EN

HASSLACHER
NORICA TIMBER
From **wood** to **wonders.**

Glued laminated timber

The engineered timber beam.

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01
At a glance

Areas of application

- Single and multiple family houses
- Multi-storey residential and office buildings
- Public and administrative buildings
- Agricultural facilities
- Industrial and production halls
- Recreational and sport-hall facilities

Fields of use

- Roof structures
  also as visible components
- Main beams with large spans
  also with special shapes
- Columns
- Floor structures
  or as girder grid system

Advantages

- Innovation at its best:
  direct, pre-cambered and with special shapes
- Large spans
- High loadbearing capacity with a low density
- High dimensional stability through bonding
- Can be assembled with simple tools
- High fire and chemical resistance
- High thermal insulation properties
- Natural, renewable raw material
- 100 % recyclable building materia

02

Overview

Product standard/certification

EN 14080

Surface qualities

Visual quality
Industrial quality

Cross sections

Heights:	80 to 1,280 mm in 40 mm steps Special components up to 4,000 mm are possible
Widths:	(60) 80 mm to 280 mm in 20 mm steps Any desired extension is possible through block bonding
Lengths:	up to 27 m; or up to 42 m as special components

Strength classes

GL24h GL24c up to a beam width of 280 mm
GL28h GL28c up to a beam width of 280 mm
GL30h GL30c up to a beam width of 240 mm
GL32h GL32c up to a beam width of 200 mm
Other strength classes available on request

Wood species

- Spruce/fir
- Larch
- Pine
- Other wood species on request

Certification

The current certificates are available in the download area of our website at hasslacher.com.

Sustainability

The HASSLACHER group stands for a careful use of wood as a resource. Our raw materials come from sustainable and controlled forestry. Our locations are certified according to the strict PEFC standards.

03
Technical data

Bonding

Melamine resin adhesive with bright glue line, adhesive type I according to EN 301 approved for bonding loadbearing and non-loadbearing timber components, both indoors and outdoors

Lamella thickness

Maximum lamella thicknesses: 45 mm
Maximum service class 3 lamella thicknesses:
35 mm (also, 40 mm to 60,000 mm² of cross sectional area)
For curved/arched special components:
Lamella thickness from 6 to 45 mm
Rod bonding for three-dimensional shaped components

Moisture content

12 % ±2.5 %

Density

For spruce, and depending on the strength class, approximately 400 kg/m³ to 500 kg/m³ in average

Thermal conductivity

λ = 0.13 W/mK

Diffusion resistance

According to EN ISO 10456
μ = 50 (dry) to 20 (wet)

Formaldehyde emissions

E1 according to EN 717-1 (<0.1 ppm)

Fire behaviour

D-s2, d0
D_{fl}-s1 when used as floor covering

Structural fire resistance

0.70 mm/min in accordance to EN 1995-1-2

Shrinkage and swelling behaviour

Perpendicular to the grain direction
$\alpha_{u,90}$ = 0.24 % per 1 % change in moisture content

Parallel to the grain direction
$\alpha_{u,0}$ = 0.01 % per 1 % change in moisture content

Dimensional tolerances

In accordance to EN 14080

Service classes (EN 1995-1-1)

Service class 1	heated interior
Service class 2	roofed outdoor area
Service class 3	Exposed to the elements (on request)

