REI 30 2. Semi-open LVL rib with double fire board ceiling structure, up to REI 90 3. Semi-open LVL rib with triple fire board ceiling structure, up to REI 120 4. Semi-open LVL rib with double fire board ceiling structure, up to REI 120 The LVL X panel on the lower side of LVL rib panel by Stora Enso – closed type (or inverting a non-closed type) may be used as a non-load-bearing protection for the rest of the LVL rib panel cross-section or as a load bearing part of the structure in the design of the resistance to fire. LVL material charring rate - According to EN 1995–1–2, Table 3.1
Airtightness	LVL has adequate airtightness according to ETA 18/1132
Thermal conductivity	0.13 W/mK according to ETA 18/1132
Water vapour resistance	Wet cup 70 μ Dry cup 200 μ



WittyWood Building
HQ Office for
Porsche Digital
Barcelona, Spain

Architect:
Ballarin & Grinyó

Stora Enso partner:
Madergia



Høyt Under Taket
climbing center
Skien, Norway

Architect:
Snøhetta

Stora Enso partner:
Woodcon

Høyt Under Taket
climbing center
Skien, Norway

World of Volvo
Gothenburg, Sweden

Architect:
Henning Larsen

Developer:
AB Volvo and
Volvo Cars

Stora Enso partner:
WiEHAG

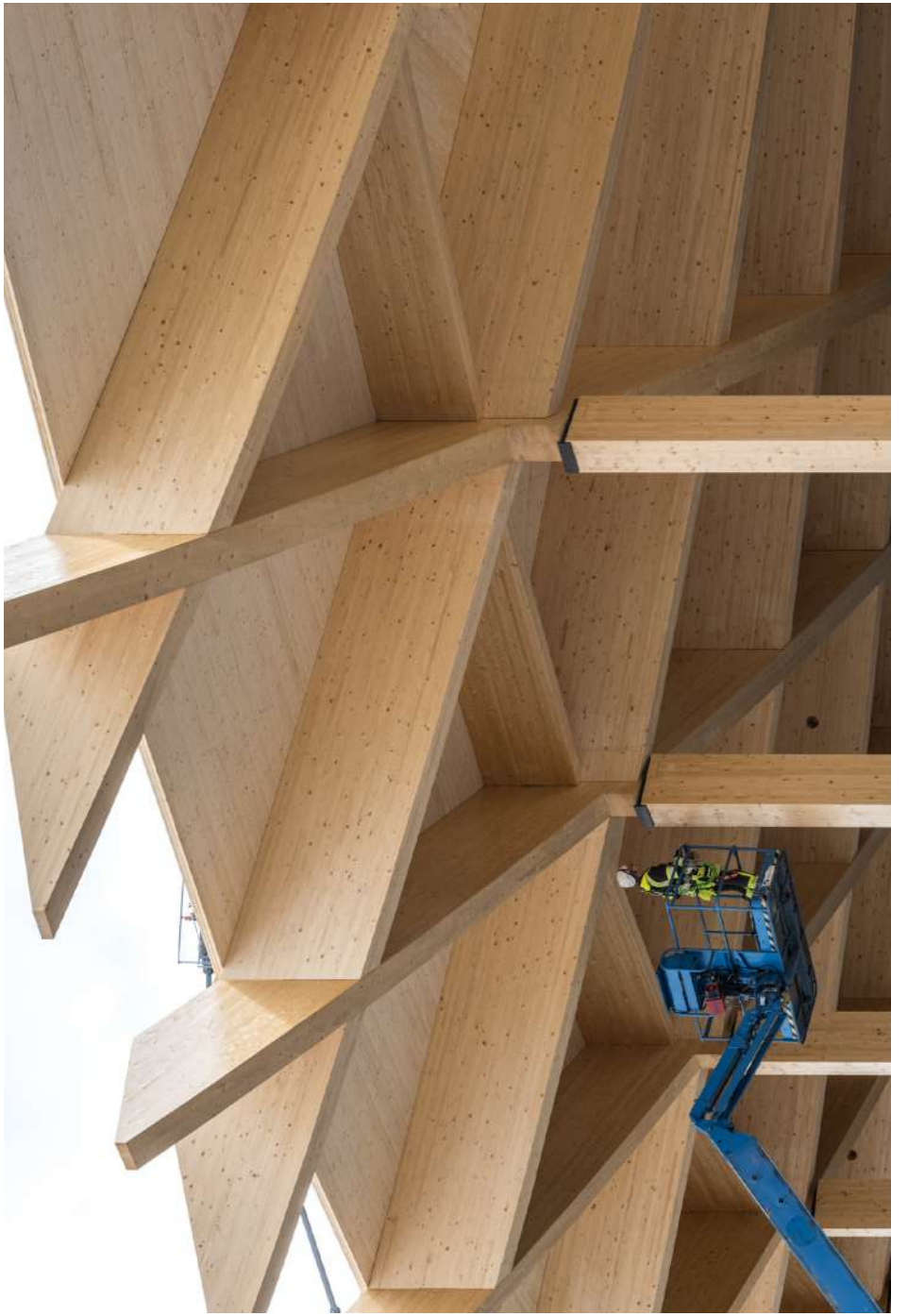
Glued laminated timber (GLT/Glulam)

GLT/Glulam is an engineered wood product for load-bearing structures. GLT products are stronger and stiffer than conventional timber. With a higher strength to weight ratio than steel, it can offer unlimited flexibility in design and construction opportunities.

