



WOODEN HAUS SUPPLY

WWW.WOODENHAUSSUPPLY.COM

Smart by Nature

Utilization of Small Diameter Timber

Forest Stewardship through the
manufacture of Solid Timber products

Patrick Clark
Wooden Haus Supply

406 212 0388



European Timber Products: Manufacturing, utilization and opportunities in Montana





- 🌿 **Wooden Haus Supply:** Specialist for innovative building products made from wood

Agenda

- 🌿 **Wooden Haus Supply** European/USA Partner firms
- 🌿 Hasslacher Noritec Holzindustrie - Austria
- 🌿 Rema Holzindustrie- Austria
- 🌿 Steico Wood Fiber - Germany/Poland
- 🌿 KLH CLT - Austria/USA
- 🌿 Global Wholesale Supply - USA

Agenda

- 🌿 **Wooden Haus Supply**
- 🌿 **Timber Product Mix for a Full System Built Timber Solution**
- 🌿 Cross Laminated Timber (CLT)
- 🌿 Duo/Trio Lam
- 🌿 Glulam Timber
- 🌿 KVH
- 🌿 Brettstapel/Solid Timber Ceiling and Roof
- 🌿 Dreischichtplatten/ 3 Ply Panel
- 🌿 Wood Fiber Insulation

STEICO Munich (GER)



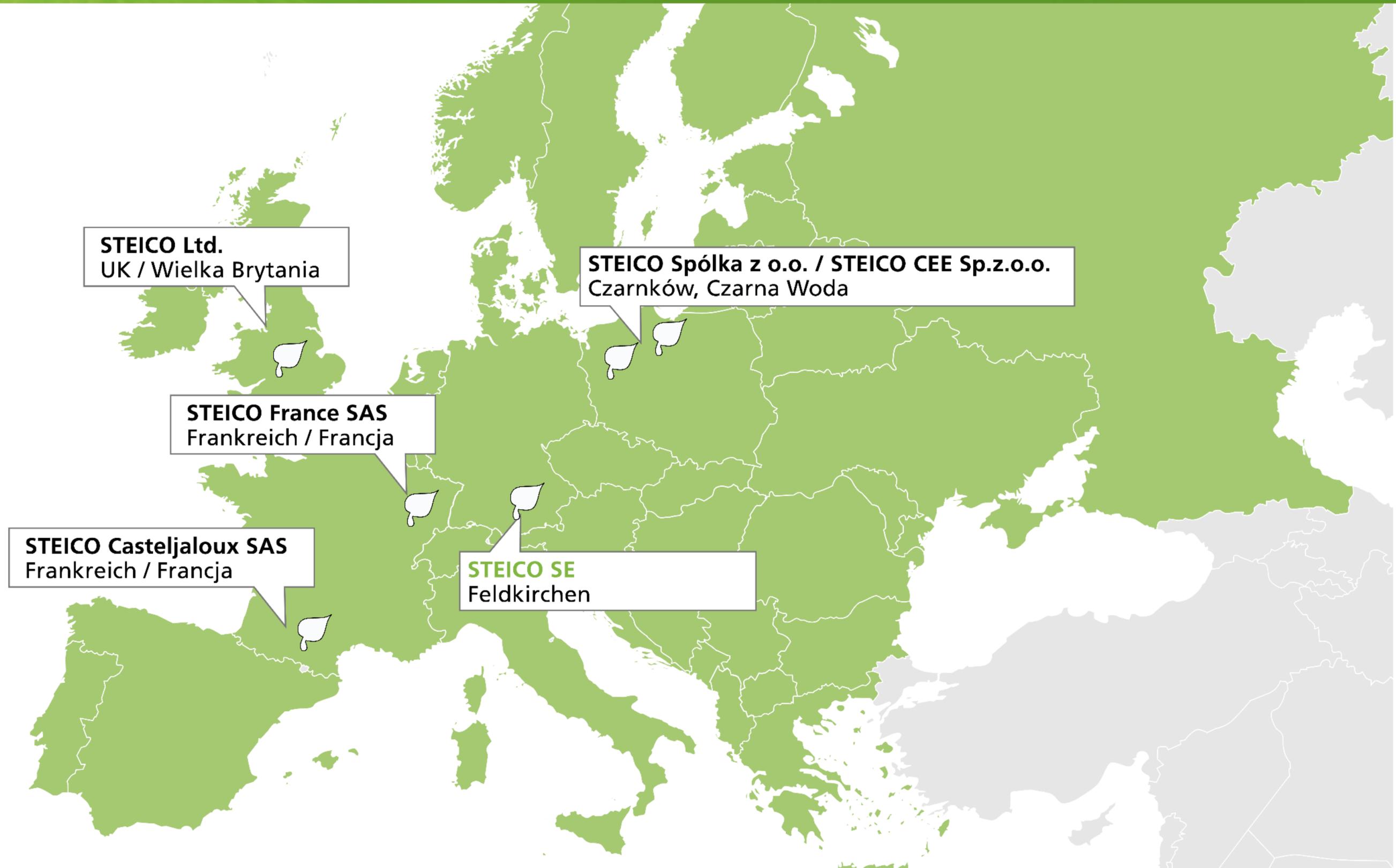
STEICO Headquarters Feldkirchen / Munich

- ✔ Worldwide sales management and corporate control
- ✔ Unique construction system for innovative timber constructions
- ✔ Broadest assortment of the whole industry
- ✔ Leader in technical development and client services
- ✔ Close cooperation with universities. Sponsor of international timber frame construction developments

Steico

Employees:	1,300
Headquarter:	Feldkirchen near Munich
Locations:	6 including 3 production sites
Annual turnover:	About USD \$250 Million (2016); \$226 Million (2015)
Sales:	Worldwide
Logistic:	Mixed truck and container loads, insulating and constructional materials
Investments:	\$60 Million for a new STEICO <i>LVL</i> production plant (increase of capacity in planning process) \$12 Million for another production plant for wood fiber board of wet process

Locations



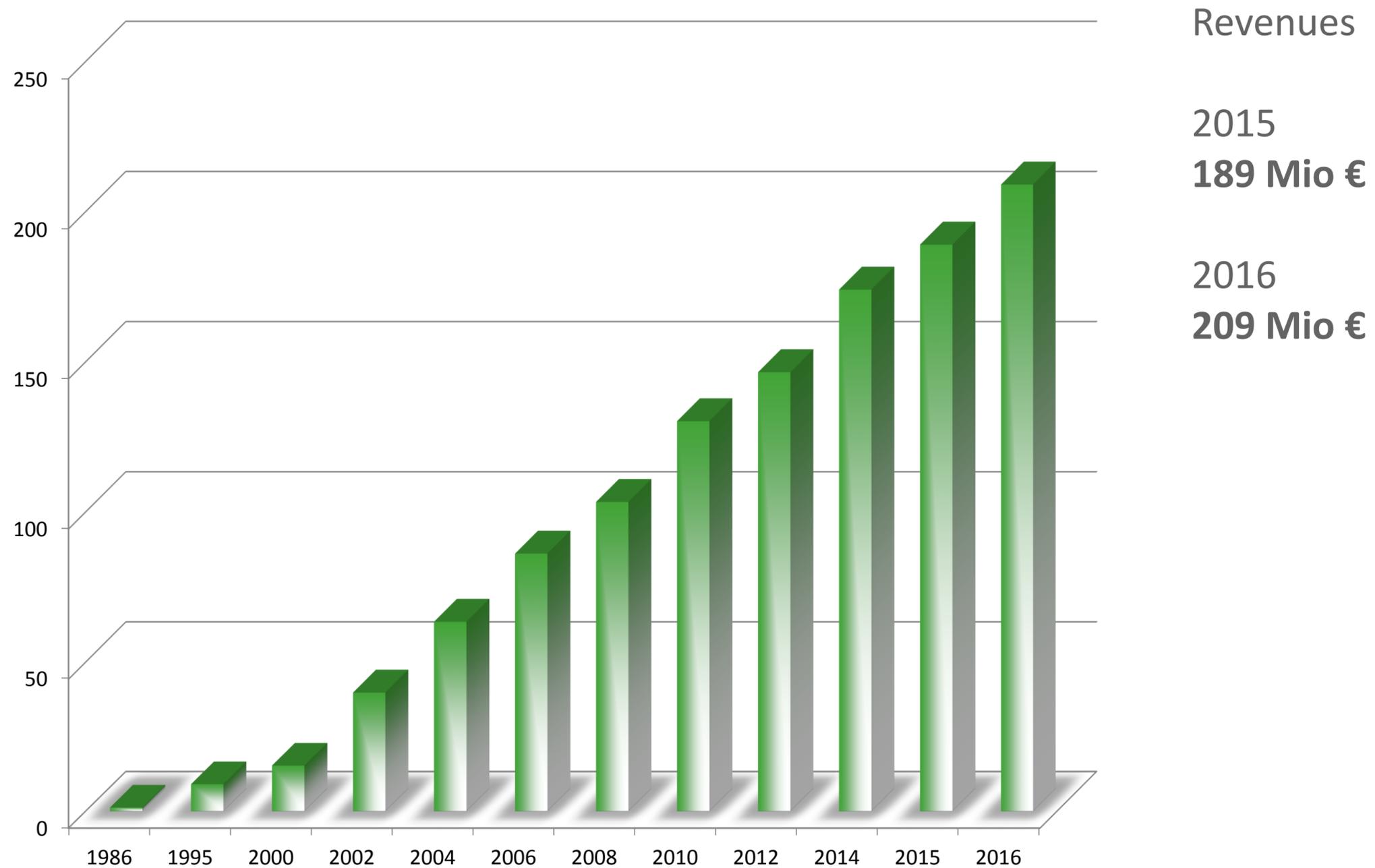
Czarnków (PL)



