

# Building systems for the natural building methods of the future.





# Prefabricated construction will be the natural choice of the future.

Wooden building frames are nothing new. In fact, they have been used from time immemorial. The high load-bearing capacity of wood relative to its weight, combined with its flexibility and environmental benefits, give wood a strong position compared with other construction materials. Not to mention its natural environmentally friendly properties that allow the creation of a pleasant and comfortable living environment. In our building system for homes and commercial buildings, we have incorporated all the positive properties of wood in order to develop industrially produced building components from wood using a high degree of prefabrication and efficient assembly methods. This has made us a real competitor to conventional building methods.

**A leading position that comes naturally** Our building system for homes in multi-storey buildings has developed strongly since its beginnings in the early 2000s, with a CV that includes a number of popular residential areas. And we have also a natural cutting-edge position within the industry with our commercial buildings constructed using glulam frames. Increased demand in recent years for efficient construction and sustainable, climate-friendly construction solutions means that we at Martinsons have arrived at exactly the right time. With 50 years of experience and

thousands of completed projects, we are naturally at the cutting-edge of the development of industrially produced wooden buildings.

**Ready-made frame systems using glulam and solid wood** Martinsons' building system comprises complete frame systems made from glulam or solid wood. Slow-growing pine and spruce from northern Sweden provide the raw materials from which the products are made. This systematic approach creates entirely new economies of scale that allow the realisation of the next generation of wooden buildings, whether your vision is to rationalise building processes, create attractive living environments or simply make use of the unique aesthetic characteristics of wood.

**Simpler purchasing and planning** Our customers often call upon our expertise right from the early stages of a project, which we believe is an advantage as it simplifies the planning process. Starting from a basic specification of requirements and sketches, we can produce complete planning documentation and calculations. We make good use of the latest 3D design tools in our work.





**Complete construction kits direct from the factory** The ready-to-assemble building components are manufactured in a production environment with low humidity, which guarantees both consistent dimensions and quality. Wooden building materials are easy to work with and contribute towards a pleasant workplace, with low levels of sawdust and unusually low noise levels. The light weight of the frame also reduces the costs associated with laying foundations and transportation. The delivery consists of a complete building kit with detailed assembly instructions. The Martinsons concept also makes the construction process more efficient and includes logistical solutions for precise coordination and scheduling in accordance with the relevant construction plans.

**Martinsons also offers assembly services** In addition to complete material deliveries, Martinsons is also able to assemble commercial buildings and apartment blocks. Martinsons Entreprenad has more experience of assembling glulam commercial buildings than anyone else in Sweden. A specially developed assembly system is available for apartment blocks, which ensures quality and dry building conditions beneath weather protection. Customers themselves can choose what aspects of the contract Martinsons should be responsible for.

**Timber construction - a smart environmental choice** Climatic issues represent an important argument in favour of wooden buildings. Building components made from wood have less environmental impact compared with other materials in terms of both production and construction, and the material forms part of the natural cycle. Additionally, Martinsons can supply homes in the form of 'low-energy houses', which have been designed to be compatible with the sustainable society of the future.

**Added value**

- Homes in tall buildings made from solid wood
- Buildings with large, open spaces
- Simpler purchasing and planning
- Quality-assured factory production
- Lower costs for preparing foundations and transportation
- Rational assembly and short construction times
- Pleasant and safe working environment
- Dry construction
- Fire resistant
- Attractive and pleasant living environments
- Quiet home environments