GLT is particularly suitable for where there is a requirement for a natural solid wood appearance without visible joints of individual lamellas.

GLT consists of at least two dried boards or lamellas made of coniferous wood that are glued together in parallel with the fibers. Due to the strength grading of the raw material and the optimized positioning of layered structures, the product ensures a stable quality and has higher load capacities than conventional timber. The manufacturing process makes GLT a very dimensionally stable building material. GLT is available in visual or non-visual quality. Using finger-jointing, lengths of up to 16 metres can be produced.

World of Volvo
Gothenburg, Sweden



World of Volvo
Gothenburg, Sweden

Applications

GLT is typically used for beams in floors, roofs and columns. GLT beams can span more than 30 metres and can be found in every kind of building from churches to schools to commercial office buildings or even giant warehouses and distribution centres.

GLT is typically used where industrial strength is required. They can be used indoor and outdoor in both very dry and wet climates. Because of GLT's strength and excellent seismic resistance it is a suitable choice for construction that needs to span large distances or withstand the more dangerous forces of nature, such as earthquakes and typhoons. Common applications include:

- Structural parts of a building or bridge
- Posts, beams, studs, floor joists and roof rafters, lintels, floor beams
- Columns, including round, square, and complex sections posts
- Curved beams and arches

Benefits

GLT is highly resource-efficient because it consist of relatively thin pieces of timber bonded together to create a material similar in size and strength of old-growth timber. GLT therefore offers many benefits:

- Beams can freely span large distances – the sky is quite literally the limit when building with GLTs
- Versatile and easy to make to size
- Manufactured to precise dimensions
- Available in both non visible and beautiful finishes
- Easy to install and repair – no need for special equipment
- Predictable fire resistance; can outlast steel beams under the same fire conditions

GLT key data

Service class	Service class 1 and 2 according to EN 1995–1–1
Product certification	CE-marked, manufactured according to EN 14080
Strength class	GL24h, GL28c
Moisture content	12% ± 2% (max 15%)
Wood species	Spruce
Weight/Density	420 kg/m³ (GL24h), 420 kg/m³ (GL28c)
Reaction to fire class	Euroclass D–s2, d0
Reaction to fire, charring rate	βn=0.7 mm/min (notional charring according EN 1995–1–2)
Thermal conductivity	0.13 W/mK
Water vapour transmission resistance	40

Stora Enso Gruvön
Saw Mill
Grums, Sweden

Sawn and planed

Stora Enso offers an extensive range of high-quality rough sawn, structural or planed timber. Our portfolio includes a huge variety of dimensions and lengths, and can cut and planed to exact requirements.

We supply strong, workable and beautiful whitewood and redwood products in various qualities cut to specific lengths according to customer needs. Like all our wood products, our classic sawn products come with the highest environmental credentials.

Our sawmills utilise the most modern technology and select the best raw material for each end use – reducing handling costs and raw material waste. Processes are designed for different customer needs and they are continuously improved. This way, you are sure to get a reliable delivery and all-round high quality.

Applications

Our classic sawn wood segment focuses to serve industrial integrators, merchants and DIY retailers, as well as wholesalers and trading houses. We supply a wide range of sawn and planed wood to choose from: rough, strength graded or planed sawn goods. Uses include:

- General construction (both new build and renovation)
- Joinery
- Frame and truss
- Floorings
- Garden products
- Cladding and decking
- Furniture
- Packaging

Benefits

- Highly accurate size tolerances, flexible sizes and lengths
- Superior form stability and surfacing
- Consistent and uniform quality
- High environmental standards
- Utilisation of the latest technology and high-quality raw material

House in Vålberg
Värmland, Sweden

Sawn and planed wood key data

CLS items used in USA

Thickness	2” (38 mm)
Widths	3”–12” (solid), 6” and 8” (FJ)
Lengths	6’–16’ (solid), 26’–36’ (FJ)
Wood species	Spruce and pine
Moisture content	12% ± 2%
Grades	No2 and MSR grades
Produced in	Austria, Czech Republic, Estonia, Lithuania, Latvia, Poland

Framings for Australia

Thickness	35, 45 mm
Widths	70 / 90 / up to 190 mm
Lengths	2.4–6.0 m
Wood species	Spruce and pine
Moisture content	12% ± 2%
Grades	F5, F8, MGP10, MGP12
Produced in	Austria, Czech Republic, Estonia, Finland, Lithuania, Poland, Sweden

Hagarazai Japan by Stora Enso

Thickness	15–45 mm
Widths	40–120 mm
Lengths	2.7–3.985 m
Wood species	Spruce
Surface	Planed
Moisture content	18% ± 2%
Grades	A, B
Produced in	Austria, Czech Republic, Finland

CLS Japan by Stora Enso

Thickness	38 mm
Widths	89 / 140 / 184 / 235 mm
Lengths	1.830–3.985 m
Wood species	Spruce
Surface	Planed
Moisture content	18% ± 2%
Grades	A, B, JAS 2
Produced in	Czech Republic

CLS/SCANTS UK by Stora Enso

Thickness	38 / 42 / 45 mm
Widths	69 / 89 / 94 / 140 mm
Lengths	2.4–4.8 m
Wood species	Spruce
Surface	Planed
Moisture content	18% ± 2%
Grades	C16 and B
Produced in	Czech Republic, Estonia, Finland, Lithuania, Sweden

