



Superior durability with glulam

**versowood** group

timber • glulam • pack • infra • energy

## Superior durability with glulam

Timber has again gained ground as a construction material – indeed, wooden buildings fit naturally into the landscape, regardless of geographical location. Glulam, with its superior strength properties, has been developed alongside traditional timber products. Glulam is produced from select sawn timber by gluing pieces together in layers. The natural surface of glulam is well suited for providing structures with architectural elegance.

As a result of the glueing, the life characteristic of solid wood ends. Therefore, glulam can be used in all directions in a specific measure and shape. Glulam is an environmentally friendly alternative, because timber is a renewable construction material and it is easy to recycle. Glulam is a fireproof solution. If the surface burns, the carbonised layer that is produced slows combustion and extends the load capacity of the structures.



# Standard glulam products

Versowood manufactures different standard-sized glulam products, which can be used as is or further processed as required. From the extensive selection of standard solutions, an affordable option can be easily found, for example, for the supporting structures of build-

ings. Spruce lamellas are usually used as the raw material for glulam, but Versowood also manufactures standard products from pine lamellas. Versowood also provides other standard glulam solutions for the needs of builders, such as partition posts and floor beams.



## Verso glulam

Produced from strength graded sawn timber, a column or a beam of at least four lamellas. Glulam is produced into the desired strength grade according to strict standards in a high-quality-controlled environment.



## Verso 2Lam and 3Lam

A two or three-lamella column or beam produced of sorted sawn timber. The 2Lam and 3Lam are produced with the same glueing agent and production methods as the glulam products. These are also available manufactured in the desired strength grade according to the FI standard.



## Verso floor beam

A beam produced from strength graded sawn timber, at least four-lamella, split and a supporting beam. The floor beam is produced in the desired strength grade according to strict standards in a high-quality controlled environment.



## Verso partition wall post

A two or multilamellar product produced from visually sorted sawn timber. The partition wall post is produced with the same glueing agent and production methods as the glulam products.

Versowood has all the most important standards, for example Japan JAS, Scandinavia L, Russia GOST and Germany DIN as well as the Pan-European CE and FI certificates.

The raw material that is used in the product comes from sustainably maintained forests, of which the PEFC marking is a clear indication.



## Project products

Due to its lightness, glulam offers structural and installation technical benefits. Glulam can be used both in small sites as well as in the durable structures of even large sports and multipurpose halls. Because of its beautiful surface, it is also a good fit for various public sites.



Glulam structures and their possibilities should be taken into consideration already in the early phase of the planning process. Versowood offers its planning service to its customers. The planning service staff is versed in all the possibilities and limitations of glulam and takes responsibility for the right sizing of the structures.

Versowood has expertise and extensive experience in executing various kinds of glulam structures and buildings. The company can offer case-by-case tailored solutions, with which even rather innovative and challenging structures can be successfully executed.

## Uses for glulam:

- multipurpose halls
- sports halls
- ice hockey halls
- auditoriums
- libraries
- schools
- kindergartens
- commercial facilities
- industrial halls
- logistics centres
- agricultural buildings
- one-family houses
- apartment buildings
- pergolas and canopies
- bridges



*The Metla House, Joensuu*



*Varkaus Airport*



*Sibelius House, Lahti*



*Meilahti Sports Hall, Helsinki*



*Agricultural building, Åsbro, Kruunupyä*



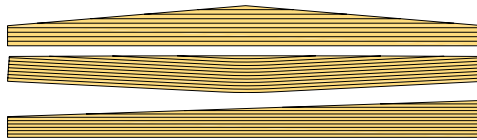
*Vihantasalmi Bridge*

# Glulam frame structures



## 1. Straight beams and columns

- an excellent and economical solution for halls with a roof span of less than 20 m
- ready-to-install column-to-foundation joints and column-to-beam joints allow for fast and easy construction
- well-suited to such applications as agricultural buildings, minor industrial plants and commercial facilities



## 2. Ridge, reverse ridge and wedge beams

- for structural applications with a roof span of 15-30 m
- suitable solution for applications such as industrial halls and commercial facilities



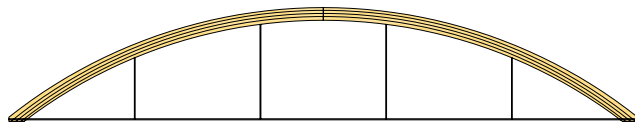
## 3. Boomerang beams

- for structural applications with a roof span of 15-25 m
- for structures whose roof gradient is more than 1:10
- for structures requiring a great amount of open space
- an excellent solution for applications such as minor multipurpose arenas