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04
Quality description

Characteristics	Visual Quality	Industry Quality
General	Optimised for a visible use, e.g. as visible rafters and beams for carports and upscale residential areas. All knots are sound knots and knotholes are patched. The occurrence of blue stains, red stripes and/or pitch pockets is minimised. The cracks are minimised and hardly any heart centre is present due to core-free cutting. A homogeneous appearance is aspired.	Optimised for a non-visual use. Discolouration such as blue stain, nail-proof brown and/or red stripes are permitted. Fallen-out knots and pitch pockets may casually occur. For loadbearing and non-loadbearing use in engineered timber structures with lower aesthetic requirements.
Black knots	Permitted, provided that they do not fall out	Permitted
Falling knots	Permitted up to approximately 20 mm, sound knots are permitted	Permitted
Wane	Not permitted	Not permitted
Rotten areas	Not permitted	Not permitted
Pith	Permitted	Permitted
Pitch pockets	Permitted up to approximately 5 x 50 mm, larger pockets must be patched	Permitted
Insect infestations	Not permitted	Permitted up to a diameter of 2 mm
Red stripes	Up to approximately 5 % of the surface	Permitted
Blue stain	Up to approximately 5 % of the surface	Permitted
Planing quality	Rough areas are not permitted. Planer marks up to a length of 10 mm and a depth of 1 mm are permitted	Rough areas and planer marks are permitted
Cracks	Permitted up to a depth of 1/6 of the component width (per side); as long as the required static loadbearing capacity is not impared	Permitted up to a depth of 1/6 of the component width (per side); as long as the required static loadbearing capacity is not impared
Scope of validity	The specified surface qualities are valid at time of delivery.	