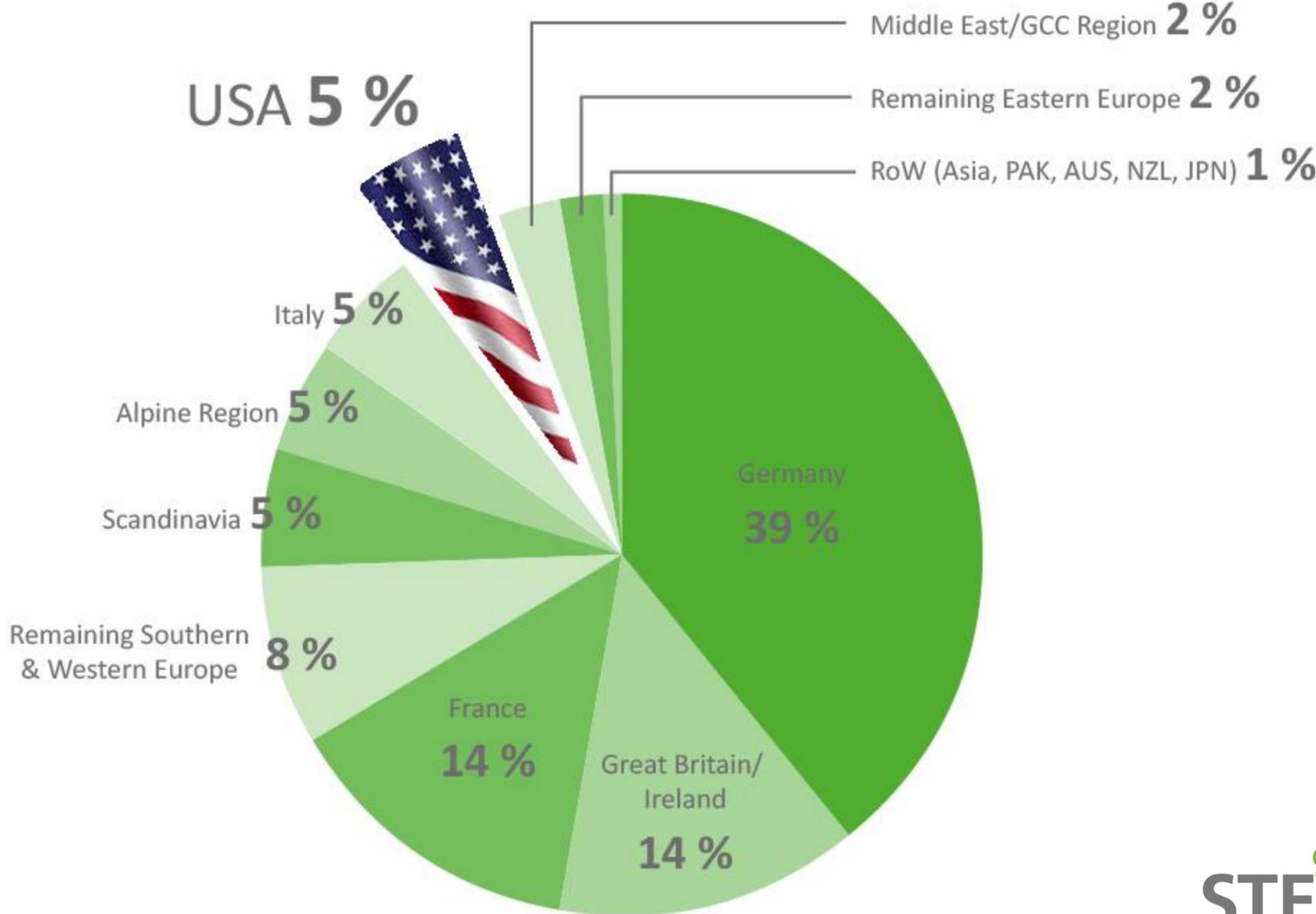
World's largest production site for ecological insulation

- 🌱 Location: ca. 60 km (37.2 miles) from Poznan
- 🌱 Size: ca. 50 ha. (123.5 acres)
- 🌱 8 production lines for wood fibre insulation with more than 2 million m³ (70.6 million cubic ft) capacity p.a.
- 🌱 Europe's largest line for I-joist with 25 mio. m (82 million linear feet) capacity
- 🌱 Around 730 Employees
- 🌱 350 Trucks per week, 120 trucks on peak days
- 🌱 Main production site for insulation material and beams

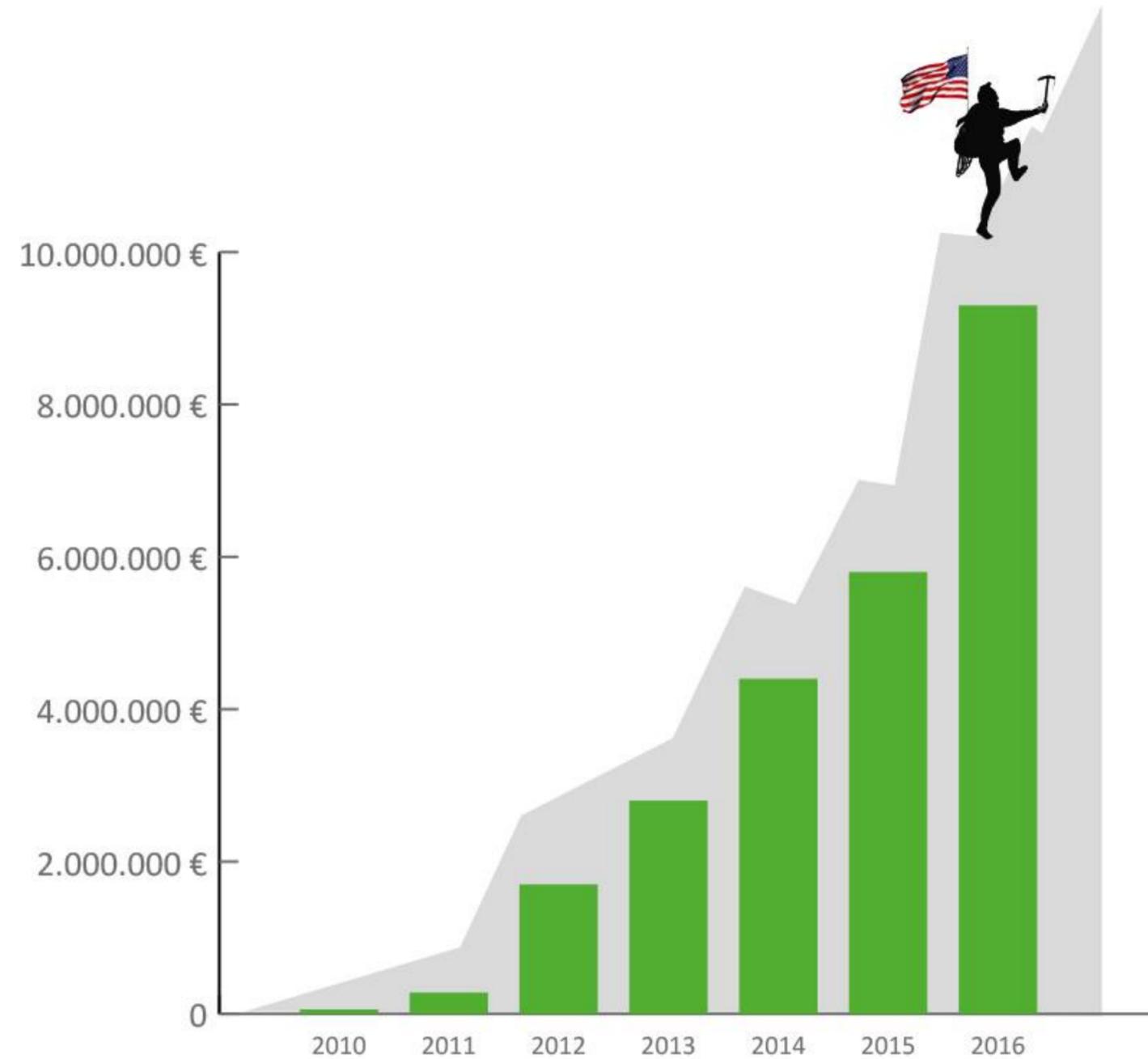
STEICO SE – Development of Turnover in Mio €



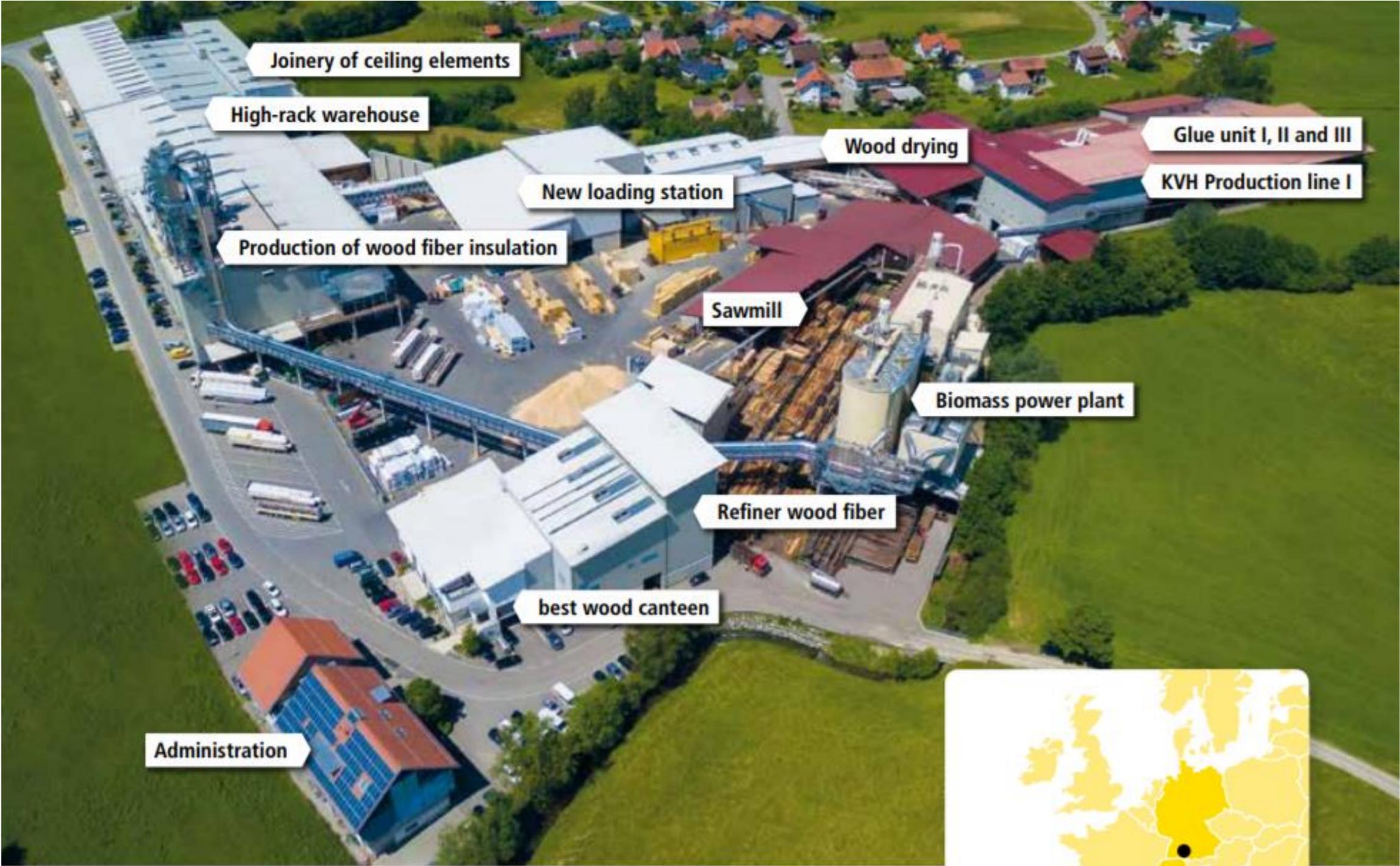
STEICO SE – Breakdown of Sales by Markets in 2016



STEICO SE – Development of Turnover (USA)