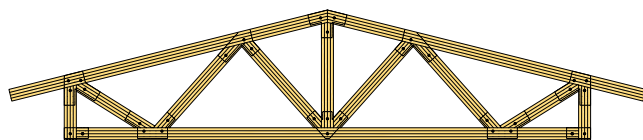
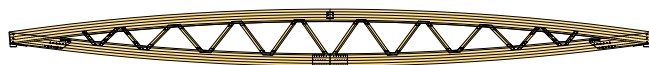
## 4. Arch

- for structural applications with a roof span of 15-30 m
- suitable solution for applications such as domed halls



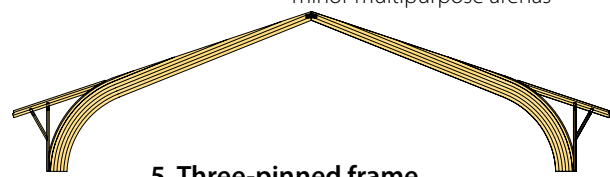
## 6. Arches or straight beams stiffened by a tension cable

- for structures with a roof span of 25-60 m
- the upper flange is made of glulam and the drawbar and possible hangers are either steel or glulam
- for use in structures requiring a great amount of open space or excellent visibility, such as sports arena bleachers
- various sports and multipurpose arenas



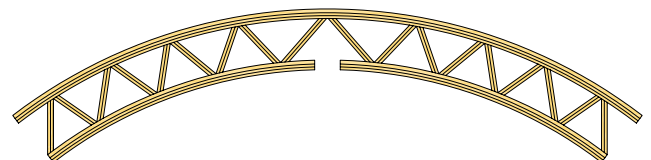
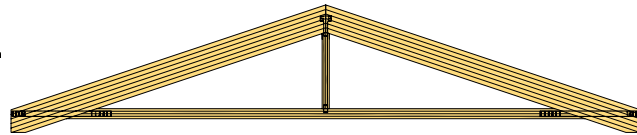
## 7. Ready-to-install truss with dowelled joints

- for structural applications with a roof span of 30-40 m
- fireproof dowelled joint for sites where the roof span should be large and the appearance prominent (the joints are inside the structures, where they do not disturb the beautiful appearance and do not require a separate fire safe option for structures with a long roof span)
- wide range of profiles



## 5. Three-pinned frame

- for structural applications with a roof span of 15-40 m
- excellent solution for applications where the height of the external wall is low, but the centre of the building requires height
- agricultural buildings, various mass storages



## 8. Three-hinged frames with dowelled joints

- using a three-hinged arched structure, 40-100 metre spans are possible
- suitable solution for various large-scale halls

### Straight beams

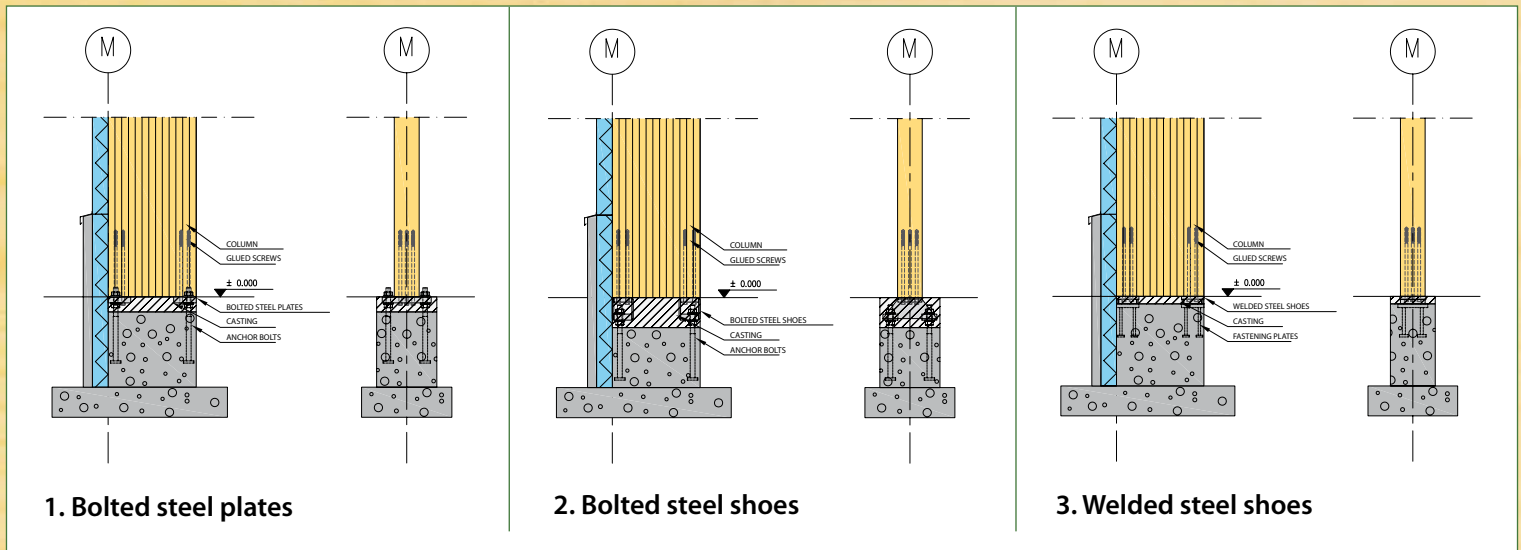
**Standard widths:** 90, 115, 140, 165, 190, 215, 240 mm (265, 290 mm)