C24/C18 for European market

Thickness	45 or 70 mm
Widths	70 / 95 / 120 / 145 / 170 / 195 / 220 / 245 mm
Lengths	Falling length 3.0–6.0 m
Wood species	Spruce or pine
Surface	Planed and rough sawn (C-class)
Moisture content	18% ± 2%
Grades	Mainly C24, C18, but even C30, C35 and C40
Produced in	Estonia, Sweden, Finland

Paupio Verslo / Centro Terasos Business Center
Vilnius, Lithuania

Architect:
Plazma Architecture Studio

Developer:
Darnu Group

Cladding and decking

Stora Enso provides ready to install products for exterior claddings, interior walls, ceiling panels and floor boards. The products are suitable for both new constructions and renovations and ideal for construction companies, industry retailers and DIY builders.

Consistent quality and availability of goods are provided due to many years of production experience, the careful selection of raw materials and modern technologies. The products are available uncoated or surface treated. There are several types of coatings available: primer, paint, wax or lacquer. All of the products are mini-bundled or neatly shrink-wrapped in order to achieve clean, long-lasting in user friendly packaging.

Applications

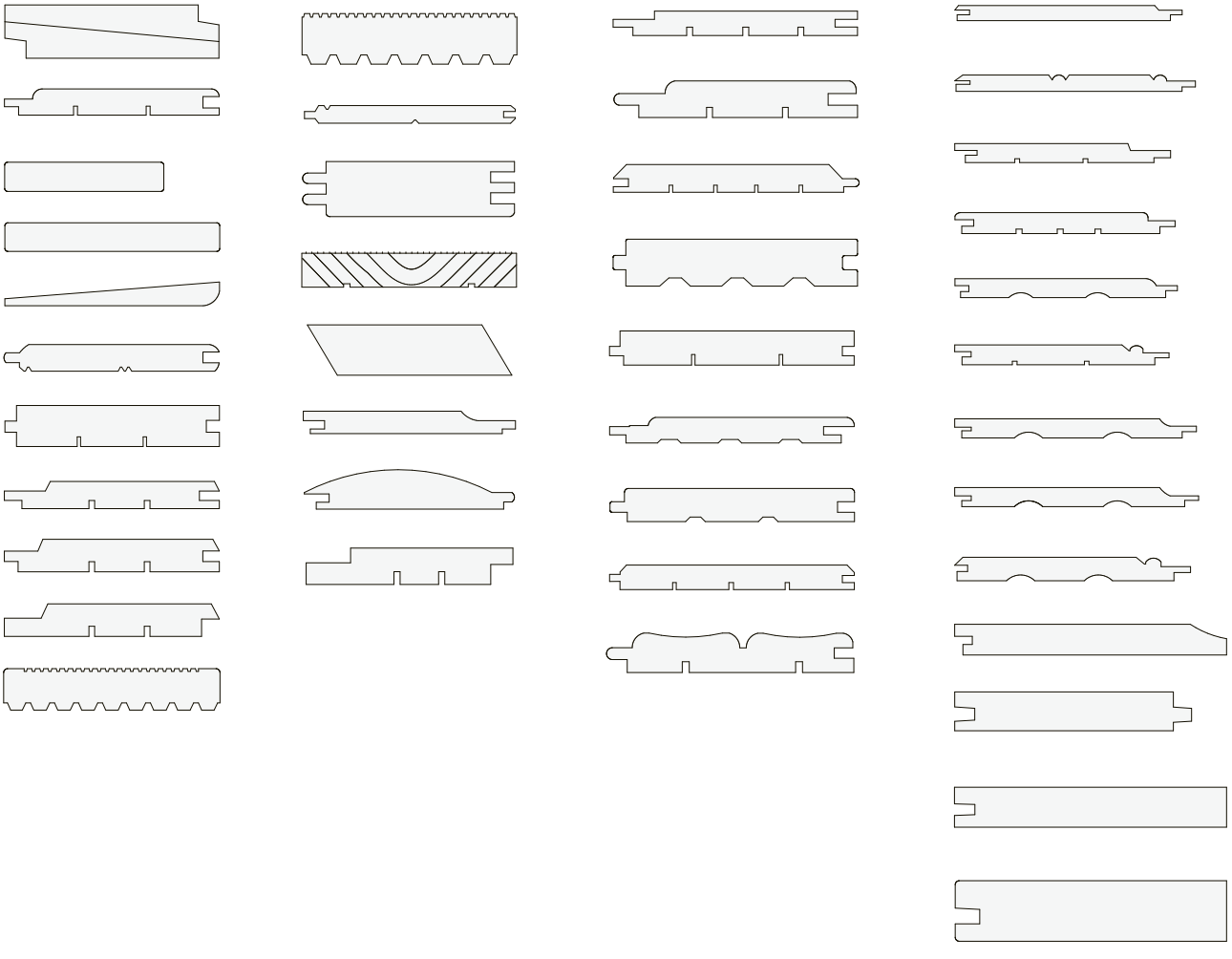
A wide range of uses for wood cladding and decking include:

- Exterior and interior cladding
- Wall and floor panels
- Decking and garden furniture/fences
- Saunas
- Facades
- Building sunshades

Benefits

Our wood cladding and decking panels are lightweight, feature precise tongue-and-groove joints, and have uniform, high quality. This makes them easy to install and cost-effective. When properly maintained, they last for decades.