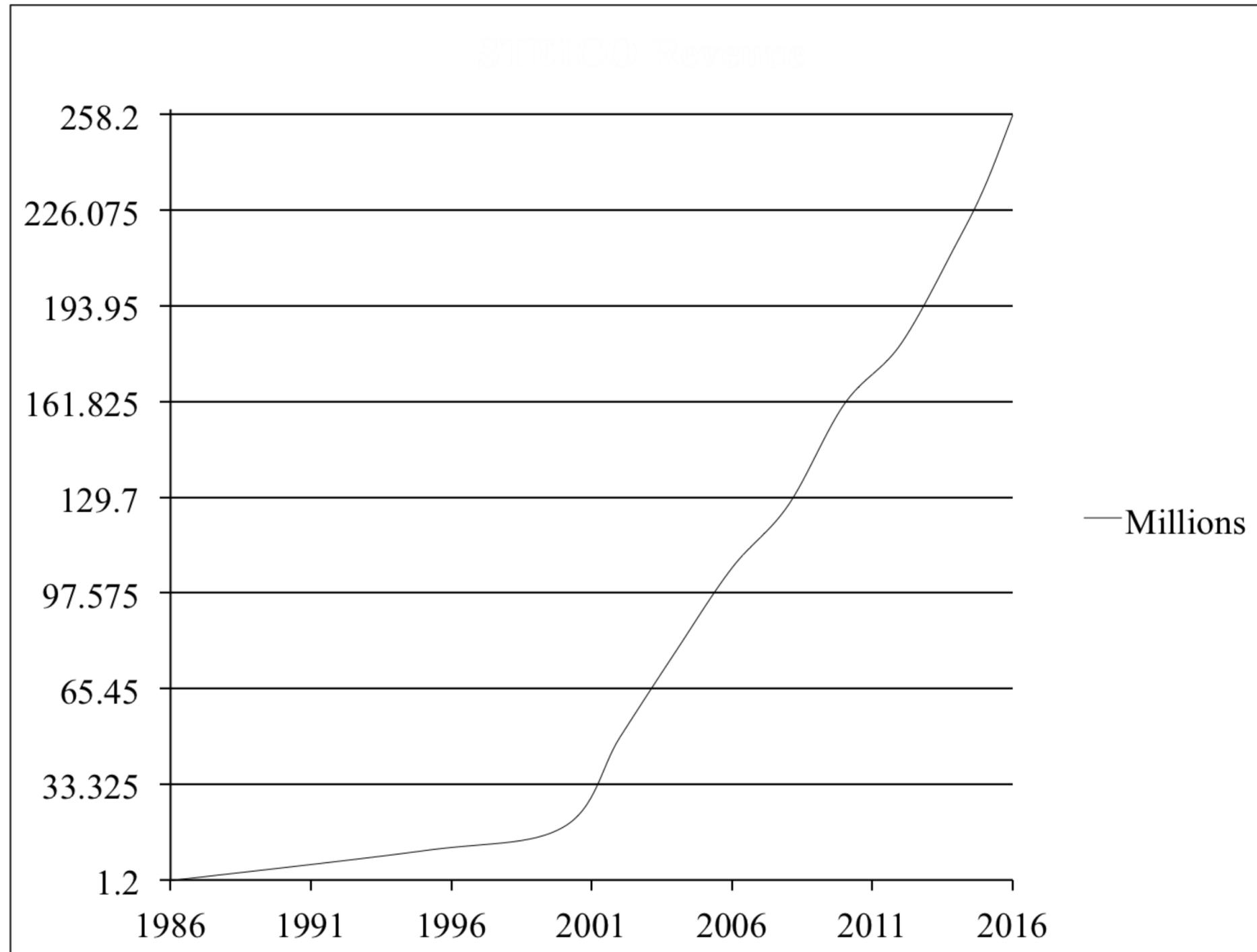
Intergrated Micro Wood Fiber Plant



Wood Fibre Insulation History

- ✔ Wood Fibre Insulation has been in Europe and the U.S. for over 70 years
- ✔ U.S. products were once used for structural sheathing prior to OSB
- ✔ U.S. products are now used for cover board in commercial roofing, sound board and some sheathing.
- ✔ There were once around 20 fiberboard plants in the U.S. & Canada – now there only 4.
- ✔ European use of fiberboard/ wood fibre insulation is surging with the growth curve of energy efficient and healthy buildings.
- ✔ Renovation market is also significant in Europe as families keep houses for generations.
- ✔ The differences between U.S. and European products is significant.
- ✔ The target markets for European style wood fibre insulation are: Passive/ High Performance Homes, Timber Frame Construction, CLT Construction.

History - Growth of Wood Fibre Insulation



Product Range

STEICO universal 

STEICO universal black 

STEICO special 

STEICO safe 

STEICO multi 

STEICO zell  ÖKO-TEST
STEICO zell
Hörsen-Verleumdung
sehr gut
Ausgabe 08/2017

STEICO floc  NEU
 $\lambda = 0,039$

STEICO flex 036  NEU
 $\lambda_D = 0,036$

STEICO flex 038 

STEICO therm 

STEICO install 

STEICO internal 

STEICO isorel 

STEICO roof 

STEICO top 

STEICO floor 

STEICO underfloor 

STEICO base 

STEICO protect 

STEICO secure 

STEICO joist/wall 

STEICO LVL 

Product Range Overview



**Wood fiber
boards – wet
process**



**Wood fiber
boards – dry
process**



**Flexible wood
fiber boards**



**Wood fiber
& cellulose
injection
insulation**

Production Processes



EN13171



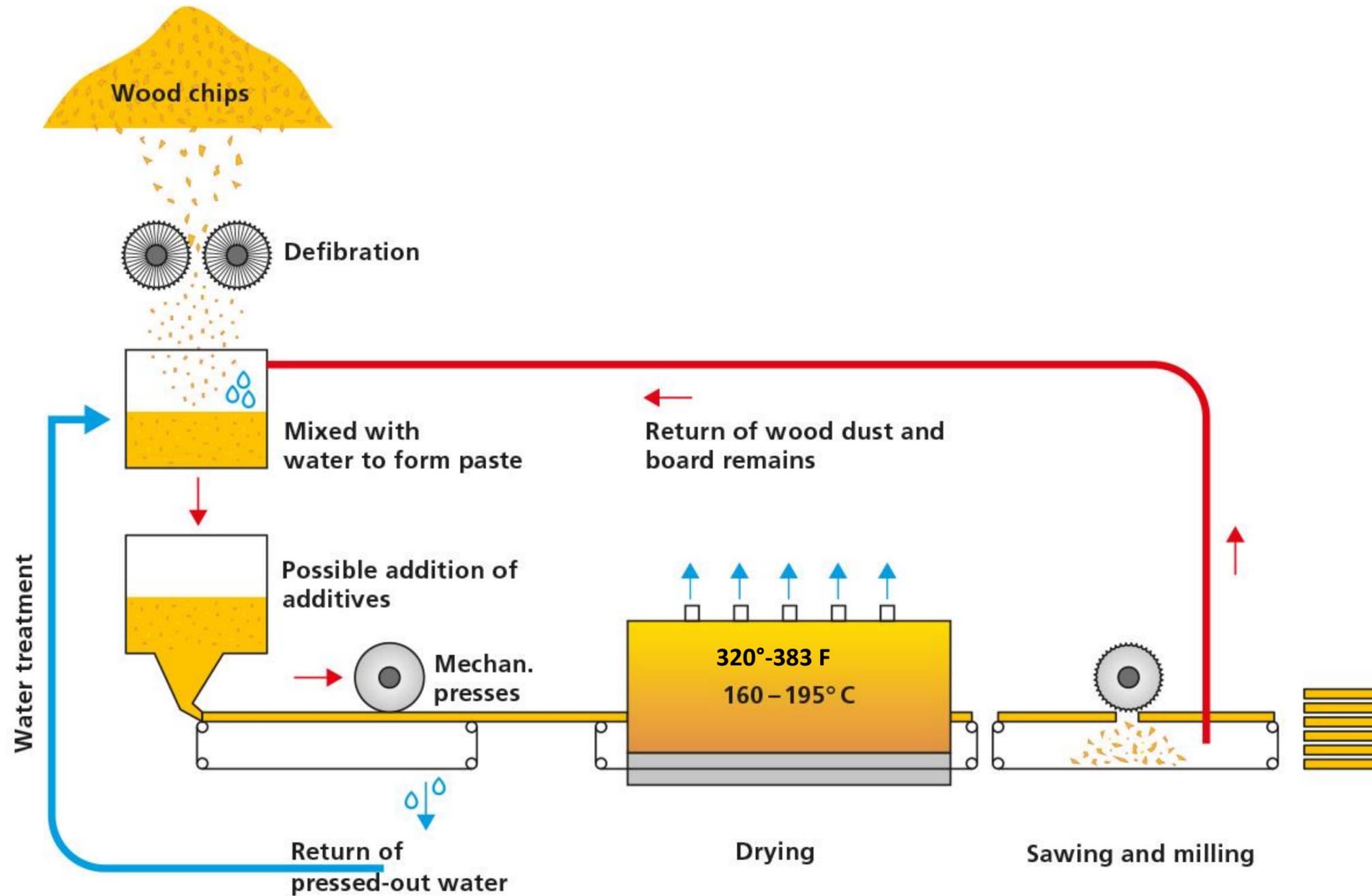
The Wet Process

- ✔ Wood own binding materials
- ✔ Bulk density 16.9 lb/f³
- ✔ Water vapor diffusion resistance factor μ : 5
- ✔ R value 3
- ✔ Higher Density/ Lower R value/ higher u value

The Dry Process

- ✔ Additional binding materials (3-5%)
- ✔ Bulk density 11.25 – 13.1 lb/f³
- ✔ Water vapor diffusion resistance factor μ : 3
- ✔ R value 3.5
- ✔ Lower Density/ Higher R value/ lower u value

Wet Process

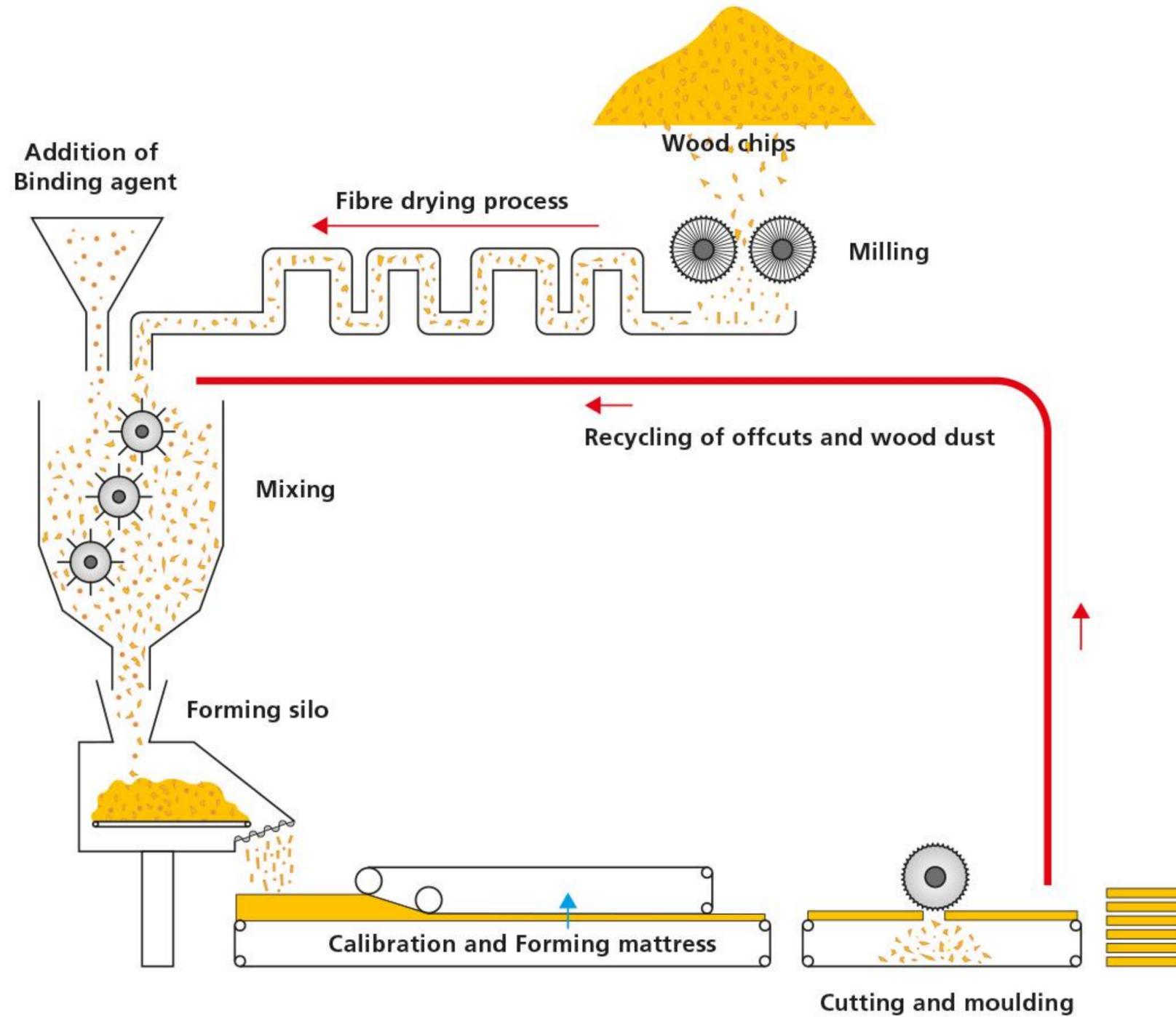


Wet Process Ingredients

- 🌿 **Wood Fibre/ Natural Resins**
- 🌿 **Water**
- 🌿 **Paraffin**
 - principal user: candle industry
- 🌿 **Aluminium sulphate**
 - flocking agent
 - further areas of use: flocking agent in the water treatment, backing agent in the food industry
- 🌿 **Silicate**
 - binding mechanism: CO₂-absorption and water loss
 - further areas of use: binding agent in mineral colours and paper