05
Straight beams
Standard packing units
Packaging units

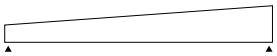
Height in mm	t	m³	t	m³	t	m³	t	m³	t	m³	t	m³	t	m³	t	m³	t	m³	t	m³
	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm	unit	cm
1,280	2.5	5.5	3.1	6.9	1.9	4.1	2.2	4.8	2.5	5.5	1.4	3.1	1.6	3.5	1.9	4.1	2.0	4.5	2.2	4.8
	4	128 x 32	**4**	128 x 40	**2**	128 x 24	**2**	128 x 28	**2**	128 x 32	**1**	128 x 18	**1**	128 x 20	**1**	128 x 24	**1**	128 x 26	**1**	128 x 28
1,240	2.4	5.4	3.0	6.7	1.8	4.0	2.1	4.7	2.4	5.4	1.4	3.0	1.5	3.3	1.8	4.0	2.0	4.4	2.1	4.7
	4	124 x 32	**4**	124 x 40	**2**	124 x 24	**2**	124 x 28	**2**	124 x 32	**1**	124 x 18	**1**	124 x 20	**1**	124 x 24	**1**	124 x 26	**1**	124 x 28
1,200	2.3	5.2	2.9	6.5	1.7	3.9	2.0	4.5	2.3	5.2	1.3	2.9	1.5	3.2	1.7	3.9	1.9	4.2	2.0	4.5
	4	120 x 32	**4**	120 x 40	**2**	120 x 24	**2**	120 x 28	**2**	120 x 32	**1**	120 x 18	**1**	120 x 20	**1**	120 x 24	**1**	120 x 26	**1**	120 x 28
1,160	2.3	5.0	2.8	6.3	1.7	3.8	2.0	4.4	2.3	5.0	1.3	2.8	1.4	3.1	1.7	3.8	1.8	4.1	2.0	4.4
	4	116 x 32	**4**	116 x 40	**2**	116 x 24	**2**	116 x 28	**2**	116 x 32	**1**	116 x 18	**1**	116 x 20	**1**	116 x 24	**1**	116 x 26	**1**	116 x 28
1,120	2.2	4.8	2.7	6.0	1.6	3.6	1.9	4.2	2.2	4.8	2.4	5.4	2.7	6.0	3.3	7.3	3.5	7.9	3.8	8.5
	4	112 x 32	**4**	112 x 40	**2**	112 x 24	**2**	112 x 28	**2**	112 x 32	**2**	112 x 36	**2**	112 x 40	**2**	112 x 48	**2**	112 x 52	**2**	112 x 56
1,080	2.1	4.7	2.6	5.8	1.6	3.5	1.8	4.1	2.1	4.7	2.4	5.2	2.6	5.8	3.1	7.0	3.4	7.6	3.7	8.2
	4	108 x 32	**4**	108 x 40	**2**	108 x 24	**2**	108 x 28	**2**	108 x 32	**2**	108 x 36	**2**	108 x 40	**2**	108 x 48	**2**	108 x 52	**2**	108 x 56
1,040	2.0	4.5	2.5	5.6	1.5	3.4	1.8	3.9	2.0	4.5	2.3	5.1	2.5	5.6	3.0	6.7	3.3	7.3	3.5	7.9
	4	104 x 32	**4**	104 x 40	**2**	104 x 24	**2**	104 x 28	**2**	104 x 32	**2**	104 x 36	**2**	104 x 40	**2**	104 x 48	**2**	104 x 52	**2**	104 x 56
1,000	1.9	4.3	2.4	5.4	1.5	3.2	1.7	3.8	1.9	4.3	2.2	4.9	2.4	5.4	2.9	6.5	3.2	7.0	3.4	7.6
	4	100 x 32	**4**	100 x 40	**2**	100 x 24	**2**	100 x 28	**2**	100 x 32	**2**	100 x 36	**2**	100 x 40	**2**	100 x 48	**2**	100 x 52	**2**	100 x 56
960	1.9	4.1	2.3	5.2	1.4	3.1	1.6	3.6	1.9	4.1	2.1	4.7	2.3	5.2	2.8	6.2	3.0	67	3.3	7.3
	4	96 x 32	**4**	96 x 40	**2**	96 x 24	**2**	96 x 28	**2**	96 x 32	**2**	96 x 36	**2**	96 x 40	**2**	96 x 48	**2**	96 x 52	**2**	96 x 56