Profiles produced by Stora Enso



Paupio Verslo Centro Terasos
Business Center
Vilnius, Lithuania

Types of cladding and decking

Exterior cladding
Exterior cladding in wood adds a warm, natural look and feel to a building. Choose natural, factory primed, or ready finished and painted panels from all colours on the exterior paint colour chart. Priming will prolong durability and help protect the cladding panels from sunlight and moisture as well as provide an excellent adhesion surface for any top paint coat.

Interior cladding and wall panels
Wood cladding can add interest, warmth and comfort to an interior space. It's perfect for softening a more industrial design and giving it some character. Our wood interior cladding panels come uncoated or ready finished with wax or varnish. A popular treatment is a white wax varnish with water-based pigment content, which lets you leave the wood grains visible.

Wooden flooring
Solid timber floorboards provide elegant flooring that's pleasant to the touch. Our floorboards are crafted from sustainably sourced, sound-knotted pine or spruce and feature beautiful grain patterns. This durable product balances indoor humidity and has natural sound insulation properties.

Pension Bovida
Čenkovice, Czech Republic

Architect:
Plazma Architecture Studio

Developer:
Darnu Group

Structural Timber/ Konstruktionsvollholz (KVH®)

KVH® is a technically-dried, strength-graded and generally finger-jointed solid wood product made from softwood (mainly spruce) and designed for a wide variety of applications in modern timber construction. Alternative types of softwood are also available for special uses, such as for thresholds or for outdoor areas not directly exposed to the elements.

Types of KVH structural timber

Depending on the intended use, we manufacture two ranges which essentially differ only in terms of their visual appearance:

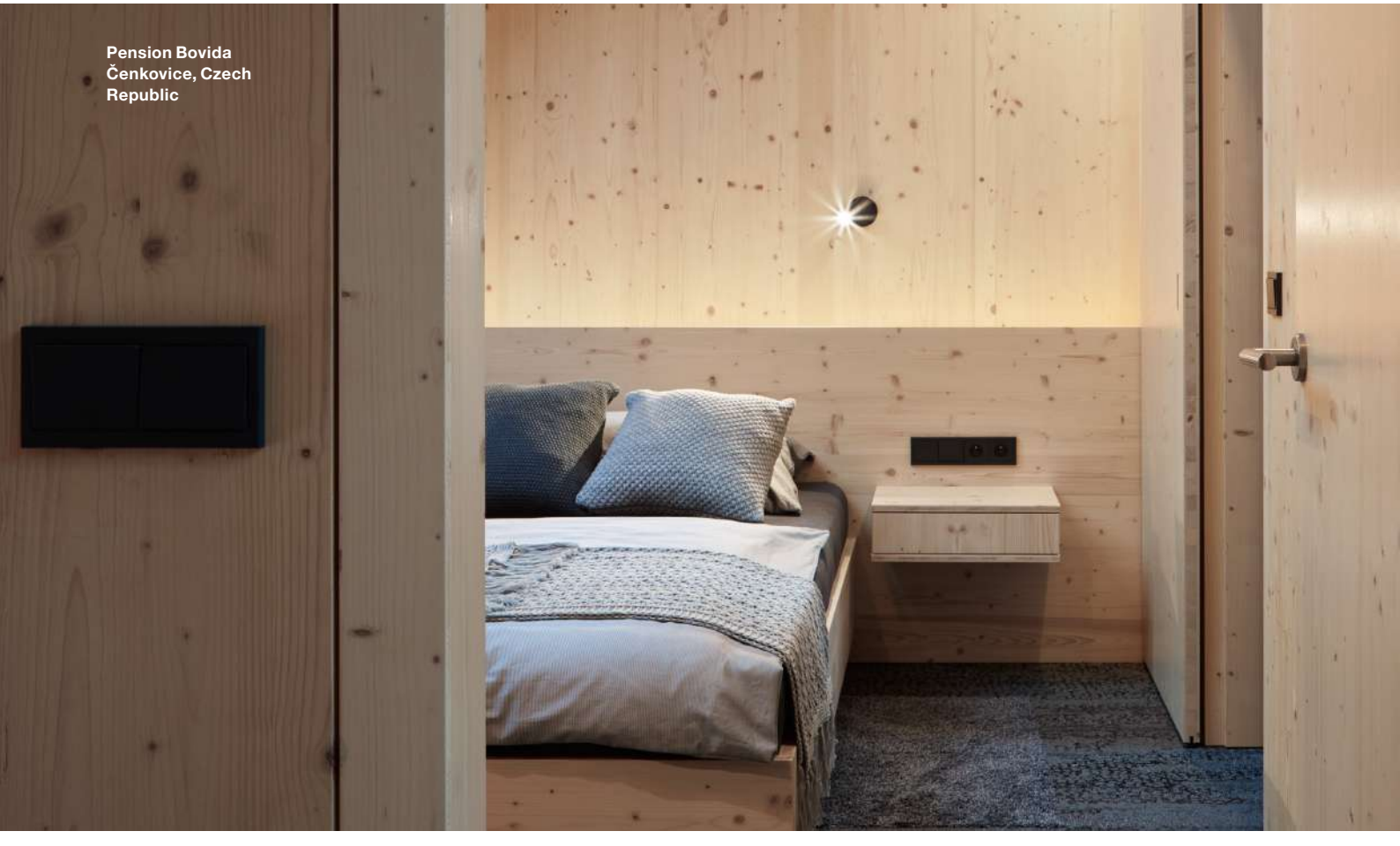
- KVH-Si for visible areas
- KVH-NSi for non-visible structures

Applications

KVH is a solid structural timber typically made from spruce softwood and used in modern timber construction. Other softwood types, like pine, are available on request for special uses like wooden thresholds or outdoor areas not directly exposed to the weather.