Dry Process – Wood Fibre Boards



Dry Process Ingredients

- ✔ **Wood Fibre/ Natural Resin**
- ✔ **Ammonium Phosphate**
 - function: fire retardant agent
 - mineral salt out of the elements nitrogen (N) and phosphorus (P)
 - further areas of use: fertilizer / food industry
- ✔ **Polyolefin Fibre**
 - function: binding agent
 - textile fibre from the clothing industry
- ✔ **Paraffin Wax**
 - principal user: candle industry
- ✔ **Polyurethane Resin**



Wood Chips – All FSC Wood



Chips/ Fibers Routed to Processing

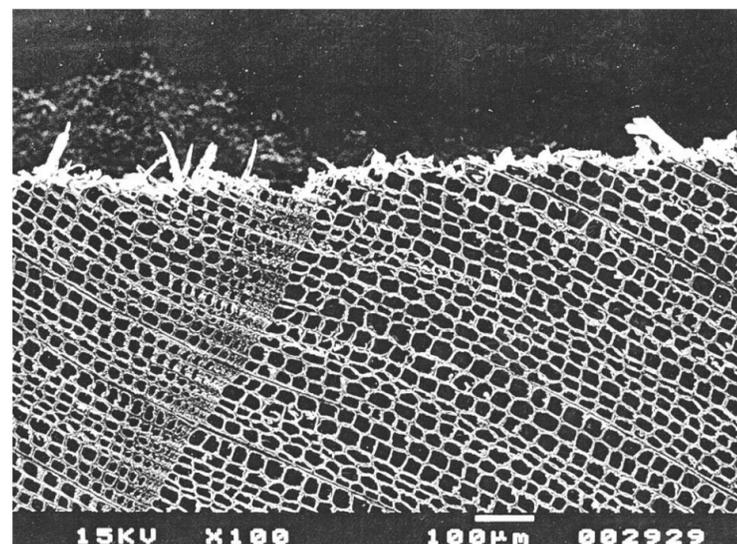


Dry Board Processing – Rolled/ Compressed to Thickness

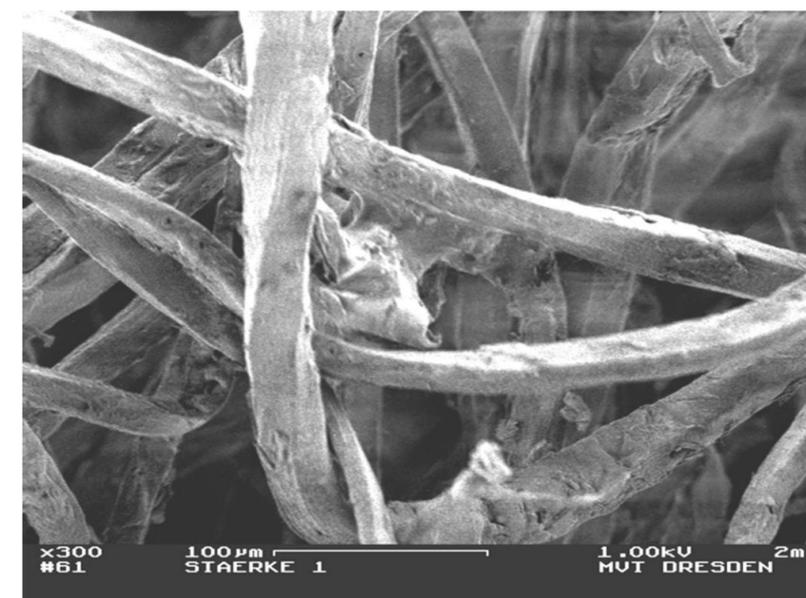


Why Wood Fibre Insulation?

Wood is a Natural Insulator



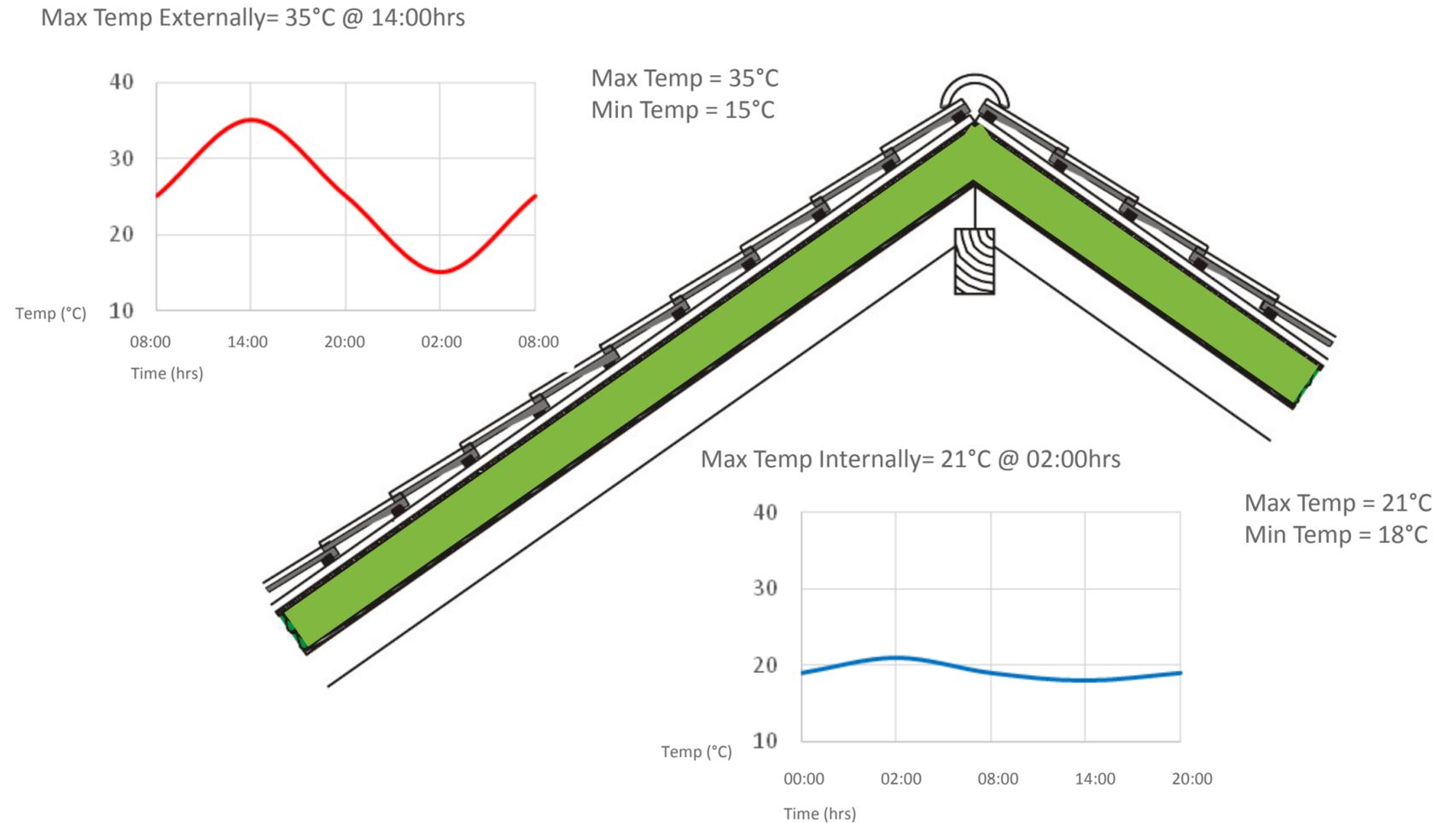
- ✔ Low Thermal Conductivity
- ✔ High Specific Heat Capacity
- ✔ High density Insulation



Why Wood Fibre Insulation?

Phase Shift Explained

Phase Shift is defined as the time span between the highest external temperature and the highest internal temperature
In this example the highest temperature is at 2:00 PM and the highest internal temperature at 2:00 AM. This equates to a 12hr Phase Shift
With this level of performance a portion of the heat stored in the insulation components is returned to the external air
Internal temperature will never reach that of the external



How does this work in practice.....