Establish assembly system

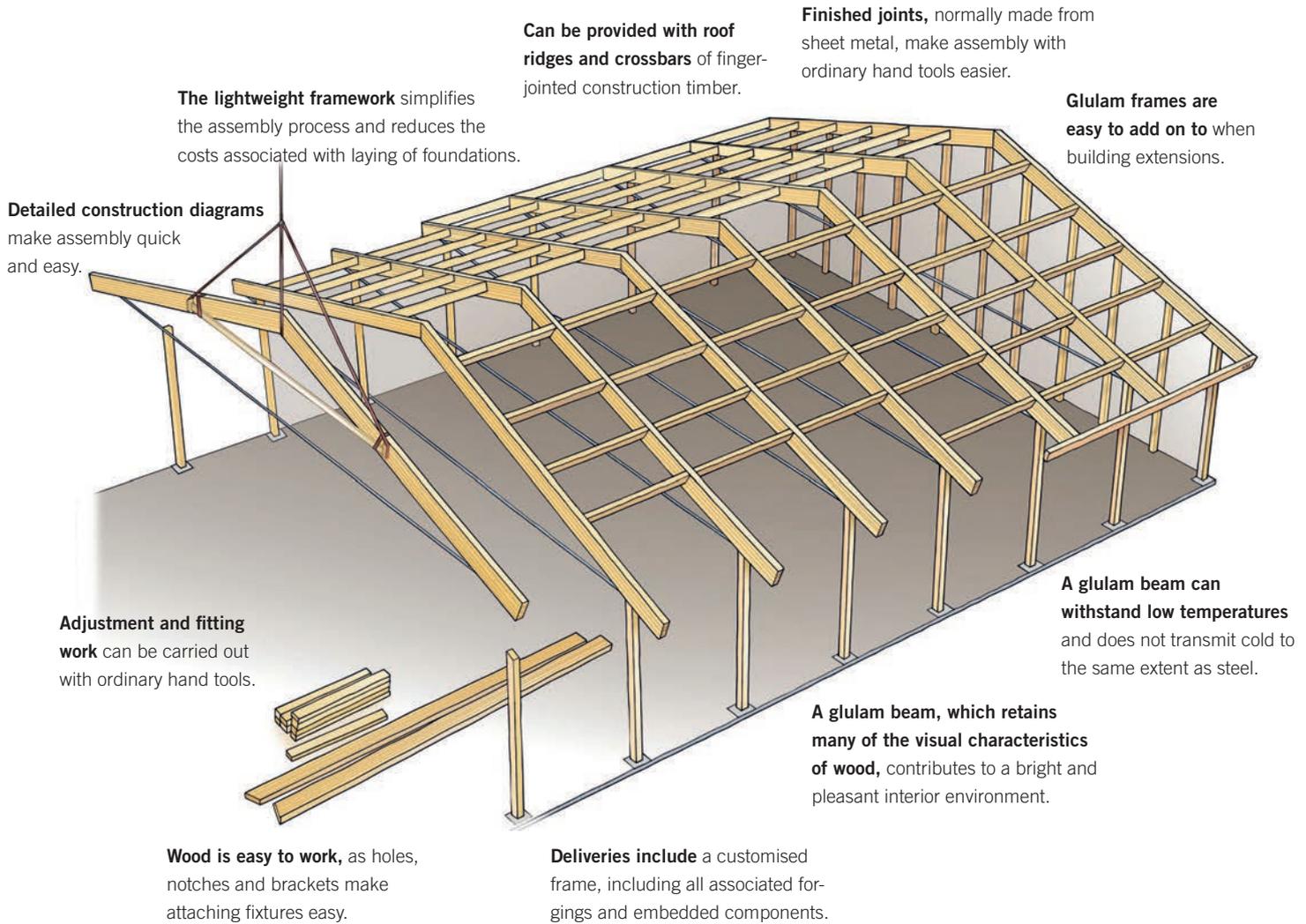
Logistics and delivery of complete construction kit

Assembly of frame

Completion of sealed building

Ready-to-use building

# Building with large, open spaces.



## Assembly

Martinsons has market-leading experience of the assembly of buildings with glulam frames, making it an obvious choice as a turnkey provider for a building project from start to finish. Martinsons can therefore assemble a turnkey building, including doors, windows and facade cladding. By giving Martinsons complete responsibility for a project, customers have the peace of mind that comes from knowing that the assembly work will be carried out correctly and in accordance with laws, safety regulations and insurance rules. Customers can also choose to purchase a building with a lower degree of completion, covering anything from an assembled frame with support plates and wall elements to simply an assembled glulam frame.

**Glulam for large, open spaces and bright environments** Glulam has many unique characteristics compared with other building materials. In terms of its load-bearing capacity to weight ratio, it is stronger than both steel and concrete. This makes it an excellent material for creating structures with wide spans and open spaces. Glulam is also fire-resistant and does not transmit cold to the same extent as steel. At the same time, it is also easy to work, e.g. for holes and notches. As Sweden's largest supplier of glulam, we have a long tradition of being at the forefront of glulam development. We have developed an efficient framework system with refined and proven construction solutions based on more than 40 years' experience of large glulam structures. The system encompasses a broad range of different frames for everything from shopping centres to large sports centres. In other

words, for any premises or activity which requires large, open spaces or freedom of choice as regards interior fixtures and fittings.