Benefits

- Superior dimensional stability
- Attractive solid wood appearance
- Finger jointing enables lengths up to 16 m
- Surpasses requirements specified in German grading standard DIN 4074–1 and other European grading standards
- Insect-resistant due to kiln drying, so you can eliminate preservative treatment in compliance with national standards for wood preservation
- Custom orders on short notice possible



Pension Bovida
Čenkovice, Czech Republic

KVH key data

Grading criterion	Requirements KVH-Si	Requirements KVH-NSi	Comments
Technical standard	EN 15497 EN 14081	EN 15497 EN 14081	Finger jointed timber Non finger jointed timber
Strength class[1] (acc. EN 338)	Min. C24	Min. C25	Important properties (strength, stiffness and density) needed for dimensioning acc. EN 1995–1–1
Grading standard	DIN 4074	DIN 4074	Assignment of visual grading standards acc. EN 1912
Moisture content	15% ± 3%	15% ± 3%	Technically dried at minimum 55°C. The specified wood moisture content is a prerequisite for dispensing, for the most part, with preservative treatments, and also the precondition for gluing
Type of cut	The cut is made taking into account the fact that on an ideally formed log, the pith is cut through with two-strand cutting		For KVH-Si the cutting of a centreboard is possible (≥ 40mm) upon request
Wane (acc. DIN 4074)	Not permitted	≤ 10% of the smaller side of the cross section permitted	
Dimension stability of the cross section (acc. EN 336)	Tolerance class 2: < 100 mm: ± 1.0 mm d/b ≥ 100 mm: ± 1.5 mm		The tolerance of the stability of the length needs to be defined, principally no negative deviations permitted
Knot condition	Loose and dead knots are not permitted; occasionally faulty knots or part of knots up to max. 20 mm Ø are permitted	Acc. DIN 4074	
Knot diameter ratio	Acc. DIN 4074 (e.g. S10/C24: A ≤ 2/5, not more than 70 mm)		Knot ratio A, determined acc. DIN 4074
Ingrown bark	Not permitted	Acc. DIN 4074	
Cracks, radial shrinkage cracks (dry cracks)	Crack-width b ≤ 3% of the width of the surface	Acc. DIN 4074	KVH-Si full fills higher needs as the requirements acc. S10/C24, DIN 4074
Resin pockets	Width b ≤ 5 mm	–	Additional criteria
Discolouration	Not permitted	Acc. DIN 4074	KVH-Si full fills higher needs as the requirements acc. S10/C24, DIN 4074
Insect damage	Not permitted	Acc. DIN 4074	KVH-Si full fills higher needs as the requirements acc. S10/C24, DIN 4074
Twist	Acc. DIN 4074	Acc. DIN 4074	The permissible extent of twisting is not specified in further detail as no unacceptable twisting should be expected if all the other criteria are complied with
Crook	Acc. DIN 4074 (free of heart centre cutting ≤ 4 mm/2 m)	Acc. DIN 4074	KVH-Si full fills higher needs as the requirements acc. S10/C24, DIN 4074
End finishing	Trimmed perpendicular	Trimmed perpendicular	
Surface properties	Planed and chamfered	Levelled and chamfered	
Packaging	Per package 4 sides green wrap (single pieces upon request 4 sides black wrap)	Per package 4 sides green wrap	White wrap upon request
Marking	Marked on surface		
Certificates	Certificates can be sent on request – or downloaded from Stora Enso homepage		

1) Higher strength class upon request

Stora Enso Headquarters
Katajanokan Laituri
Helsinki, Finland

Architect:
Anttinen Oiva Architects

Developer:
Varma

Stora Enso partner:
Puurakentajat

Window and door components

Stora Enso specialises in quality components. We draw on generations of innovation to create the best-in-class products for windows, doors, mouldings, thresholds, and much more.

Our extensive portfolio of offerings caters to a wide range of luxury and everyday applications. Everything we make is tailormade. And naturally, as sustainability leaders, we ensure the most efficient use of raw materials with minimal waste.

As Europe's leading industrial component manufacturer with multiple production units, and sourcing from our own forests, we provide peace of mind for our customers that we can deliver.

