



WHERE  
IDEAS  
CAN  
GROW.



engineered glulam

**MM masterline**

glued laminated timber (glulam)





## WHERE IDEAS CAN GROW.

Mayr-Melnhof Holz Holding AG is one of the most prominent companies in the European wood-processing industry. As the market leader in the glued laminated timber (glulam) sector, it is a driving force behind the advancement of cross-laminated timber, the building material of the future. It is only companies with strong roots that are able to grow and surpass themselves, and indeed, Mayr-Melnhof Holz's roots go back as far as 1850. The corporate group draws on over 170 years of experience in processing the raw material, wood, which it sources exclusively from sustainably managed forests. For Mayr-Melnhof Holz, secure sources of supply, consistent traceability of the raw material's origin, transparent quality assurance of products and ongoing optimization of processes lay the foundations for reliability and product quality.



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## Facts & figures MM masterline – engineered glulam

### Wood species

- spruce
- larch

### Surface qualities

Glulam is available in two different surface qualities:

- visual quality (Vi) – designed for use in visible areas (e.g. living areas, nursery schools, schools, sports halls, etc.)
- industrial visual quality (IVi) – designed for use where there are no requirements for visual appearance (e.g. industrial buildings, compost plants, agricultural buildings such as stables or clad supporting and roof beams)

### Surface qualities

- planed on four sides and chamfered

### Dimensions

- width: 6 cm to 28 cm
- height: 10 cm to 220 cm
- length: 4 m to 56.30 m
- available on request: block glued glulam, glulam with large finger joints and special shapes requiring CNC machining

### Product standard

- EN 14080:2013

### Strength classes

(according to EN 14080:2013)

- GL24
- GL28
- GL30
- GL32 (on request)

### Shapes

- straight
- with rise
- curved
- round post  
(diameter: 12 cm to 24 cm)



### Exceptional, individual and versatile

The impressive product characteristics and manifold application possibilities of glulam have inspired Mayr-Melnhof Holz to put together the perfect combination of flexible production systems, featuring the latest cutting edge CNC processing machines, and experienced engineering knowledge, with the aim of designing and manufacturing exceptional, special shapes and versatile structural components.

The possibilities for combining high-quality bonded beams with a straight or curved design or with excessive dimensions are virtually unlimited! **MM masterline** is the international mark of quality for glued laminated timber, the popular building material produced by the corporate group, Mayr-Melnhof Holz. Glued laminated timber elements for special shapes and structural components are made from strength-graded, planed wood lamellas, bonded in parallel. They are becoming increasingly popular due to their high structural strength, excellent dimensional stability, cost effectiveness and versatility.

# Special shapes — range of products

## Engineered glulam

### Straight components without a rise

Components which are over 80 cm in height and over 18.00 m in length.

### Components with a rise

Straight components with a rise (use of a glulam press)

### Single and double pitched roof trusses

- Single pitched roof truss with a straight underside.
- Double pitched roof truss with a straight underside
- Double pitched roof truss with a curved underside.
- Double pitched roof truss with a rise

### Fish belly roof truss

### Curved components with a uniform cross-section

Curved roof truss

### Freely defined special shapes

Freely defined contours (e.g. three-dimensional components)

## Beam systems

Static system		
<b>Straight beam (single-span)</b> 	<b>Rib panels and cassette elements</b> 	<b>Finger joints</b> 
<b>Straight beam (two or more spans)</b> 	<b>Lattice truss (lattice girder)</b> 	<b>Three-pin portal frame with finger-jointed haunch</b> 
<b>Straight beam with static rise</b> 	<b>Arch</b> 	<b>Three-pin portal frame with curved haunch</b> 
<b>Single pitched beam</b> 	<b>Double pitched beam with curved underside (pitched cambered beam)</b> 	<b>Tied systems with straight beam</b> 
<b>Double pitched beam</b> 	<b>Fish belly beam</b> 	<b>Tied systems with curved beam</b> 
<b>Block glued glulam</b> 	<b>Freely defined shapes</b> 	<p>d = lamella thickness  l = span  h = height  b = width  U = rise  * recommended roof pitch</p>

**The following applies to engineered glulam:**

- A separate rise is necessary depending on the manufacturing process.
- The rises are limited to  $l/200$  or  $l/300$ , i.e. to between approx. 4 cm and 15 cm.
- The shape of the curve can be chosen freely (simple, double or elliptical curves).
- Radii from 1.00 m are possible.
- The lamella thickness is dependant on the smallest curve radius.
- The maximum rise of an element is 4.00 m.
- Precise CNC machining is possible at the customer’s request.
- Transport restrictions must be observed.

**Block glued glulam**

Glulam board widths greater than 28 cm must be “block glued” whereby two or more standard cross-sections are glued together to form one permanent, structurally effective unit. The manufacture of block glued glulam is regulated in EN 14080:2013.

- Block glued glulam may only be used in service classes 1 and 2.

**Large finger joints**

Individual components can be connected by large finger joints in a structurally effective way to form an angled load-bearing shape. Given that the finger joints reduce the strength of the structure (see also DIN 20000-3), the tensile and bending strength for the characteristic design value of the connected glulam components must be reduced as follows:

GL24h .....	80%
GL28h .....	75%
Above GL28 .....	not possible

The production method is regulated in EN 14080:2013.

- Proven production method ensuring the transfer of forces, for example, in glulam frames.
- Higher level of safety compared to mechanical connections.
- Uniform shrinkage and swelling behaviour of the connected elements.



**Screw press bonding**

To produce high-strength rib panels and cassette elements, glulam beams and wood-based panels are permanently glued by means of screw press bonding.