920	1.8	4.0	2.2	5.0	1.3	3.0	1.6	3.5	1.8	4.0	2.0	4.5	2.2	5.0	2.7	6.0	2.9	6.5	3.1	7.0
	4	92 x 32	**4**	92 x 40	**2**	92 x 24	**2**	92 x 28	**2**	92 x 32	2	92 x 36	**2**	92 x 40	**2**	92 x 48	**2**	92 x 52	**2**	92 x 56
880	1.7	3.8	2.1	4.8	1.3	2.9	1.5	3.3	1.7	3.8	1.9	4.3	2.1	4.8	2.6	5.7	2.8	6.2	3.0	6.7
	4	88 x 32	**4**	88 x 40	**2**	88 x 24	**2**	88 x 28	**2**	88 x 32	**2**	88 x 36	**2**	88 x 40	**2**	88 x 48	**2**	88 x 52	**2**	88 x 56
840	1.6	3.6	2.0	4.5	1.2	2.7	1.4	3.2	1.6	3.6	1.8	4.1	2.0	4.5	2.4	5.4	2.7	5.9	2.9	6.4
	4	84 x 32	**4**	84 x 40	**2**	84 x 24	**2**	84 x 28	**2**	84 x 32	**2**	84 x 36	**2**	84 x 40	**2**	84 x 48	**2**	84 x 52	**2**	84 x 56
800	1.6	3.5	1.9	4.3	1.2	2.6	1.4	3.0	1.6	3.5	1.7	3.9	1.9	4.3	2.3	5.2	2.5	5.6	2.7	6.0
	4	80 x 32	**4**	80 x 40	**2**	80 x 24	**2**	80 x 28	**2**	80 x 32	**2**	80 x 36	**2**	80 x 40	**2**	80 x 48	**2**	80 x 52	**2**	80 x 56
760	1.5	3.3	1.8	4.1	1.1	2.5	1.3	2.9	1.5	3.3	1.7	3.7	1.8	4.1	2.2	4.9	2.4	5.3	2.6	5.7
	4	76 x 32	**4**	76 x 40	**2**	76 x 24	**2**	76 x 28	**2**	76 x 32	**2**	76 x 36	**2**	76 x 40	**2**	76 x 48	**2**	76 x 52	**2**	76 x 56
720	1.4	3.1	1.7	3.9	1.0	2.3	1.2	2.7	1.4	3.1	1.6	3.5	1.7	3.9	2.1	4.7	2.3	5.1	2.4	5.4
	4	72 x 32	**4**	72 x 40	**2**	72 x 24	**2**	72 x 28	**2**	72 x 32	**2**	72 x 36	**2**	72 x 40	**2**	72 x 48	**2**	72 x 52	**2**	72 x 56
680	1.3	2.9	1.7	3.7	1.0	2.2	1.2	2.6	1.3	2.9	1.5	3.3	1.7	3.7	2.0	4.4	2.1	4.8	2.3	5.1
	4	68 x 32	**4**	68 x 40	**2**	68 x 24	**2**	68 x 28	**2**	68 x 32	**2**	68 x 36	**2**	68 x 40	**2**	68 x 48	**2**	68 x 52	**2**	68 x 56
640	1.2	2.8	1.6	3.5	0.9	2.1	1.1	2.4	1.2	2.8	1.4	3.1	1.6	3.5	1.9	4.1	2.0	4.5	2.2	4.8
	4	64 x 32	**4**	64 x 40	**2**	64 x 24	**2**	64 x 28	**2**	64 x 32	**2**	64 x 36	**2**	64 x 40	**2**	64 x 48	**2**	64 x 52	**2**	64 x 56
600	2.3	5.2	2.9	6.5	1.7	3.9	2.0	4.5	2.3	5.2	2.6	5.8	2.9	6.5	3.5	7.8	1.9	4.2	2.0	4.5
	8	120 x 32	**8**	120 x 40	**4**	120 x 24	**4**	120 x 28	**4**	120 x 32	**4**	120 x 36	**4**	120 x 40	**4**	120 x 48	**2**	120 x 26	**2**	120 x 28
560	2.2	4.8	2.7	6.0	1.6	3.6	1.9	4.2	2.2	4.8	2.4	5.4	2.7	6.0	3.3	7.3	1.8	3.9	1.9	4.2
	8	112 x 32	**8**	112 x 40	**4**	112 x 24	**4**	112 x 28	**4**	112 x 32	**4**	112 x 36	**4**	112 x 40	**4**	112 x 48	**2**	112 x 26	**2**	112 x 28