Quality

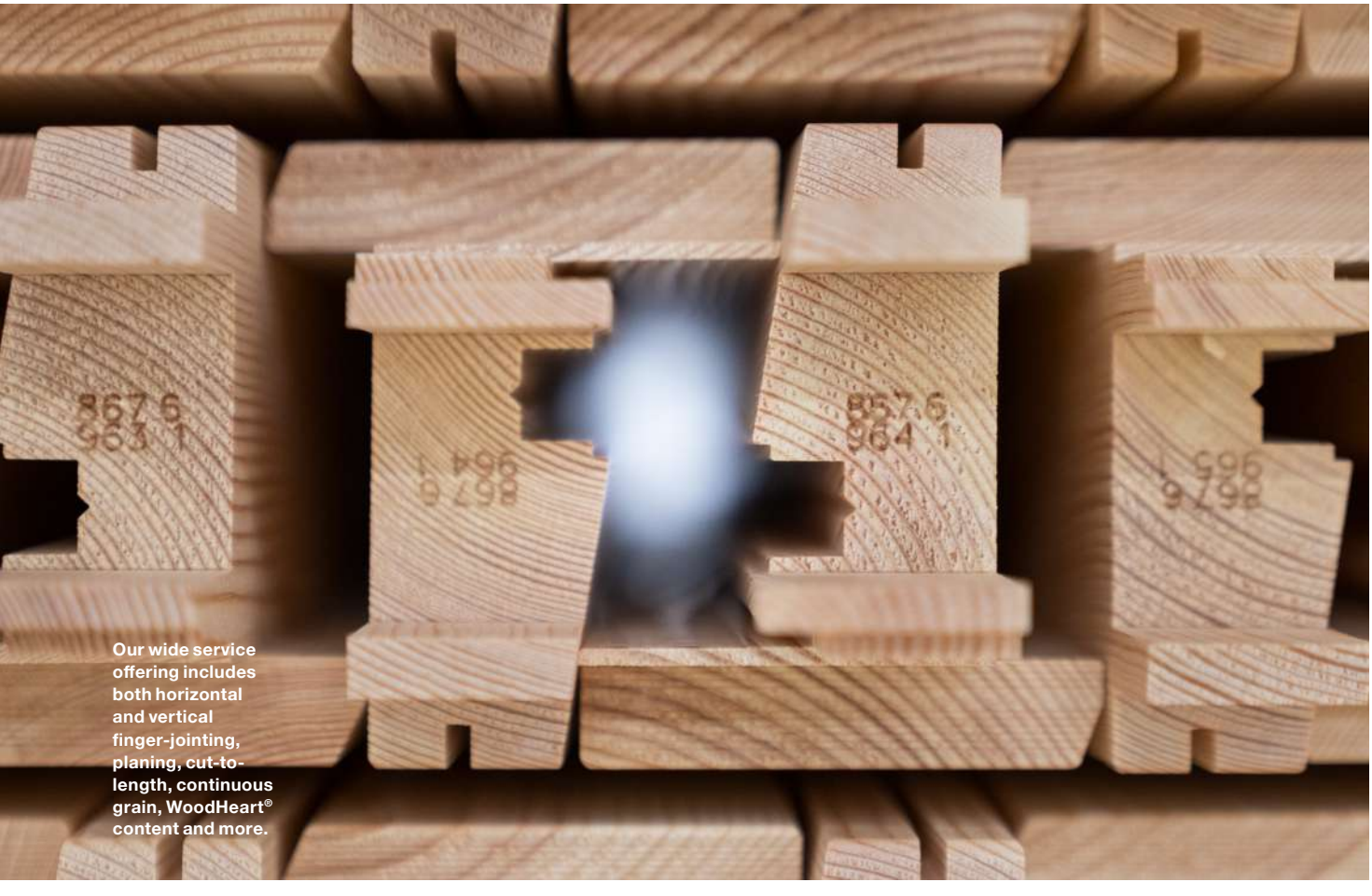
All raw materials are carefully selected from our sustainably managed forests and scanned to guarantee the best possible quality, according to customer specification. We exceed standards for all materials and processes. Quality certificates from the forest to our mills ensure we meet the most rigorous controls. Production certificates include ISO 9001, ISO14001, ISO 50001, ISO 45001.

Country specific product quality certificates include Nordic Certified Scantlings.

Precision fabrication of all our products delivers uniform quality with highly accurate size tolerances, enabling maximum performance for windows and doors for decades to come.

Sustainability

We know the origin of all the wood we use. We fully support our customers with their sustainability needs and requirements. Third-party certification under FSC®, PEFC chain of custody or both ensures traceability of the raw material from sustainably managed forests.



Our wide service offering includes both horizontal and vertical finger-jointing, planing, cut-to-length, continuous grain, WoodHeart® content and more.

Our offerings

Door components
Stora Enso offers high-quality joinery timber for door frames, jambs, posts, stiles and rails. The quality starts at the source with carefully selected raw materials from sustainably managed forests at the heart of our entire product range.

Window components
Stora Enso offers high-quality joinery timber for window sashes, frames, posts, skirtings and more – uniquely engineered to your needs. We provide finger-jointed and glue laminated products that feature continuous and uniform quality and highly accurate size tolerances, enabling maximum performance for windows for decades to come.

Effex® Dura—this is one unique product!
Its innovative thin-lamella structure is ideal for long-span windows and sliding doors where extra rigidity is needed. Its strength and visible properties are also excellent for wooden stair handrails, furniture, etc.

- Thin lamella structure on visual surface is beautiful (stained or lacquered)
- Dimensionally stable up to 6 m
- Versatile for use with smaller dimensions in sashes/frames and maximises the overall glass area for expansive panoramic views.