Installation and Detailing



Installation and Detailing



Flexible Insulation Board



STEICOflex
flexible Wärmedämmung



Flexible Insulation Board



Case study



Flexible Insulation Board



 Isoflex-Cut



Installation and Detailing

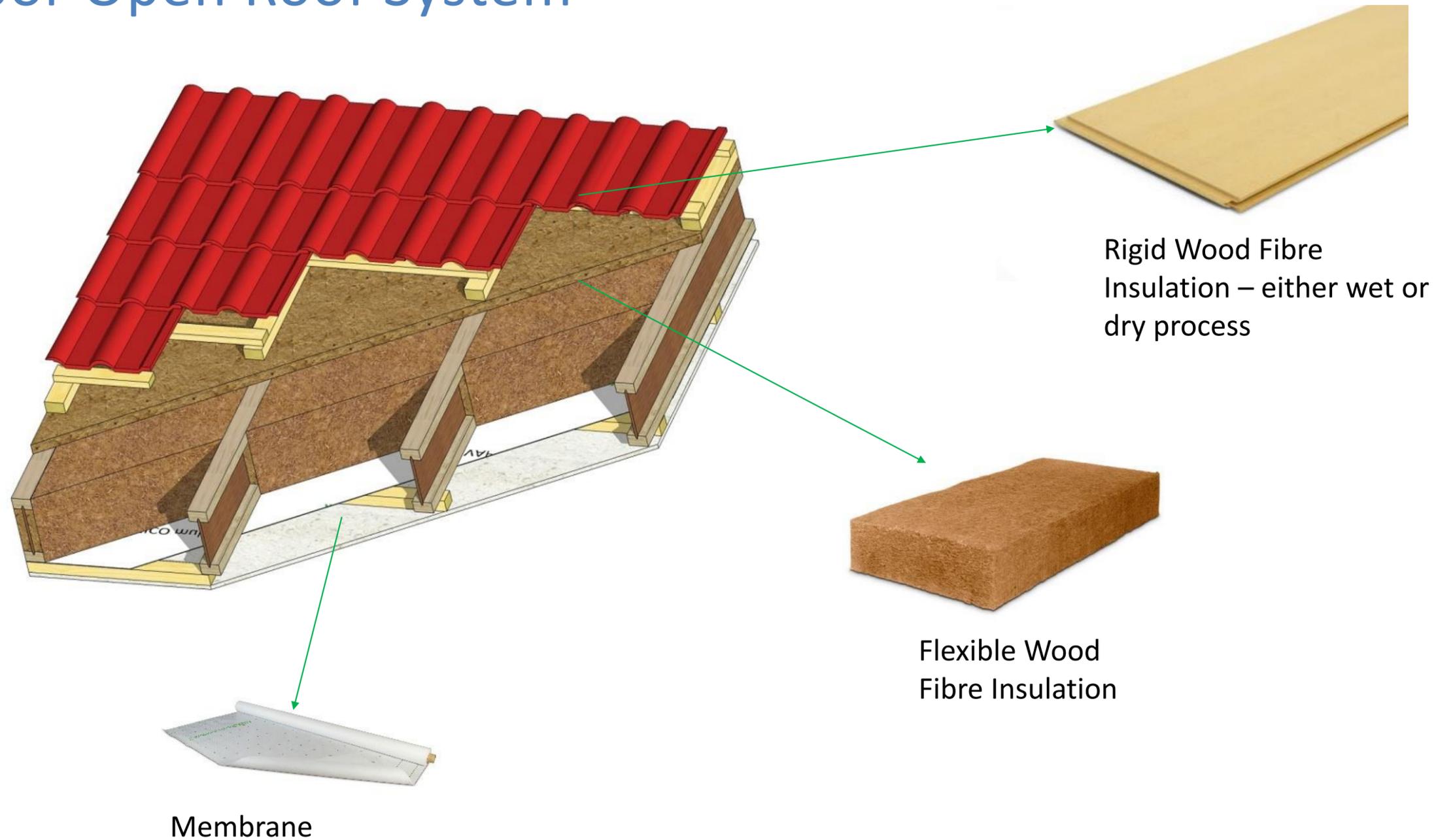


Installation and Detailing



Installation and Detailing

Vapor Open Roof System



Installation and Detailing



Weathering protection



Weathering protection during the building phase

Loose fibre

🌿 Packaging / Delivery



🌿 PE-bag 15 kg

🌿 ~ 2,5 bag per m³



Loose fibre



Loose fibre



Injection lance



Pressure Resistant Board



STEICO *therm*
stabile Wärmedämmung

STEICO *universal*
Unterdach- und Wandbauplatte

STEICO *underfloor*
Parkett- und Laminatbodenunterlage

STEICO *therm internal*
Innendämmung aus Holzfasern

STEICO *special*
Holzfaser-Dämmsystem

STEICO *isorel*
vielseitige Holzfaserplatte

STEICO *floor*
Fußboden-Dämmsystem

STEICO *protect*
Holzfaser-Dämmplatte



Installation



Installation



Floor systems



 in combination with timber floor boards



STEICO *floor*
Fußboden-Dämmsystem



Case Study



Case Study



Installation and Detailing



Case study

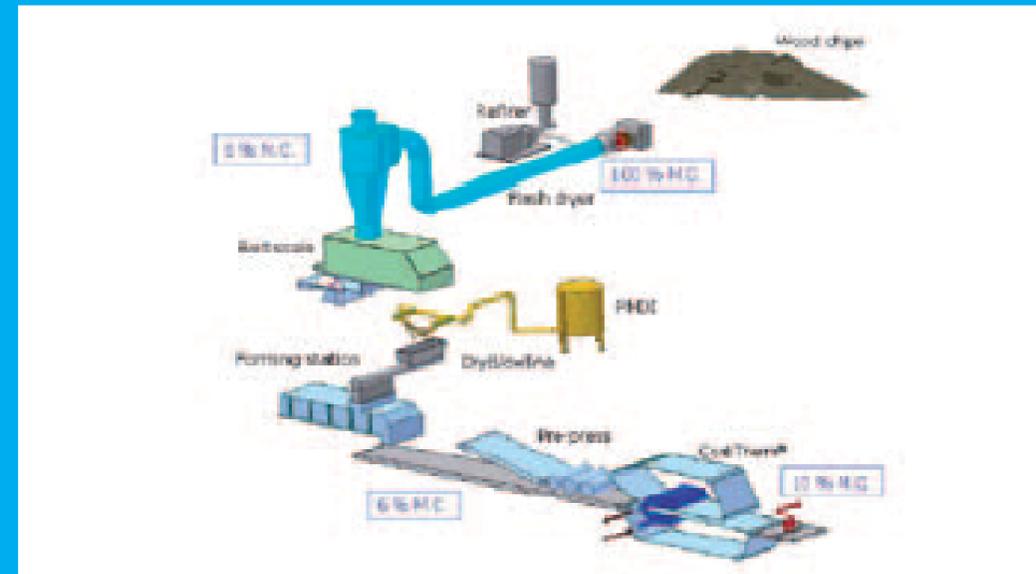


Case Study



Case Study





> PRODUCTION PLANT DATA

Raw material Wood (without bark) Binder	softwood (like spruce, fir, pine) PMDI (for rigidboards) Option: Bico-fibers (for flexible boards)
Hydrophobic additive (for special applications) Fire retardant (depending on density)	paraffin emulsion ammoniumphosphate
Site (for the production line without warehouse, infrastructure etc.) Masterboard width	approx 6,500 m ² (70,000 sq. ft.) approx 150 m x 42 m (500 ft. x 140 ft.) approx. 2,400 to 2,600 mm (8.0 – 8.5 ft.), depending on final board size
Rigid board – Capacity (depending on density and thickness) Throughput	36 – 72 m ³ /h (1,270 – 2,540 cu. ft./hour) up to 7 t/h (7.7 ton/hour) wood
Option: flexible board – Capacity (depending on density and thickness) Throughput	45 – 75 m ³ /h (1,585 – 2,648 cu. ft./hour) up to 3 t/h (3.3 ton/hour) wood

HASSLACHER Group

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

Founded in 1901 by Jakob HASSLACHER
400 Mio. EUR Turn-over
1.600 employees at 8 locations in 4 countries
Headquarter: Sachsenburg/Carinthia/Austria



HASSLACHER Group Production sites

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

AUSTRIA

Sachsenburg
Stall im Mölltal
Hermagor
Preding

GERMANY

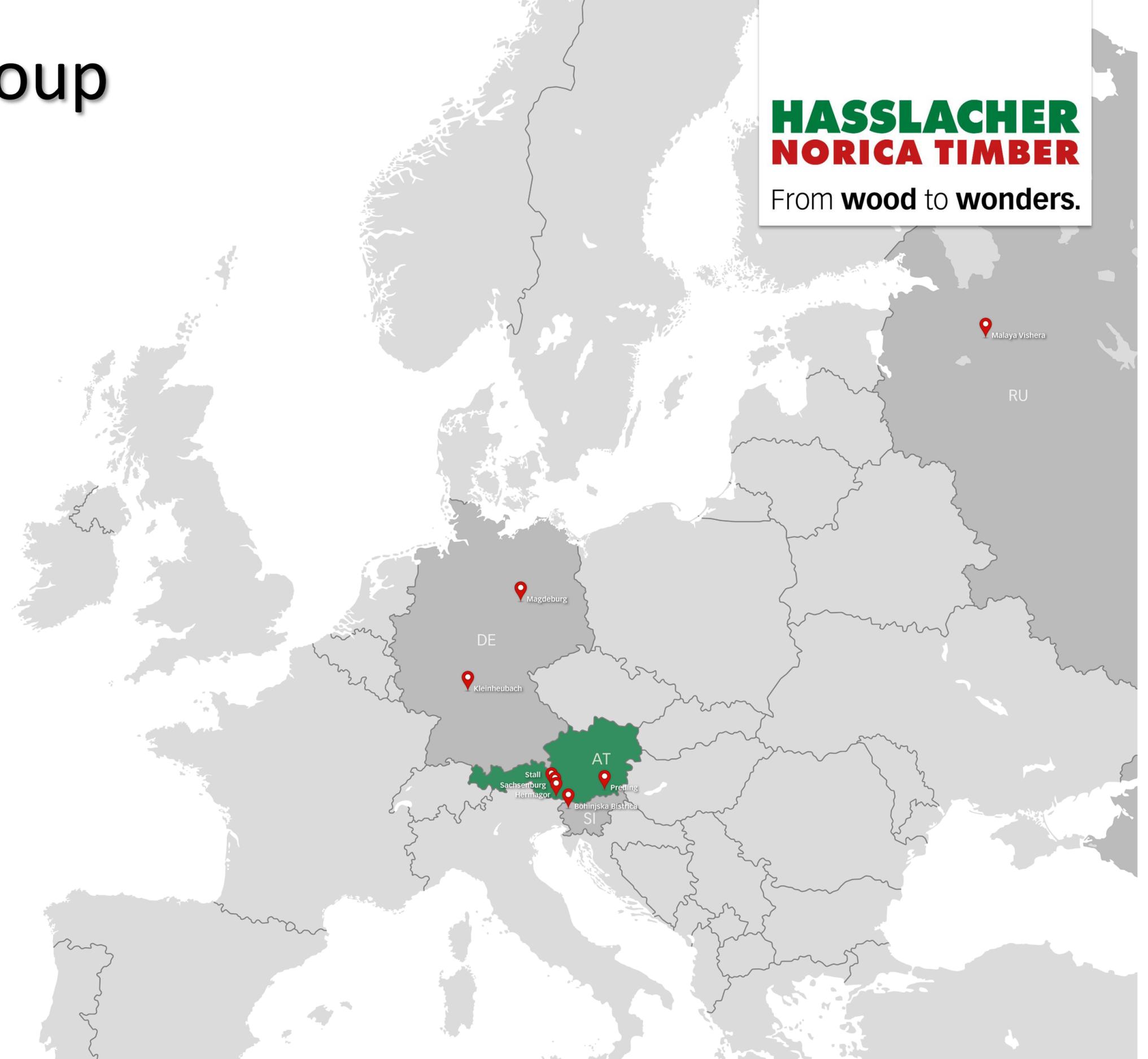
Magdeburg
Kleinheubach

SLOVENIA

Bohinjska Bistrica

RUSSIA

Malaya Vishera



ANNUAL PRODUCTION



750,000 m³
SCHNITTHOLZ
SAWN TIMBER
SEGATI



90,000 t
PELLETS
PELLETS
PELLET



160,000 m³
HOBELWARE
SURFACED TIMBER
PERLINE E PIALLATI



1,000,000 PIECES
PALETTEN & VERPACKUNGSLÖSUNGEN
PALLETES & PACKAGING SOLUTIONS
BANCALI & SOLUZIONI DI IMBALLAGGIO



100,000 m³
KONSTRUKTIONSVOLLHOLZ
FINGER JOINTED STRUCTURAL TIMBER
LEGNO MASSICCIO DA COSTRUZIONE



1,500,000 m²
SCHALUNGSPLETTEN
SHUTTERING BOARDS
PANNELLI PER CASSEFORME



150,000 m³
BRETTSCHICHTHOLZ
GLUE LAMINATED TIMBER
LEGNO LAMELLARE



90 GWh
WÄRME
HEAT
CALORE



45,000 m³
BRETTSPERRHOLZ
CROSS LAMINATED TIMBER
PANNELLI X-LAM



80 GWh
STROM
ELECTRICITY
ENERGIA ELETTRICA

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

From Wood to Wonders.