Over the years, Martinsons has supplied glulam frames to a long list of high-profile building projects. We deliver custom-made, ready-to-assemble construction kits, which include all the necessary forgings and fittings. Comprehensive diagrams of the framework and its fittings are included, as are detailed instructions for assembly. In many cases, customers enlist our expertise in overseeing the entire framework assembly process, where we manage the project from start to finish, drawing on our many years of experience and market-leading assembly techniques.



1. Business premises
2. Agricultural buildings
3. Warehouses/storage facilities
4. Sports centres
5. Other buildings

### Environment

Glulam is an environmentally smart construction material that is manufactured from renewable raw materials from sustainable forestry within the local area, thus minimising environmentally damaging transportation. Glulam production is a resource-efficient process, in which most of the energy that is used comes from the facility's own biofuel. Additionally, a building constructed from glulam binds carbon throughout its lifetime, so helping to halt climate change. Emissions of carbon dioxide are reduced by approximately two tonnes for each cubic metre of timber that replaces other materials.

### Fire

Glulam is a safe material in the event of a fire, as it burns at a constant rate - a characteristic that is an advantage for the emergency services. Martinsons delivers framework systems with fire ratings of R30 and R60. This means that glulam buildings are more fire-resistant than unprotected steel structures, which in turn means lower insurance premiums. For more information on designing for fire resistance and general fire safety, see *Limträhandboken* (the Glulam Handbook) at [www.svensktlimtra.se](http://www.svensktlimtra.se).

# Multi-storey apartment blocks.

**All components** come fitted with fastening devices to facilitate lifting and are easily assembled right off the delivery lorry, without any need for temporary storage.

**Flexibility in the positioning** of partitions makes creative designs and large, open areas possible.

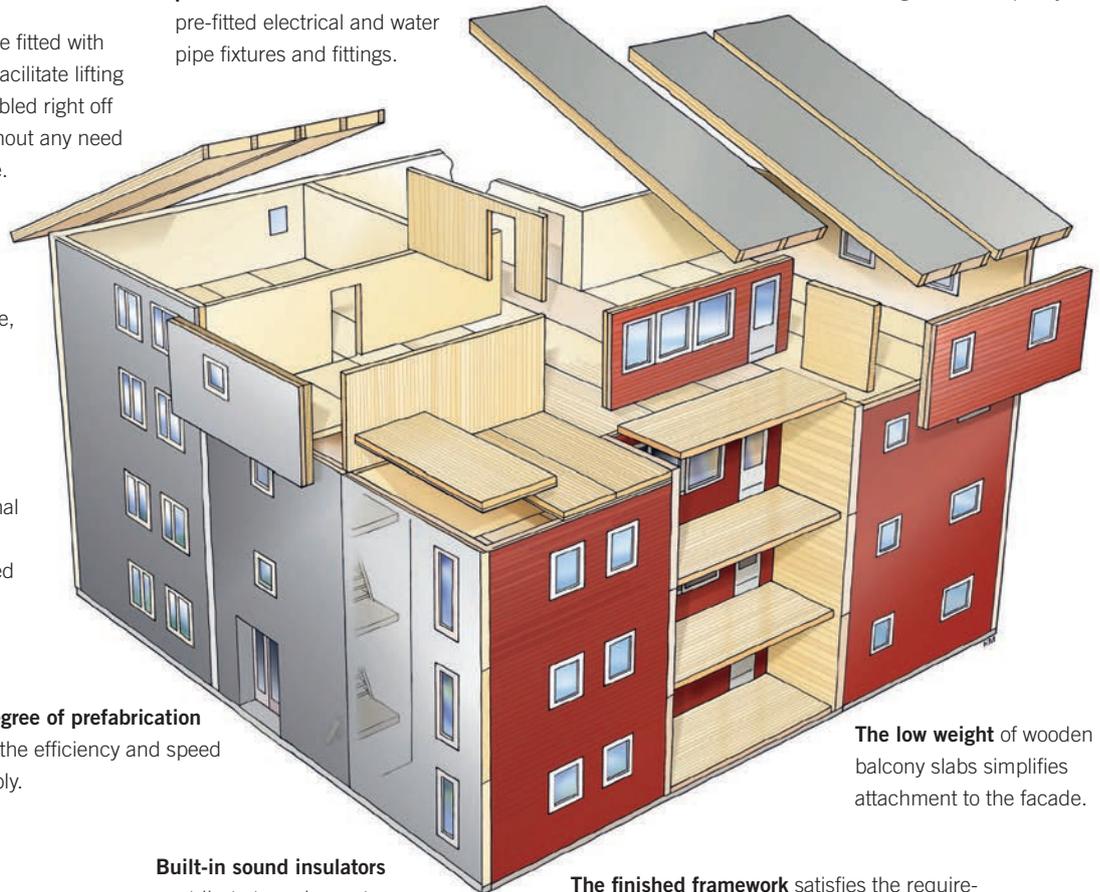
**Can be fitted with glulam panels** or any type of external cladding. Most external claddings are easily attached to the solid external wall component.