520	2.0	4.5	2.5	5.6	1.5	3.4	1.8	3.9	2.0	4.5	2.3	5.1	2.5	5.6	3.0	6.7	1.6	3.7	1.8	3.9
	8	104 x 32	**8**	104 x 40	**4**	104 x 24	**4**	104 x 28	**4**	104 x 32	**4**	104 x 36	**4**	104 x 40	**4**	104 x 48	**2**	104 x 26	**2**	104 x 28
480	1.9	4.1	2.3	5.2	1.4	3.1	1.6	3.6	1.9	4.1	2.1	4.7	2.3	5.2	2.8	6.2	1.5	3.4	1.6	3.6
	8	96 x 32	**8**	96 x 40	**4**	96 x 24	**4**	96 x 28	**4**	96 x 32	**4**	96 x 36	**4**	96 x 40	**4**	96 x 48	**2**	96 x 26	**2**	96 x 28
440	1.7	3.8	2.1	4.8	1.3	2.9	1.5	3.3	1.7	3.8	1.9	4.3	2.1	4.8	2.6	5.7	1.4	3.1	1.5	3.3
	8	88 x 32	**8**	88 x 40	**4**	88 x 24	**4**	88 x 28	**4**	88 x 32	**4**	88 x 36	**4**	88 x 40	**4**	88 x 48	**2**	88 x 26	**2**	88 x 28
400	2.3	5.2	2.9	6.5	1.7	3.9	2.0	4.5	2.3	5.2	2.6	5.8	2.9	6.5	3.5	7.8	1.9	4.2	2.0	4.5
	12	120 x 32	**12**	120 x 40	**6**	120 x 24	**6**	120 x 28	**6**	120 x 32	**6**	120 x 36	**6**	120 x 40	**6**	120 x 48	**3**	120 x 26	**3**	120 x 28
360	2.1	4.7	2.6	5.8	1.6	3.5	1.8	4.1	2.1	4.7	2.4	5.2	2.6	5.8	3.1	7.0	1.7	3.8	1.8	4.1
	12	108 x 32	**12**	108 x 40	**6**	108 x 24	**6**	108 x 28	**6**	108 x 32	**6**	108 x 36	**6**	108 x 40	**6**	108 x 48	**3**	108 x 26	**3**	108 x 28
320	1.9	4.1	2.3	5.2	1.4	3.1	1.6	3.6	1.9	4.1	2.1	4.7	2.3	5.2	2.8	6.2	1.5	3.4	1.6	3.6
	12	96 x 32	**12**	96 x 40	**6**	96 x 24	**6**	96 x 28	**6**	96 x 32	**6**	96 x 36	**6**	96 x 40	**6**	96 x 48	**3**	96 x 26	**3**	96 x 28
280	2.2	4.8	2.7	6.0	1.6	3.6	1.9	4.2	2.2	4.8	2.4	5.4	2.7	6.0	1.6	7.3	1.8	3.9	1.9	4.2
	16	112 x 32	**16**	112 x 40	**8**	112 x 24	**8**	112 x 28	**8**	112 x 32	**8**	112 x 36	**8**	112 x 40	**8**	112 x 48	**4**	112 x 26	**4**	112 x 28
240	2.3	5.2	2.9	6.5	1.7	3.9	2.0	4.5	2.3	5.2	2.6	5.8	2.9	6.5	3.5	7.8				
	20	120 x 32	**20**	120 x 40	**10**	120 x 24	**10**	120 x 28	**10**	120 x 32	**10**	120 x 36	**10**	120 x 40	**10**	120 x 48				
200	2.3	5.2	2.9	6.5	1.7	3.9	2.0	4.5	2.3	5.2	2.6	5.8	2.9	6.5						
	24	120 x 32	**24**	120 x 40	**12**	120 x 24	**12**	120 x 28	**12**	120 x 32	**12**	120 x 36	**12**	120 x 40						
160	2.2	4.8	2.7	6.0	1.6	3.6	1.9	4.2	2.2	4.8										
	28	112 x 32	**28**	112 x 40	**14**	112 x 24	**14**	112 x 28	**14**	112 x 32										
120	2.3	5.2	2.9	6.5	1.7	3.9														
	40	120 x 32	**40**	120 x 40	**20**	120 x 24														
Width in mm	80		100		120		140		160		180		200		240		260		280	