From Wood ...



„Fichtenwald bei Spittal“ © Christoph Kulterer

... to Wonders.



La Seine Musical © HESS Timber

... to Wonders.



... to Wonders.



... to Wonders.



„Freisinger Holzbau“ © Frischeis

... to Wonders.



Why Central European Products?

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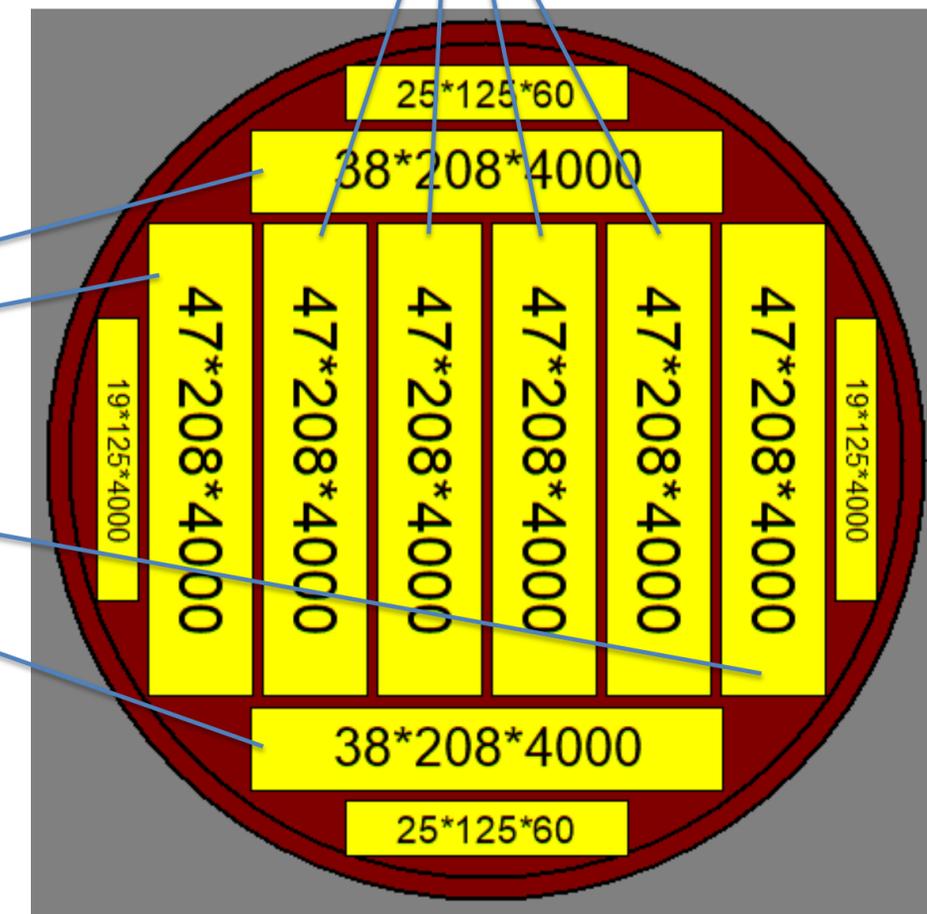
From **wood** to **wonders**.

Log Diameter: average 280 mm/11"

- High yield
- High volume of 200 mm and wider lumber
- Large widths of side boards possible
- Example 380 mm log

CLT

GLULAM



COMPREHENSIVE PRODUCT RANGE

ALL FROM ONE SOURCE



SCHNITTHOLZ
SAWN TIMBER
SEGATI



HOBELWARE
SURFACED TIMBER
PERLINE E PIALLATI



KONSTRUKTIONSVOLLHOLZ GLT®
FINGER JOINTED STRUCTURAL TIMBER
LEGNO MASSICCIO DA COSTRUZIONE



BALKENSCHICHTHOLZ DUO/TRIO
LAMINATED BEAMS DUO/TRIO
TRAVI DUO/TRIO



BRETTSCHICHTHOLZ
GLUE LAMINATED TIMBER
LEGNO LAMELLARE



BRETTSTAPELSYSTEMDECKE
SOLID TIMBER CEILING SYSTEM
ELEMENTI PER SOLAIO IN LAMELLARE



BRETTSPERRHOLZ NORITEC X-LAM
CROSS LAMINATED TIMBER
PANNELLI X-LAM



BRETTSCHICHTHOLZ SONDERBAUTEIL
GLUE LAMINATED TIMBER SPECIAL COMPONENTS
LEGNO LAMELLARE ELEMENTI COSTRUTIVI SPECIALI



SPEZIALPRODUKTE
SPECIAL PRODUCTS
PRODOTTI SPECIALI



PELLETS
PELLETS
PELLET



SCHALUNGSPLETTEN
SHUTTERING BOARDS
PANNELLI PER CASSEFORME



PALLETEN & VERPACKUNGSLÖSUNGEN
PALLETES & PACKAGING SOLUTIONS
BANCALI & SOLUZIONI DI IMBALLAGGIO

HASSLACHER NORICA TIMBER

From wood to wonders.



ALL FROM ONE SOURCE
ALL ON ONE TRUCK

HASSLACHER
NORICA TIMBER

From wood to wonders.



Cross laminated timber

Glue laminated timber special components



Shuttering boards



Pellets



Finger jointed structural timber

Duo/Trio



Solid timber ceiling system



Special products



Glue laminated timber



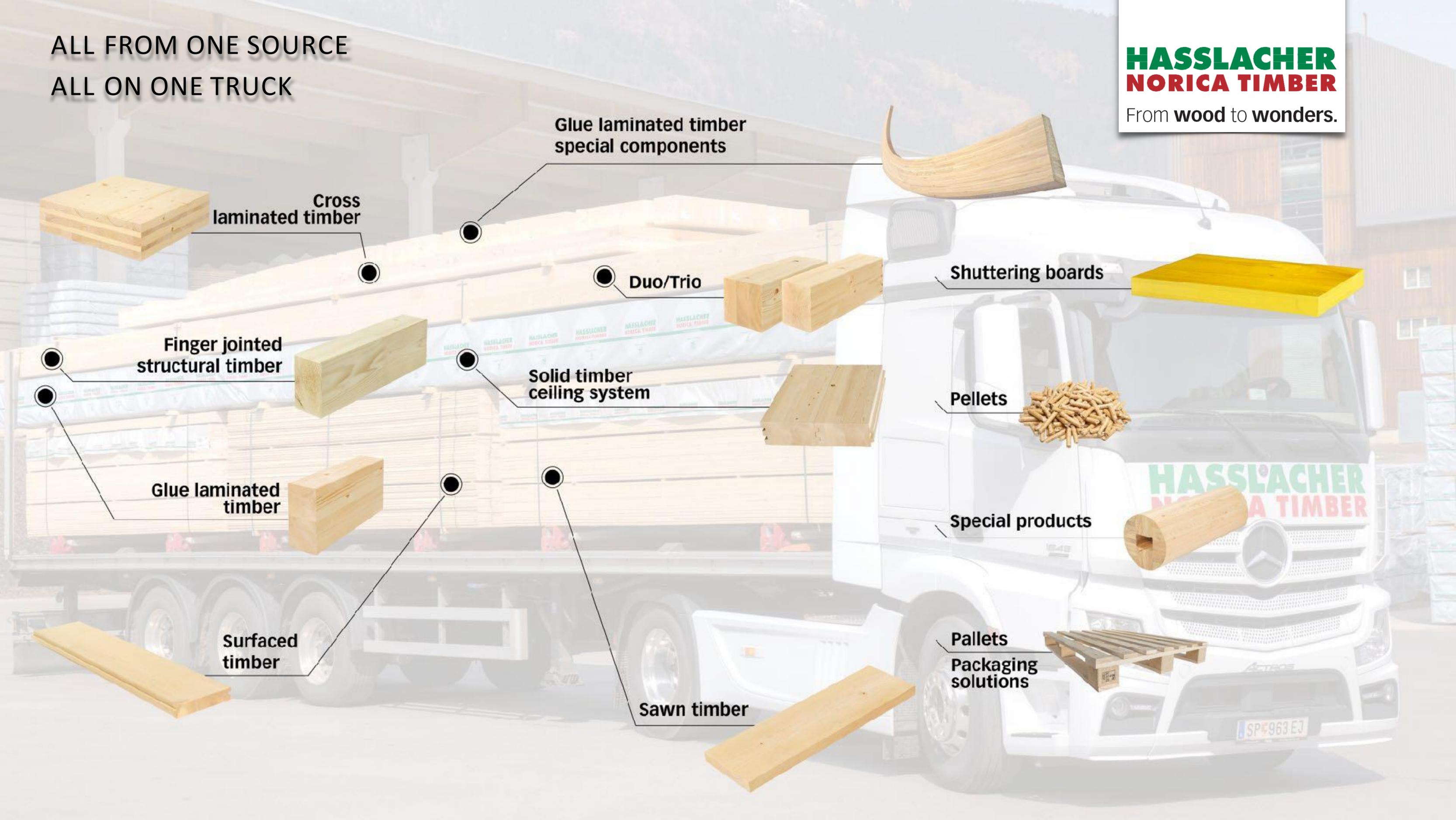
Pallets
Packaging solutions



Surfaced timber



Sawn timber



CROSS LAMINATED TIMBER NORITEC X-LAM

THE CONSTRUCTION MATERIAL OF THE FUTURE

HASSLACHER
NORICA TIMBER

From wood to wonders.



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From **wood** to **wonders.**

From
wood
to
wonders.

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CROSS LAMINATED TIMBER NORITEC X-LAM

THE CONSTRUCTION MATERIAL OF THE FUTURE

HASSLACHER
NORICA TIMBER

From wood to wonders.

ADVANTAGES

- + No modular dimensions, order size = invoiced size
- + Highest precision joinery work
- + Sanded surface with all qualities
- + Flexible sizes up to 3.20 x 20.0 m



CROSS LAMINATED TIMBER NORITEC X-LAM

THE CONSTRUCTION MATERIAL OF THE FUTURE

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SOLID TIMBER CEILING SYSTEM

THE HIGH-PERFORMANCE CEILING SYSTEM

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SOLID TIMBER CEILING SYSTEM

THE HIGH-PERFORMANCE CEILING SYSTEM

ADVANTAGES

- + Cost-effective system for flat ceilings
- + High load capacity and rigidity
- + Fast delivery times
- + Also available as an acoustic ceiling



GLUE LAMINATED TIMBER

ENGINEERED WOODEN BEAMS

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wood
to
wonders.