**Narrow holders:** 42, 56, 66, 78 mm (split, plane and sawn surface)

**Standard heights:** The shortest height of the glulam holders is four lamellar strengths. The most common lamellar strength is 45 mm, at which time the heights from 180 mm upwards are in 45 mm intervals. There are also some exceptional sizes. Special dimensions as agreed.

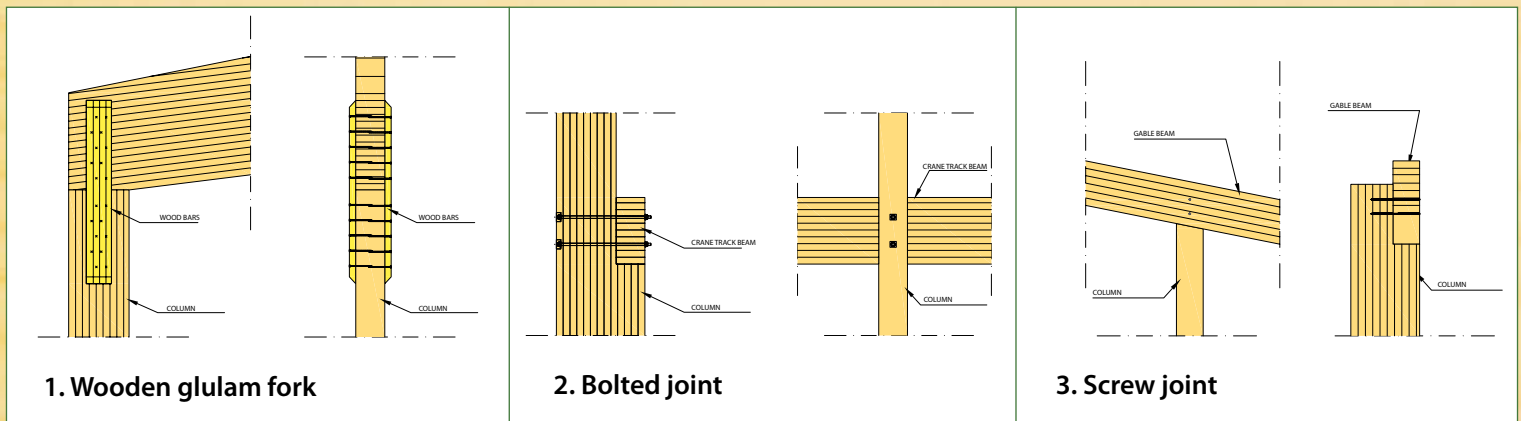
# Joining solutions for glulam structures

## Fastening of the column to the base with steel shoes

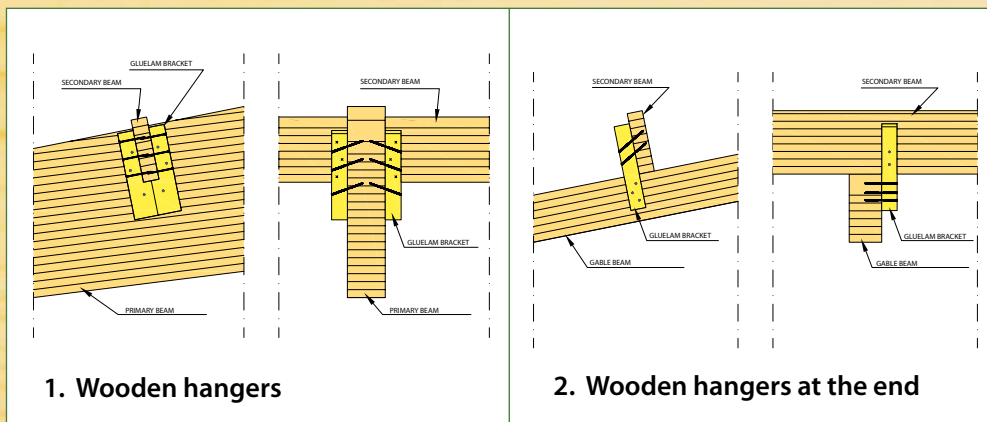


The steel parts are attached to the glulam with glued screws according to the pictures. The steel parts may be delivered galvanised or primer painted.