Can be expanded by block bonding if desired. Heights up to 4.000 mm are possible

06

Special components

Product portfolio



Single tapered beams

Beam length: up to 42 m
Width: 80 to 280 mm
Block bonding: >280 mm
possible on request
Heights: up to 4,000 mm

Curved beams or pre-cambered parallel beams

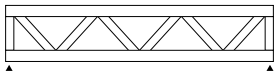
Beam length: up to 42 m
Width: 80 to 280 mm
Block bonding: >280 mm
possible on request
Heights: up to 4,000 mm

Double-tapered or pitched cambered beams

Beam length: up to 42 m
Width: 80 to 280 mm
Block bonding: >280 mm
possible on request
Heights: up to 4,000 mm

Fish beams

Beam length: up to 42 m
Width: 80 to 280 mm
Block bonding: >280 mm
possible on request
Heights: up to 4,000 mm



Trussed girders

Span lengths: >42 m
Width: 80 to 280 mm
Block bonding: >280 mm
possible on request
Heights: >4,000 mm are possible

Free forms

Lengths: up to 42 m
Widths: up to 280 mm
Block bonding: >280 mm
possible on request
Heights: up to 4,000 mm

07

Mechanical properties

Glued Laminated Timber – Mechanical properties

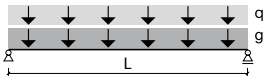
characteristic strength and stiffness properties for homogeneous glued laminated timber

Strength class		GL20h	GL24h	GL28h	GL30h	GL32h
Bending strength	$f_{m,g,k}$	20	24	28	30	32
Tensile strength	$f_{t,0,g,k}$	16	19.2	22.3	24	25.6
	$f_{t,90,g,k}$			0,5		
Compressive strength	$f_{c,0,g,k}$	20	24	28	30	32
	$f_{c,90,g,k}$			2.5		
Shear strength	$f_{v,g,k}$			3.5		
Rolling shear strength	$f_{r,g,k}$			1.2		
Modulus of elasticity	$E_{0,g,mean}$	8,400	11,500	12,600	13,600	14,200
	$E_{0,g,05}$	7,000	9,600	10,500	11,300	11,800
	$E_{90,g,mean}$			300		
	$E_{90,g,05}$			250		
Shear modulus	$G_{g,mean}$			650		
	$G_{g,05}$			540		
Rolling shear modulus	$G_{r,g,mean}$			65		
	$G_{r,g,05}$			54		
Density	$\rho_{g,k}$	340	385	425	430	440
	$\rho_{g,mean}$	370	420	460	480	480