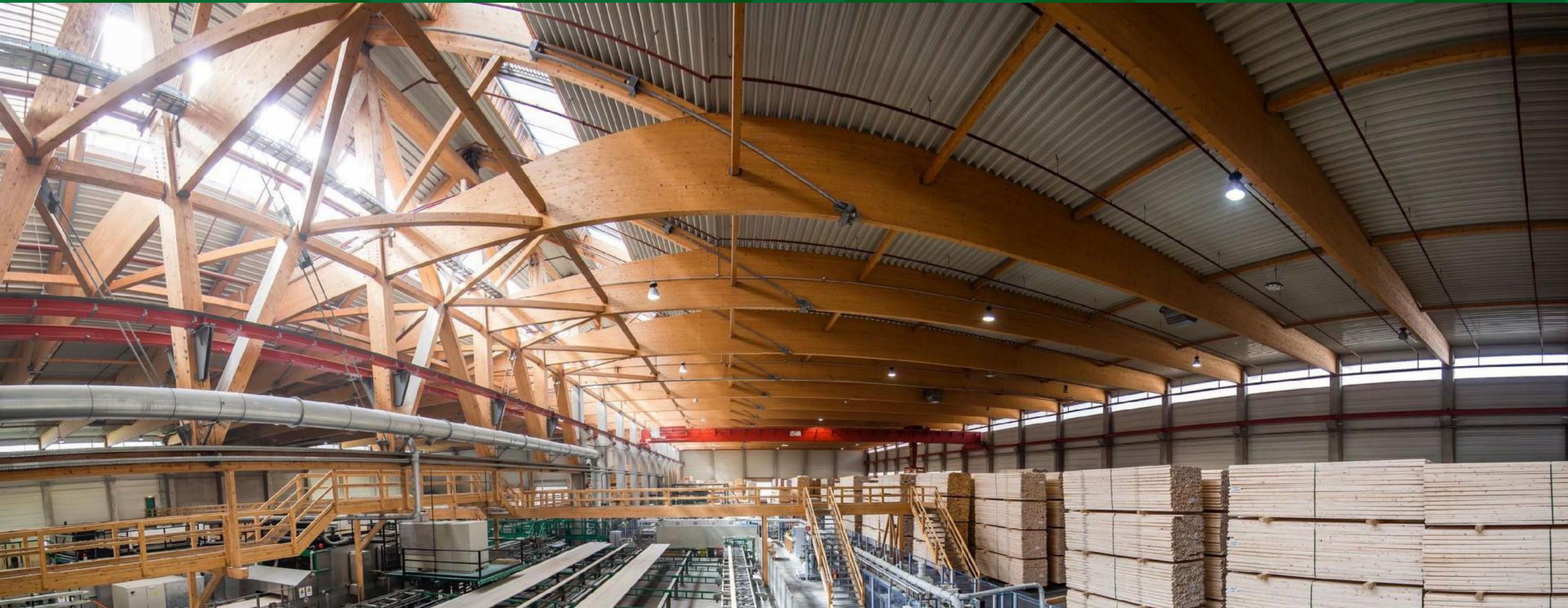
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GLUE LAMINATED TIMBER

ENGINEERED WOODEN BEAMS

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GLUE LAMINATED TIMBER

ENGINEERED WOODEN BEAMS

ADVANTAGES

- + Broad product range
- + All strength categories
- + Wood types: spruce/fir, pine, larch, birch
- + Widths from 80 mm to 280 mm, block bonding
- + Heights from 80 mm to 4,000 mm
- + Lengths up to 41 m
- + All forms possible, incl. 3-dimensional

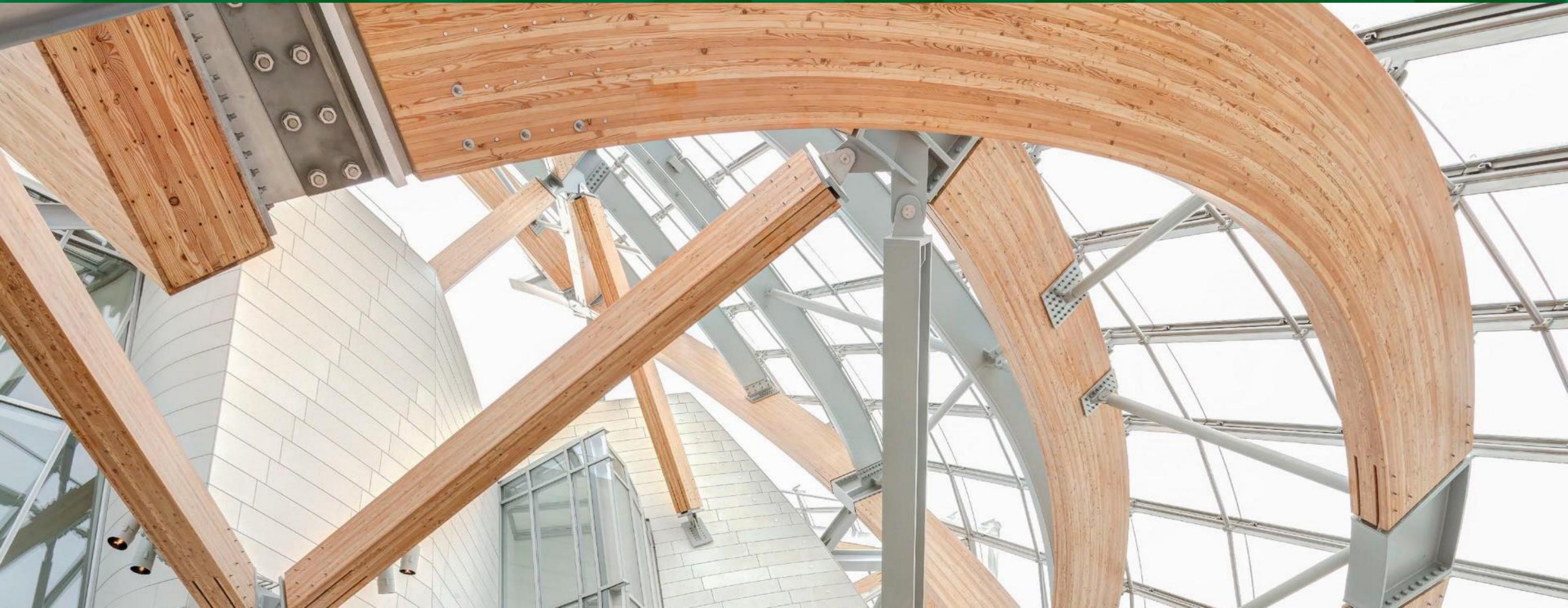


GLUE LAMINATED TIMBER

ENGINEERED WOODEN BEAMS

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LAMINATED BEAMS

DUO/TRIO

DIMENSIONALLY STABLE AESTHETICS

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LAMINATED BEAMS DUO/TRIO

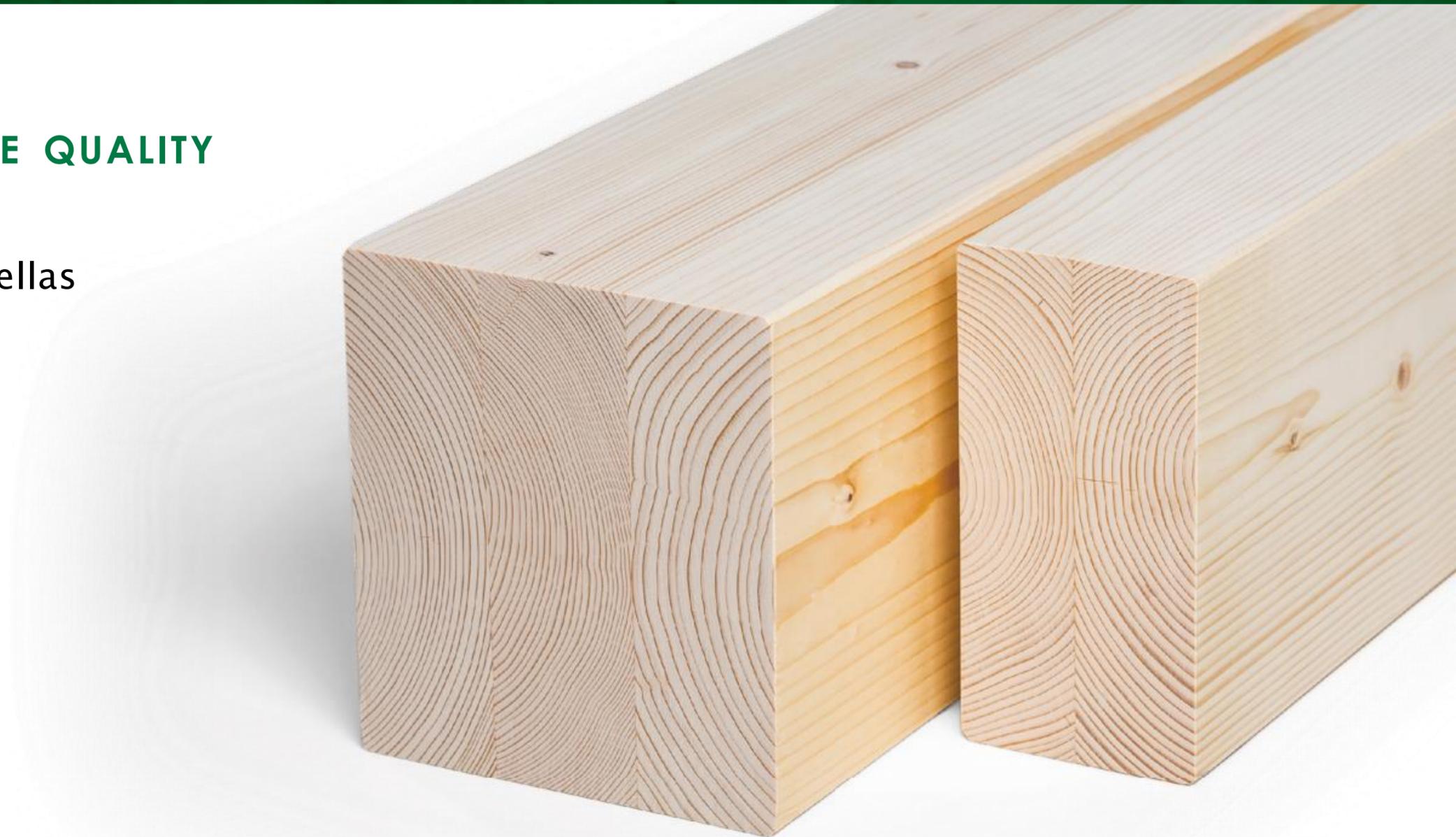
DIMENSIONALLY STABLE AESTHETICS

HASSLACHER
NORICA TIMBER

From wood to wonders.

LAMINATED BEAMS OF FURNITURE QUALITY

- + Top quality surfaces
- + Use of heartwood-free, cut raw lamellas
- + Wide range of cross-sections
- + Various types of wood possible



LAMINATED BEAMS

DUO/TRIO

DIMENSIONALLY STABLE AESTHETICS

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A wide-angle photograph of a modern timber mill. In the foreground, a worker in a red shirt and apron stands near a conveyor belt of long wooden beams. In the background, another worker in a green shirt is visible near a large yellow and red machine. The facility is filled with industrial equipment, including overhead cranes and conveyor systems, all set within a large, well-lit industrial building.

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

- + Joinery systems available at all our plants
- + Fast and easy assembly at the construction site
- + Competent contact partners ensure accurate and cost-effective finishing

FINGER JOINTED STRUCTURAL TIMBER GLUED LAMINATED TIMBER BEAMS

THE INDIVIDUALLY CERTIFIED SECURITY GUARANTEE

HASSLACHER
NORICA TIMBER

From wood to wonders.

FINGER JOINTED STRUCTURAL TIMBER GLUED LAMINATED TIMBER BEAMS

THE INDIVIDUALLY CERTIFIED SECURITY GUARANTEE

BROAD PRODUCT RANGE

- + Cross-section heights from 80 mm to 300 mm
- + Cross-section heights from 60 to 160 mm
- + Lengths from 2.5 m to 18.0 m
- + Wood types: spruce/fir, pine, Douglas fir
- + Block profile on request
- + Pressure impregnation possible
- + From spring 2017: joinery work at customer request



FINGER JOINTED STRUCTURAL TIMBER GLUED LAMINATED TIMBER BEAMS

THE INDIVIDUALLY CERTIFIED SECURITY GUARANTEE

HASSLACHER
NORICA TIMBER

From wood to wonders.