Elitfönster windows
Villa Leander
Sweden

Key data

Door components

Thickness / Widths / Lengths	Customer selectable
Wood species	Pine and spruce
Moisture content	10, 12% ± 2%
Processing	Planed, finger-jointed, laminated, module length cut
Surface	Planed, rough
Glued products	Edge or face glued products into block profiles
Grades	1–4 side clears, sound knot quality

Window components

Thickness / Widths / Lengths	Customer selectable
Wood species	Pine
Moisture content	10, 12% ± 2%
Surface	Planed
Strength class	N/A
Processing	Planed, finger-jointed, glue laminated, module length cut
Glued products	Edge- or face-glued products into L or Block profiles
Grades	1–4 side clears and sound knot quality

Effex® Dura

Thickness	45–126 mm
Widths	45–306 mm
Lengths	Up to 6 m
Wood species	Pine
Surface	Planed, finger-jointed, laminated
Moisture content	Max. 10% ± 2%
Strength class	MoE up to 14.4 [kN/mm^2] depending on structure
Grades	Depending on customer requirement

Uldal AS windows
The Fairytale castle
Norway

After thermal treatment, the wood exhibits a uniform and rich, golden-brown tone throughout that showcases the natural vein of the wood.

World Ski Championships 2015
Lugnet Arena
Falun, Sweden

ThermoWood®

Warm, safe and sound wood for decking, cladding and sauna interiors. Stora Enso ThermoWood is thermo-treated wood produced using completely natural methods – heat and steam. The thermal treatment improves the wood's properties, opening up a wide range of applications for use outdoors or indoors.

ThermoWood uses a patented production process and is a registered trademark that may only be used by licensed companies that are members of the International ThermoWood Association.

The raw material for ThermoWood comes from premium-quality pine and spruce from responsibly managed forests. Since no harmful chemicals are added during the treatment process, ThermoWood contains only renewable substances. This makes ThermoWood also the perfect solution for a warm, attractive deck that's pleasant to walk on and safe for kids to play on, and is also an excellent choice for interior cladding, spa and sauna interiors.

Stora Enso Pavilion at FIS Nordic World Ski Championships Planica, Slovenia

Architect:
Studio Abiro

Stora Enso partner:
CBD

Applications

Thermowood is an environmentally sound alternative to pressure-impregnated wood. Its natural high-temperature treatment makes this wood resistant to varying weather conditions, fungi and rot.

Because of its decay resistance, lower moisture content and lower thermal conductivity compared with untreated wood, Thermowood is dimensionally stable, durable and possesses good insulation. It keeps its shape and stands up to changing climate conditions Typical uses include saunas, exterior cladding and facades, decking, fences, garden furniture and sun shades for buildings.

Benefits

- 100% natural processing with no chemical additives, biodegradable and recyclable
- Third-party certification under FSC®, PEFC chain of custody or both ensures full traceability of the raw material from sustainably managed forests
- Superior performance outdoors, indoors or in different weather conditions thanks to special thermal treatment
- Possesses high dimensional stability, durability and decay resistance, has colour uniformity and reduced thermal conductivity
- No resin leakage, easy to paint or apply surface treatments

A versatile product, a variety of uses

Thermowood is a very popular choice for **exterior cladding**, decking, and facades. We provide standard and custom wood profiles, or the raw material for further processing. Because, Thermowood is resin and pith free, you can easily apply glue, paint, oil finishing or surface treatments like a fire-retardant coating or simply leave it natural. Thermowood is also an ideal material for **interior panelling** and flooring, furniture and other building components. With reduced thermal conductivity and resin-free, it works very well in saunas too.

To ensure the best technical performance, Stora Enso's Thermowood is available in two standard thermal treatment classes, Thermo-S and Thermo-D. Thermo-S has improved stability, an attractive light golden-brown tone, and is mainly suitable for interiors. Thermo-D has improved durability, a darker brown tone, and is used in both interior and exterior applications.

Thermowood key data

Application	External and internal cladding and decking, industrial productions like joineries, window and door manufactures
Heat treatment classes	Two standard thermal modification classes – Thermo-D and Thermo-S
Standard dimension	Rough Thermowood out of pine and spruce is available as standard: 25x125 / x150; 32x125 / x150; 50x125 / x150 Planed sizes are often 19, 26, 42 mm thick and 117 and 140 mm wide. Other sizes available on request
Use class	Stora Enso Thermowood with Thermo-D treatment is suitable for use class 3 (EN 335)
Durability/resistance to rot	Thermo-D is falling into durability class 2 (EN 350) Without additional treatments Thermowood by Stora Enso is not resistant to termites
Dimensional stability	The thermal treatment process greatly reduces wood's tendencies to warp, swell or shrink in different humidity conditions. The wood's equilibrium moisture balance may be decreased to less than 40–50 % compared to untreated timber
Thermal properties	0.09 W/mK according EN ISO 13787 + EN 12667
Leaching	As no substances are added during the Thermowood process, no chemical leaching will occur. In addition, as the resin is removed during the process, the problem of resin leakage through the knots or pitch pockets is removed
Ecological and safe	Thermowood is produced using high temperature and steam. Since no chemicals are added during the process Thermowood contains only renewable substances. Disposal of offcuts can be burned or given into the normal waste system
Certification	PEFC, FSC, CE, KOMO, International ThermoWood Association member

PENNY Supermarket
Skuteč, Czech Republic

Architect:
Yuar s.r.o.

Main contractor:
PS Slovacko s.r.o

Vítáme vás
zelenější

Wood pellets

Wood pellets — reliable heat from a renewable resource. Stora Enso's quality wood pellets made only from wood shavings, dry chips, and sawdust by-products from our sawmills offer a reliable, renewable energy source for residential, commercial, or industrial heating. Heating with our pellets leaves a much smaller CO_2 footprint than heating with natural gas – and an even smaller footprint than oil, making them both an economical and environmental positive choice. Our pellets are also a popular choice for horse bedding that's comfortable, hygienic and hassle-free.