Characteristic strength and stiffness properties for combined glued laminated timber

Strength class			GL24c	GL28c	GL30c	GL32c
Bending strength	$f_{m,g,k}$		24	28	30	32
Tensile strength	$f_{t,0,g,k}$		17	19.5	19.5	19.5
	$f_{t,90,g,k}$			0.5		
Compressive strength	$f_{c,0,g,k}$		21.5	24	24.5	24.5
	$f_{c,90,g,k}$			2.5		
Shear strength	$f_{v,g,k}$			3.5		
Rolling shear strength	$f_{r,g,k}$			1.2		
Modulus of Elasticity	$E_{0,g,mean}$		11,000	12,500	13,000	13,500
	$E_{0,g,05}$		9,100	10,400	10,800	11,200
	$E_{90,g,mean}$			300		
	$E_{90,g,05}$			250		
Shear modulus	$G_{g,mean}$			650		
	$G_{g,05}$			540		
Rolling shear modulus	$G_{r,g,mean}$			65		
	$G_{r,g,05}$			54		
Density	$\rho_{g,k}$		365	390	390	400
	$\rho_{g,mean}$		400	420	430	440

08
Tables for preliminary design



Glued Laminated Timber – Strength class GL24h

Height in mm	Width in mm	Persistent loads q incl. imposed load p in kN/m																
		2.50	3.00	3.50	4.00	4.50	5.00	6.00	7.00	8.00	9.00	10.0	11.0	12.0	15.0	20.0	25.0	30.0
360	240	9.64	9.15	8.74	8.40	8.11	7.85	7.42	7.07	6.78	6.53	6.32	6.13	5.96	5.44	4.73	4.24	3.87
	220	9.40	8.92	8.52	8.18	7.89	7.64	7.22	6.88	6.60	6.35	6.14	5.96	5.79	5.21	4.53	4.06	3.71
	200	9.15	8.67	8.28	7.95	7.67	7.42	7.01	6.68	6.40	6.16	5.96	5.78	5.55	4.97	4.32	3.87	3.54
	180	8.87	8.40	8.02	7.70	7.42	7.18	6.78	6.46	6.19	5.96	5.76	5.50	5.27	4.73	4.10	3.68	3.36
	160	8.57	8.11	7.73	7.42	7.15	6.92	6.53	6.22	5.96	5.72	5.44	5.19	4.97	4.46	3.87	3.47	3.04
	140	8.23	7.78	7.42	7.12	6.86	6.63	6.26	5.96	5.68	5.36	5.09	4.86	4.66	4.18	3.62	3.19	2.67
320	200	8.17	7.74	7.38	7.09	6.83	6.61	6.24	5.94	5.70	5.48	5.30	5.14	4.94	4.43	3.84	3.44	3.15
	180	7.92	7.49	7.15	6.86	6.61	6.40	6.04	5.75	5.51	5.30	5.12	4.89	4.69	4.21	3.65	3.27	2.99
	160	7.64	7.23	6.89	6.61	6.37	6.16	5.82	5.53	5.30	5.10	4.84	4.62	4.43	3.97	3.44	3.08	2.71
	140	7.34	6.94	6.61	6.34	6.11	5.91	5.57	5.30	5.06	4.77	4.53	4.33	4.15	3.72	3.22	2.84	2.37
	120	7.00	6.61	6.30	6.04	5.82	5.62	5.30	5.01	4.69	4.43	4.21	4.01	3.84	3.44	2.99	2.44	2.03
280	200	7.18	6.80	6.48	6.22	6.00	5.80	5.47	5.21	4.99	4.81	4.65	4.50	4.33	3.88	3.37	3.02	2.76
	180	6.96	6.58	6.28	6.02	5.80	5.61	5.29	5.04	4.83	4.65	4.49	4.29	4.11	3.68	3.20	2.86	2.62
	160	6.71	6.35	6.05	5.80	5.59	5.40	5.10	4.85	4.65	4.47	4.24	4.05	3.88	3.48	3.02	2.70	2.37
	140	6.44	6.09	5.80	5.56	5.36	5.18	4.88	4.65	4.43	4.18	3.97	3.79	3.63	3.25	2.82	2.49	2.08
	120	6.14	5.80	5.52	5.29	5.10	4.93	4.65	4.39	4.11	3.88	3.68	3.52	3.37	3.02	2.62	2.14	1.78
	100	5.80	5.47	5.21	4.99	4.81	4.65	4.33	4.01	3.76	3.55	3.37	3.21	3.08	2.76	2.22	1.78	1.49
240	200	6.19	5.85	5.58	5.35	5.15	4.98	4.70	4.47	4.29	4.13	3.99	3.86	3.72	3.33	2.89	2.59	2.36
	180	5.99	5.66	5.40	5.17	4.98	4.82	4.55	4.33	4.14	3.99	3.85	3.68	3.53	3.16	2.74	2.46	2.24
	160	5.78	5.46	5.20	4.98	4.80	4.64	4.38	4.16	3.99	3.83	3.64	3.48	3.33	2.98	2.59	2.32	2.03
	140	5.54	5.23	4.98	4.78	4.60	4.45	4.19	3.99	3.81	3.59	3.41	3.25	3.12	2.79	2.42	2.14	1.78
	120	5.28	4.98	4.74	4.55	4.38	4.23	3.99	3.77	3.53	3.33	3.16	3.02	2.89	2.59	2.24	1.83	1.53
	100	4.98	4.70	4.47	4.29	4.13	3.99	3.72	3.44	3.23	3.04	2.89	2.76	2.64	2.36	1.91	1.53	1.27
200	160	4.83	4.56	4.35	4.16	4.01	3.88	3.65	3.47	3.33	3.20	3.04	2.90	2.78	2.49	2.16	1.93	1.70
	140	4.63	4.37	4.16	3.99	3.84	3.71	3.50	3.33	3.18	3.00	2.85	2.72	2.60	2.33	2.02	1.78	1.49
	120	4.41	4.16	3.96	3.80	3.65	3.53	3.33	3.14	2.94	2.78	2.64	2.52	2.41	2.16	1.87	1.53	1.27
	100	4.16	3.93	3.74	3.58	3.44	3.33	3.10	2.87	2.69	2.54	2.41	2.30	2.20	1.97	1.59	1.27	1.06
160	120	3.54	3.34	3.18	3.04	2.93	2.83	2.66	2.52	2.36	2.23	2.11	2.02	1.93	1.73	1.50	1.22	1.02
	100	3.34	3.15	2.99	2.87	2.76	2.66	2.49	2.30	2.16	2.03	1.93	1.84	1.76	1.58	1.27	1.02	0.85
	80	3.11	2.93	2.78	2.66	2.56	2.44	2.23	2.06	1.93	1.82	1.73	1.65	1.58	1.36	1.02	0.82	0.68
120	100	2.51	2.37	2.25	2.15	2.07	2.00	1.87	1.73	1.62	1.53	1.45	1.38	1.32	1.18	0.96	0.77	0.64
	80	2.34	2.20	2.09	2.00	1.92	1.83	1.67	1.55	1.45	1.37	1.30	1.24	1.18	1.02	0.77	0.61	0.51
100	100	2.10	1.97	1.88	1.80	1.73	1.67	1.56	1.44	1.35	1.27	1.21	1.15	1.10	0.99	0.80	0.64	0.53
	80	1.95	1.83	1.74	1.67	1.61	1.53	1.39	1.29	1.21	1.14	1.08	1.03	0.99	0.85	0.64	0.51	0.43

Note: the table only represents a feature for preliminary design and therefore does not replace the necessary static proof.