This production method is regulated in DIN EN 1995-1-1/NA:2010-12, NCI NA 6.8.1 (NA.4) and DIN 1052-10:2012-05.

- Large spans with less material are possible through the use of hollow box elements.
- Flush floor beam with wood-based panels without a visible load-bearing structure.
- Technical installations can be integrated if the preliminary planning is sufficiently detailed.
- Flat plane supporting structures with an initial waterproofing layer applied in the factory.

**Pre-assembled components**

Wooden components can be joined manually according to traditional methods, or with the use of CNC processing machines. Angle and bevel cuts, chamfers and boreholes are some of the more basic processing techniques. More complex techniques such as dovetail joints, mitre joints, grooves, slots and rounding off, can usually be implemented more efficiently on one of our modern CNC joinery portals, depending on the number of pieces and the complexity of the joint.

As one of the most modern and high-performance CNC timber processing centres in Europe, we offer you:

- modern joinery portals to meet differing requirements
- precise joinery with the highest dimensional accuracy
- complicated angle cuts, lathing, rounding, milling and boring
- dimensional accuracy including within one series
- efficiency and therefore lower costs

To guarantee efficient and cost-effective CNC processing, we can process the data provided to us in the form of single piece drawings or as a model from one of the following file formats:

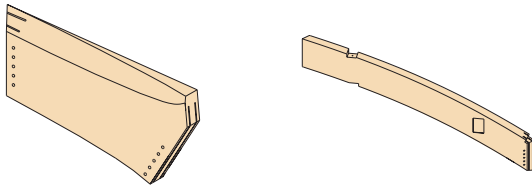
- SAT
- IFC
- DWG/DXF
- Cadwork 2D/3D
- BVN, BVX, BTL

We will agree on a suitable file format with you according to your individual project.

### Machining and joinery machines

Large components, curves and cassette elements are processed with extremely high accuracy on CNC-controlled five-axis machining portals:

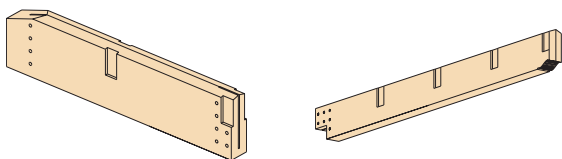
- machining dimensions up to 33.80 m in length, 5.00 m in width and 0.28 m in height (Reuthe site)
- machining dimensions up to 53.00 m in length, 4.50 m in width and 0.48 m in height (Olsberg site)
- Cutting of straight and curved components, large format panels (e.g. cross-laminated timber panels) and cassette elements
- Fully-automated tool changing units



### Processing straight components (off-the-shelf timber)

Straight components are processed on our Hundegger systems as follows:

- K2i: machining dimensions up to 23.00 m in length, 1.30 m in width and 0.30 m in height
- RD: machining dimensions up to 24.00 m in length, 1.30 m in width and 0.30 m in height



### CNC processing possibilities

<p>birdsmouth (incl. 8 mm hole for rafter nail)</p>	<p>halving birdsmouth for valley rafters</p>
<p>rebate</p>	<p>V groove</p>
<p>double notched joint</p>	<p>cross-halving joint</p>
<p>plain scarf joint</p>	<p>nibbed scarf joint</p>
<p>dovetail joint</p>	<p>plain mortise and tenon</p>

## Additional services

### Technical advice

At Mayr-Melnhof Holz, we provide you with support and competent technical advice related to your individual building project. For instance, our services comprise basic structural physics advice and simple preliminary dimensioning.

### Structural analysis, working drawings and installation planning

On request, we offer you structural calculations as well as working drawings and installation planning, carried out by our own engineering offices or selected partner companies.

### In-plant pre-assembly

On request, Mayr-Melnhof Holz offers to install steel and connection components. In-plant pre-assembly reduces subsequent assembly costs at the construction site and simplifies processes.

### Timber and steel components

Various cost-effective and efficient joining techniques are available in modern timber construction. This includes:

- steel plate shaped parts
- welded steel parts
- specifically designed fitted bolts and dowels
- self-tapping dowels
- high tensile screws

### Fasteners

We use standard fasteners made by established manufacturers (joist anchors, cleats, purlins, bolts, screws, etc.).

### Waterproofing and coatings

In principle, our glulam components are delivered untreated. However, regional building regulations or individual customer requirements may require the application a chemical surface treatment. On request, our service portfolio includes the application of:

- primers
- varnish

### Just-in-time delivery service

By arrangement, Mayr-Melnhof Holz delivers the components in the assembly sequence just-in-time, directly to the construction site. The components are numbered and packaged.

### MM complete by Hüttemann

We are also happy to manage the entire construction project, from official approval to turnkey delivery.



# Our sites

**Sweden**

- Bergkvist Siljan Insjön**  
saw mill
- Bergkvist Siljan Blyberg**  
saw mill
- Bergkvist Siljan Mora**  
saw mill
- Bergkvist Siljan Skog**  
round timber procurement

**Germany**

- Mayr-Melnhof Holz Wismar**  
second transformation
- Mayr-Melnhof Holz Olsberg**  
second transformation
- Mayr-Melnhof Holz Reuthe**  
second transformation, pellets production
- Mayr-Melnhof Holz Gaishorn am See**  
second transformation

**The Czech Republic**

- Mayr-Melnhof Holz Paskov**  
saw mill, pellets production

**Austria**

- Mayr-Melnhof Holz Leoben**  
saw mill, pellets production, second transformation

**KAUFMANN  
BAUSYSTEME**

**MMK**

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