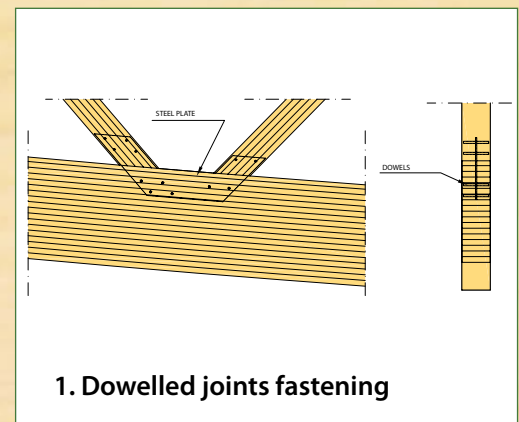
## Fastening the column and beam



## Fastening the primary and the secondary beams



## Other fastenings



• other options case by case

### Other beams

Ridge, wedge and boomerang beams are made into desired measures according to the load capacity requirements of the structures.

The tallest height is 2000 mm, but with the ridge and boomerang beams that height can be exceeded.

The lamellar strength of the arched holders is determined according to the arch radius.

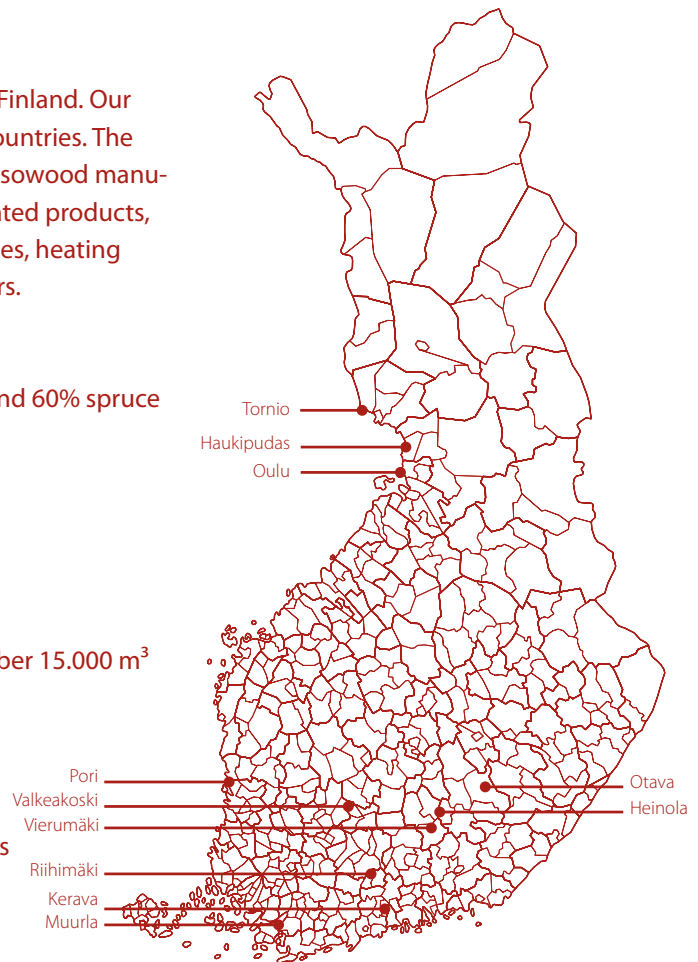
Dowelled joints are primarily used in wide-span structures. The fastenings are usually made at the factory or in special cases at the worksite.

## Versowood in brief

Versowood is the largest family-owned wood processor in Finland. Our turnover exceeds €200 million, and we export to over 40 countries. The Group employs 700 people. In addition to sawn timber, Versowood manufactures other refined goods, such as planed and impregnated products, glulam products and structures, telephone and electric poles, heating pellets, wood packages, wooden bridges and sound barriers.

### Outputs/year:

- Sawn timber approx. 900.000 m<sup>3</sup>, of which 40% is pine and 60% spruce
- First degree sawn timber refined goods
  - planed timber 100.000 m<sup>3</sup>
  - impregnated products 30.000 m<sup>3</sup>
  - strength graded timber 15.000 m<sup>3</sup>
  - primer painted products 10.000 m<sup>3</sup>
  - sawn timber components 30.000 m<sup>3</sup>
  - finger jointed and strength graded sawn timber 15.000 m<sup>3</sup>
- Glulam products 100.000 m<sup>3</sup>
- Poles and fence posts 200.000 units
- Wooden bridges and bridge elements
- Sound barrier elements
- Wooden and plywood cable drums and packaging boxes
- Pallets 4.000.000 units
- Wooden heating pellets 60.000 t



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