09
Further processing

Advantages

- High precision with optimal material utilisation
- Versatile machining options due to modern technology
- Ongoing development through regular and continuous quality control
- Professional support during the planning phase
- Consultation and services provided by qualified master carpenters
- Rapid and cost-efficient assembly on the construction site thanks to a high level of prefabrication

Further processing – Special components

Portal Machining Centre		CMS Hermagor	MAKA BC 570 Kleinheubach
Component dimensions and axes.	X-axis (longitudinal direction) Y-axis (transverse direction) Z-axis (vertical stroke) C-axis (rotation) B-axis (panning)	42 m 5.80 m 1.25 m 360° ± 110°	35 m or 41 m up to 4.80 m uo to 1.60 m 360° ± 105°
Precision		±2 mm to 40 m length	±2 mm to 40 m length
Spindle speed		Continuously variable from 0 to 10,000 rpm	Continuously variable from 0 to 12,000 rpm
CNC controller		NUM 1,060W	BWO 920
Online program transfer		CAD/CNC-Working Space	NC Codes from the CNC- Production Control
Workpiece measurement		Renishaw - Services	no services available
Workpiece positioning		Supported by laser	Supported by laser
Automatic changing of tools		Circular magazine with 16 tools Rotary magazine with 2 saw blades max. 750mm	20 tools saw blade max. 800mm
Workpiece fixation		Using vacuum working blocks and single vacuum units	Using flexible vacuum units and hydraulic clamp cylinders
Import formats		*.btl | Direct control of the portal system	NC Codes generated by post - processors. AlphaCam: CAD-Import: Acis, dwg, dxf, IGES, Inventor, Rhino, Step LignoCam: *.btl-Files

IT Interfaces | Import Formats

2D/3D-DXF (*.dxf) | 2D/3D DWG (*.dwg) | ACIS (*.sat)
IFC (*.ifc) | STEP (*.stp) (*.ste) (*.step) | DSTV (*.stp)

Inventor (*.ipt) (*.iam) (*.3ds) (*.fbx) (*.jt) (*.mwf) (*.dgn)
cadwork (*.2d) und (*.3d)

Further processing – Machining capabilities

5-axis CNC machining	Hundegger K3 5-axis 900, Hundegger K2i 5-axis 900 and Hundegger Robot 1,280
6-axis CNC machining	Hundegger K2-Industry 1,280 and Hundegger Robot 1,250
Component dimensions	Length: up to 27 m Height: up to 1,280 mm Width: up to 280 mm

IT Interfaces | Import Formats

(1) *.bvn, *.bvx | Direct control of the systems
(2) From SEMA 3D, Dietrich's 3D-CAD/CAM and cadwork *.bvn, *.bvx files are created.
(3) 2D/3D *.dxf, *.dwg, *.sat (ACIS) files can be converted into machine files at an extra charge.

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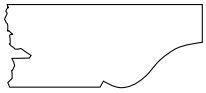
Further Processing – possibilities and examples

Rafter and Purlin profiles

Profile 1



Profile 2

Profile 3

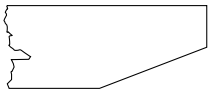
Profile 4

Profile 5

Profile 6

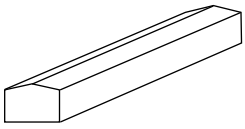
Profile 7

Profile 8

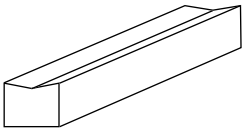


Valley and hip rafter

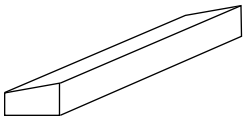
Hip rafters



Valley rafters

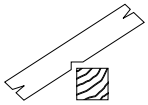


Tapered form

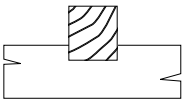


Carpentery joints

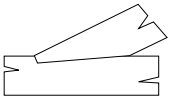
Rafter notch



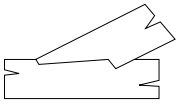
Cross cogging



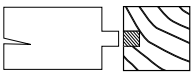
Stepped joint



Double stepped joint

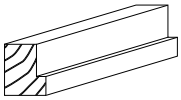


Tenon

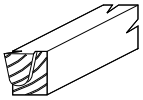


Forked support

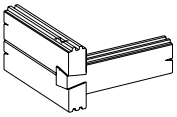
Rebate



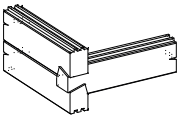
Dovetail joint



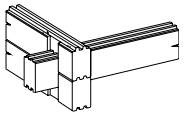
"Tiroler Schloss" corner joint



Dovetail



Log house



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