We take responsibility for the entire supply chain from forest to front door. As we integrate our wood pellet production from several mills across Europe and only sell locally we can ensure stable pricing, efficient delivery times and environmental certification. Stora Enso is one of only a few pellet producers in Europe with a fully transparent, third-party verified, Environmental Product Declaration (EPD).

A complete portfolio to serve diverse needs

Pellets for residential heating
At Stora Enso, we source, make and deliver biomass pellets. Heating with our wood pellets is a natural, sound way to heat homes and districts that's gentle on the environment. With less smoke out the chimney and less money from your wallet, Stora Enso has your heating and environmental needs covered. Heating an average-sized house with our premium pellets instead of natural gas can save 2.7 tons CO_2 annually. We offer wood pellets by the bag or in bulk available year-round in easy-to-store containers thanks to their compact nature. And, because our biomass pellets are a dense form of fuel with high energy content, they burn up to 25–50% on average less than fossil heating fuels.

Pellets for industrial heating
Stora Enso biomass wood pellets offer an environmentally friendly alternative to gas, oil, and electricity to power industrial plants and commercial premises. We use only wood shavings, dry chips, and sawdust to manufacture our pellets, meaning our pellets are highly energy-rich and produce a minimal volume of ash.

When burned in pellet boilers, our consistently high quality premium pellets lower both heating bills and CO_2 emissions. Pellet pricing is more reliably stable vs speculation-driven energy like electricity and fossil fuels. This makes budgeting both affordable and predictably accurate. Depending on your country, you could also benefit from tax incentives and renewable energy credits.

For companies participating in supplier transparency and traceability programs, our pellets come with third-party certification from FSC® and PEFC.

Pellets for horse bedding
Pellet horse bedding can make a great alternative to wood shavings or straw. Stora Enso's premium horse bedding pellets are sourced from local and sustainably managed softwood. Our horse bedding pellets quickly absorb moisture, transforming them into a fluffy bed, soft and comfortable underfoot. Our pellets contain natural resins and oils to combat ammonia, keeping your stable smelling sweet.

Our pellets are also heat-treated and are therefore naturally antiseptic, free from mould and bacteria. They are a safe choice and provide a healthy hoof and limb environment for all ponies and horses. The virtually dust-free pellet bedding can also benefit horses prone to respiratory conditions. Unlike other bedding materials, this super-absorbent and long-lasting bedding results in fewer muck heaps. As a result, it's possible to cut mucking out time by more than half. Thanks to the compact nature of wood pellets, the bags take up minimal space compared with similar alternatives.

Easy Pellet Refill
Easy Pellet Refill is Stora Enso's service to automatically keep small and medium-sized companies stocked with 100% sustainable pellets. With the help of a monitoring device, we provide peace of mind that your supplies are always enough to meet your needs.

Applications

Pellets are an energy-rich, low-ash, low-moisture and clean-burning heating source for wood pellet heaters and boilers in residential, commercial and large-scale industrial heating applications.

Our premium wood pellets also make a natural and comfortable choice for equine bedding. They are highly absorbent, drastically cut mucking out time, reduce bedding consumption, and are easy to store and transport.

Benefits

- Thanks to years of ambitious and continuous work in our operations to replace everything with non-fossil or renewable energy solutions, and by removing unnecessary transport, our premium pellets have an outstandingly small carbon footprint.
- Reduces environmental impact – a clean-burning renewable fuel source
- We surpass all legal requirements including FSC® and PEFC Chain of Custody certified wood traceability system for responsible sourcing. Our pellets are certified A1 by the leading independent testing authorities, including ENplus® DINplus
- Cost efficient – costs much less on average than fossil heating fuels
- Energy rich – with its high energy content and density, it burns more efficiently than traditional firewood
- Easy online ordering from the comfort of your own home and superior customer service and delivery reliability
- Convenient to use – can be bought in bulk or bags and stored in less space than other biomass fuels
- Absorbent as equine bedding

Pellets webshop

Stora Enso's quality wood pellets for home use or equine bedding can be ordered directly to your home from our webshop

Pellets key data

Diameter	6/8 mm
Dry content	Approx. 92%
Ash content	Approx. 0.4%
Ash melting point	Approx. 1 400 °C
Density	Approx. 650 kg/m³
Energy per kg	Approx. 4.85 kWh
Energy per m³	Approx. 3 250 kWh

Pellets webshop

About Stora Enso

Part of the global bioeconomy, Stora Enso is a leading provider of renewable products in packaging, biomaterials, and wooden construction, and one of the largest private forest owners in the world. We believe that everything that is made from fossil-based materials today can be made from a tree tomorrow.

Stora Enso shares are listed on Nasdaq Helsinki Oy (STEAV, STERV) and Nasdaq Stockholm AB (STE A, STE R). In addition, the shares are traded in the USA as ADRs (SEOAY).

Stora Enso Sawmill
Bad St. Leonhard,
Austria

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Lasse Arvidson

pg 118
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pg 123 (bottom)
Mikko Nikkinen

Where we make it

Wood Products operates globally and has 14 production units in Europe. Our global distribution network ensures consistent and efficient shipments to our customers.

Product	Capacity per year
Sawing	5.4 million m³
Further processing	2.2 million m³
CLT	310 000 m³
LVL	85 000 m³
Pellets	460 000 t

StoraEnso

storaenso.com/contact

Partner network