**A high degree of prefabrication** improves the efficiency and speed of assembly.

**Built-in sound insulators** contribute to a pleasant and quiet atmosphere.

**Internal walls and apartment partitions** are delivered with pre-fitted electrical and water pipe fixtures and fittings.

**The specially designed assembly system** improves efficiency, protects the structure, creates a good working environment and guarantees quality.



**The low weight** of wooden balcony slabs simplifies attachment to the facade.

**The finished framework** satisfies the requirements for sound transmission class B, thanks to the tried and tested solutions used in all components and joints.

## Dimensioning

We use the same methods that have traditionally been used to determine the size of solid wooden panels to calculate the size of walls and joists of solid wood. These conventional methods are entirely suitable, but must be adapted to suit the type of component in which the CLT board is placed (girder cassette, wall element, etc.). Adjustment to suit the thickness and position of the board is also necessary. Please contact Martinsons for assistance with dimensioning.

**Quality-controlled factory production and efficient on-site assembly**

Martinsons is unique in Sweden in offering a complete building system for multi-storey buildings with supporting frames made from solid wood. Moving much of the manufacturing process from the building site to a dry and efficient factory setting has opened up entirely new opportunities for innovation within modern construction, as regards wood as a building material and in relation to construction methods. Modern production technology makes it possible to introduce the benefits of the latest wood-related research to new components, improving quality and enabling greater degrees of refinement and prefabrication. Components which in turn make work on construction sites both easier and more efficient.

Many of our customers have received awards for their innovative solutions, both for architecture and their use of wood.

Our solid wood building system is based on ready-to-use and proven construction solutions and building components, which when combined create a complete framework. Building components are manufactured either with or without pre-fitted electrical and pipe installations. Kits are delivered complete and ready for immediate assembly on-site according to clear instructions.

Martinsons can also take on responsibility for the entire frame erection process using a concept that includes specially developed systems and equipment for on-site assembly work. The primary aim of the system is to improve efficiency and quality-assure the assembly process. The second aim is to create a safe and secure workplace. As part of the company's environmental work, Martinsons has developed a new generation of low-energy house, the energy consumption of which meets the requirements specified for so-called 'sustainable towns'.



- 1 and 2. Buildings three to eight storeys tall
- 3. Passive house
- 4. Extensions
- 5. Multi-storey car park

**Fire**

Solid wood structures have considerable fire resistance due to the fact that wood retains its natural characteristics underneath the carbon layer and the carbonisation zone when exposed to fire. Wood burns slowly, which gives a high degree of fire-resistance in both load-bearing and partition structures. Solid wood structures from Martinsons are manufactured to fire ratings right up to REI90. Please contact us for more information on improving fire resistance and the fire safety properties of our various products.

**Sound**

Solid wood structures achieve good ratings in tests performed to evaluate sound proofing levels in buildings. All structures are guaranteed to conform to sound transmission class B, but it is also possible to achieve class A standard. Martinsons is investing heavily in research within this field in order to further improve the sound ratings of its products. Please contact us for more information and values.



**CLT** is a multi-ply cross-laminated timber board, which gives a construction component with a stable form and a high load-bearing capacity relative to its own weight.



**Apartment blocks made from wood** Martinsons' construction system for apartment blocks is based on prefabricated building elements in CLT with a high degree of prefabrication, including ready-made facade cladding and the option of pre-fitted electrical and pipe installations.



**Extensions in CLT wood** can be built not only efficiently but also without expensive structural reinforcements thanks to the strength of the components in relation to their low weight.



**Buildings with glulam frames** Martinsons' glulam frame system is particularly suitable for buildings with large spans and open spaces. Typical applications include commercial premises, agricultural and industrial buildings and sports centres and galleries.



**Martinsons** SE-937 80 Bygdsiljum, Sweden  
Tel +46 914 207 00 Fax +46 914 207 80  
info@martinsons.se www.martinsons.se



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