- + Each item is checked
- + Online quality assurance instead of random sampling
- + Like glue laminated timber, glue laminated timber beams can be measured and wood construction costs saved

SURFACED TIMBER

VERSATILITY FOR INSIDE AND OUTSIDE SURFACES

HASSLACHER
NORICA TIMBER

From wood to wonders.

SURFACED TIMBER

VERSATILITY FOR INSIDE AND OUTSIDE SURFACES

ADVANTAGES

- + Versatile application possibilities for both inside and outside areas
- + The correct sorting and quality for each use, comprehensive product range
- + Can be combined with all other products from the HASSLACHER group
- + Certified product quality: member of the Association of the European Planing Industries



SURFACED TIMBER

VERSATILITY FOR INSIDE AND OUTSIDE SURFACES

HASSLACHER
NORICA TIMBER

From wood to wonders.



PELLETS

SUSTAINABLE ENERGY FROM NATURE

HASSLACHER
NORICA TIMBER

From wood to wonders.



PELLETS

SUSTAINABLE ENERGY FROM NATURE

HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

BRINGING NATURE INTO BALANCE WITH PELLETS

- + This natural heating material is made from pure dried sawdust and wood shavings pressed with purely biogenic pressing additives
- + Pellets are carbon-neutral and during the burning process, they release the same quantity of CO₂ as was absorbed by the tree during growth
- + The supply is 100 % guaranteed, independent of oil and gas and always available in sufficient quantities
- + Local softwood from the region based on 100% sustainable forestry



HASSLACHER
NORICA TIMBER

From **wood** to **wonders**.

SHUTTERING BOARDS

NATURAL BEAUTY FOR CONCRETE SURFACES

HASSLACHER
NORICA TIMBER

From wood to wonders.



SHUTTERING BOARDS

NATURAL BEAUTY FOR CONCRETE SURFACES

ADVANTAGES

- + Low cost due to high level of repeat uses
- + Sanded surfaces for perfect results
- + Closed structure to prevent cracks and ensure dimensional stability
- + High product lifespan thanks to all-round glued border



SAWN TIMBER

BOARDS WHICH MEAN THE WORLD

HASSLACHER
NORICA TIMBER

From wood to wonders.

SAWN TIMBER

BOARDS WHICH MEAN THE WORLD

SAWN TIMBER PRODUCTS

- + Lamellas for glue laminated timber
- + Lamellas for laminated beams and finger jointed structural timber, heartwood-separated or heartwood-free
- + Rough-planed timber
- + Window scantlings, window lamellas and finer jointed products
- + Slats, poles and posts
- + Wooden beams
- + Side board products for packers and industrial processors
- + Cm products
- + Sawmill by-products



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wood
to
wonders.



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SPECIAL PRODUCTS

A SOLUTION FOR EVERY CHALLENGE

HASSLACHER
NORICA TIMBER

From wood to wonders.



SPECIAL PRODUCTS

A SOLUTION FOR EVERY CHALLENGE

SPECIAL PRODUCTS

- + Large façade elements
- + Edge-glued decking boards with refined surfaces
- + Mini laminated beams
- + Rounded pillars
- + Wood-concrete composite systems



SPECIAL PRODUCTS

A SOLUTION FOR EVERY CHALLENGE

HASSLACHER
NORICA TIMBER

From wood to wonders.



SPECIAL PRODUCTS

A SOLUTION FOR EVERY CHALLENGE

HASSLACHER
NORICA TIMBER

From wood to wonders.



SPECIAL PRODUCTS

A SOLUTION FOR EVERY CHALLENGE

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NORICA TIMBER

From wood to wonders.



FROM WOOD TO WONDERS BY INNOVATION. BIRCH GLUE LAMINATED TIMBER

HASSLACHER
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From wood to wonders.



FROM WOOD TO WONDERS BY INNOVATION. BIRCH CROSS LAMINATED TIMBER

HASSLACHER
NORICA TIMBER
From wood to wonders.



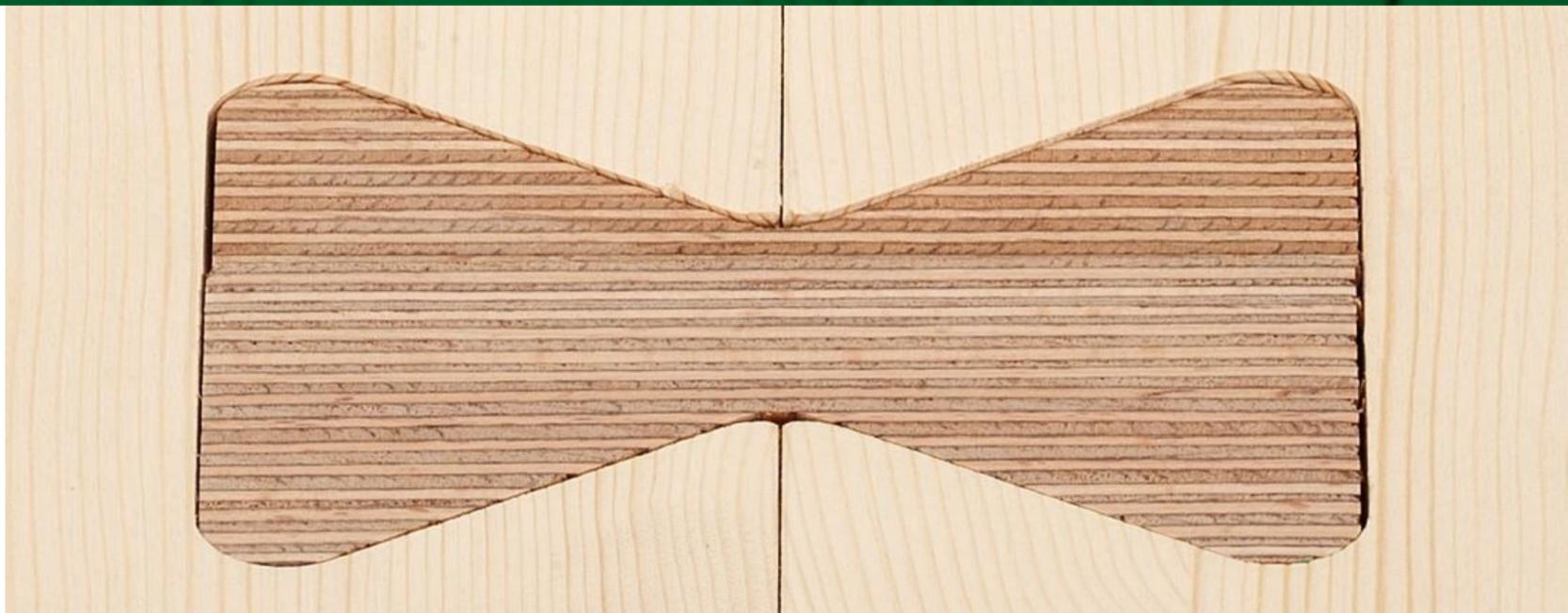
FROM WOOD TO WONDERS BY INNOVATION.
EXCELLENT SURFACE

HASSLACHER
NORICA TIMBER
From wood to wonders.



FROM WOOD TO WONDERS BY INNOVATION. X-FIX WOOD-WOOD CONNECTOR SYSTEM

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NORICA TIMBER
From wood to wonders.

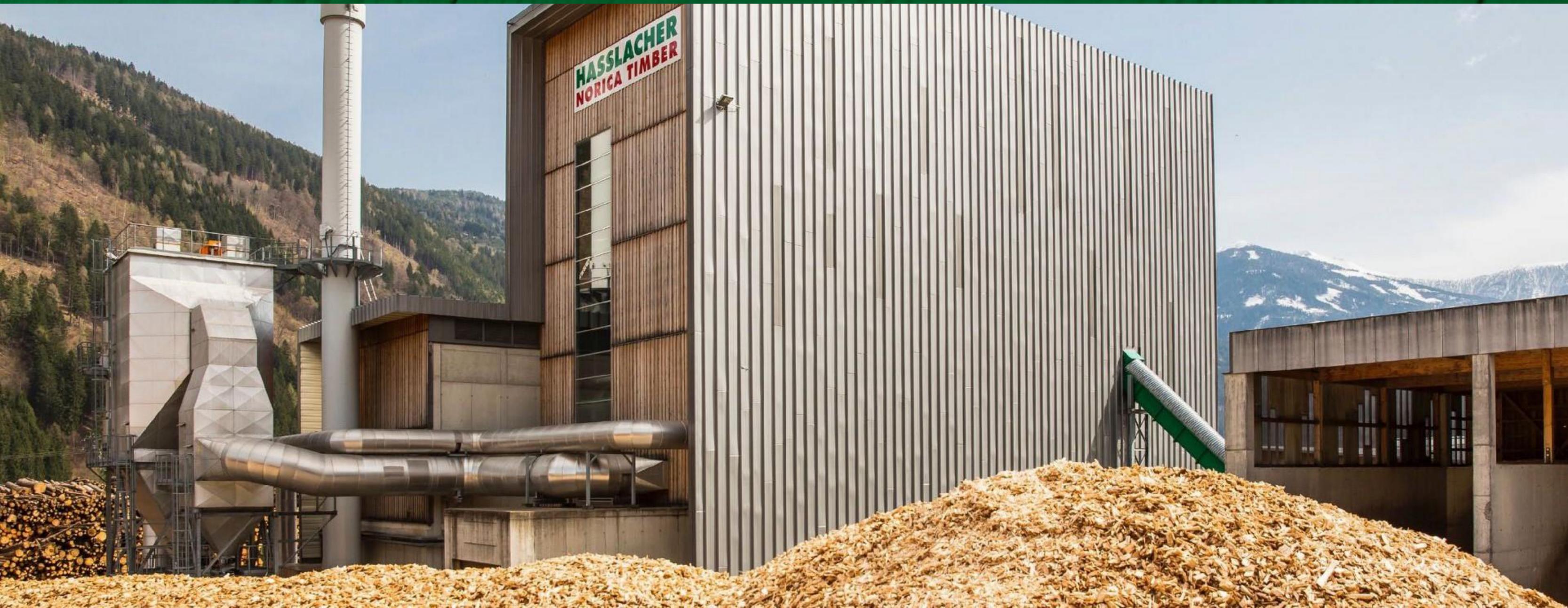


CONCENTRATED ENERGY

WITH REGIONAL ADDED VALUE FOR THE FUTURE

HASSLACHER
NORICA TIMBER

From wood to wonders.



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HASSLACHER NORICA TIMBER generates 80 GWh from wood fuel. This includes waste wood such as bark, off-cuts, wood chip, branches etc. This corresponds to an electricity consumption of 16,000 households i.e. the size of a town such as Spittal an der Drau.

SACHSENBURG | CARINTHIA

HASSLACHER
NORICA TIMBER

From wood to wonders.



Company headquarters

Feistritz 1 | 9751 Sachsenburg | Austria

T +43 4769/22 49

M info@hasslacher.com

Production of:

Glue laminated timber

Laminated beams duo/trio

Surfaced timber

Sawn timber

Sawmill by-products

Electricity and heat from 2 CHP systems

Electricity from photovoltaic plant

HASSLACHER Holding GmbH

Management & administration

HASSLACHER DRAULAND Holzindustrie GmbH

Production sawmill

NORITEC Holzindustrie GmbH

Planing mill & glue laminated timber plant

HASSLACHER Energie GmbH: biomass cogeneration

NORICA TIMBER Vertrieb GmbH: sales

Employees: approx. 380

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www.hasslacher.com

Thank You For Your Time

Any Questions?

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