LIGNOLOC®
A BECK brand

COLLATED WOODEN NAILS

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SUSTAINABLE AND EFFICIENT.

LIGNOLOC®

is the first high-performance fastening system in the world made of the renewable raw material wood.

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The technical approval makes our vision of sustainable building with sustainable fastening systems even more tangible and it is the official confirmation that this is not just a crazy abstract idea, but a completely well thought-out and marketable concept. For us it represents the first major step out of the niche towards the mass market.

Christian Beck, General Manager & CEO

THE FIRST COLLATED NAIL MADE OF WOOD

Ecological wood processing down to the smallest detail? With LIGNOLOC® we rethought fastening and developed a new generation of fastening systems, being sustainable and efficient at the same time. LIGNOLOC® is the first ever pneumatically driven wooden nail for future-oriented use in industrial production and ecological timber construction (among many other applications).
The revolutionary LIGNOLOC® wooden nails are made from indigenous beech wood and provide a maximum tensile strength similar to that of aluminium nails. Their mechanical properties allow the nails to be driven into solid structural timber* and wooden materials with the FASCO® LIGNOLOC® pneumatic nailer, without pre-drilling, to form an inseparable bond with the timber.
LIGNOLOC® wooden nails offer an advantage over fasteners made of aluminium or steel in that they form no thermal bridges and leave no traces of corrosion in the wood. If the workpiece subsequently needs to be shaped or machined, then this is possible without any cutting tool wear.

* For wood with a density of 350 to 500 kg/m^3 and in compliance with edge distances specified in Eurocode 5

TECHNICAL APPROVAL FOR LIGNOLOC® WOODEN NAILS

On August 28, 2020, the German Institute for Construction Engineering (Deutsches Institut für Bautechnik – DIBt) issued the “National technical approval / general construction technique permit” for “Load-bearing timber connections using LIGNOLOC® wooden nails”. After extensive tests and complex calculation models, all expectations of the expert committee were met. With the general construction technique permit for the LIGNOLOC® wooden nails, the application possibilities in timber construction will expand even more in the future. The approval enables the planning, design and execution of load-bearing connections in timber frame construction. Planks and panels made of solid timber, wood-based materials or gypsum fiber can be attached to wood building materials using LIGNOLOC® wooden nails. In addition, connections can be made with LIGNOLOC® to produce bracing and load-bearing wall diaphragms.

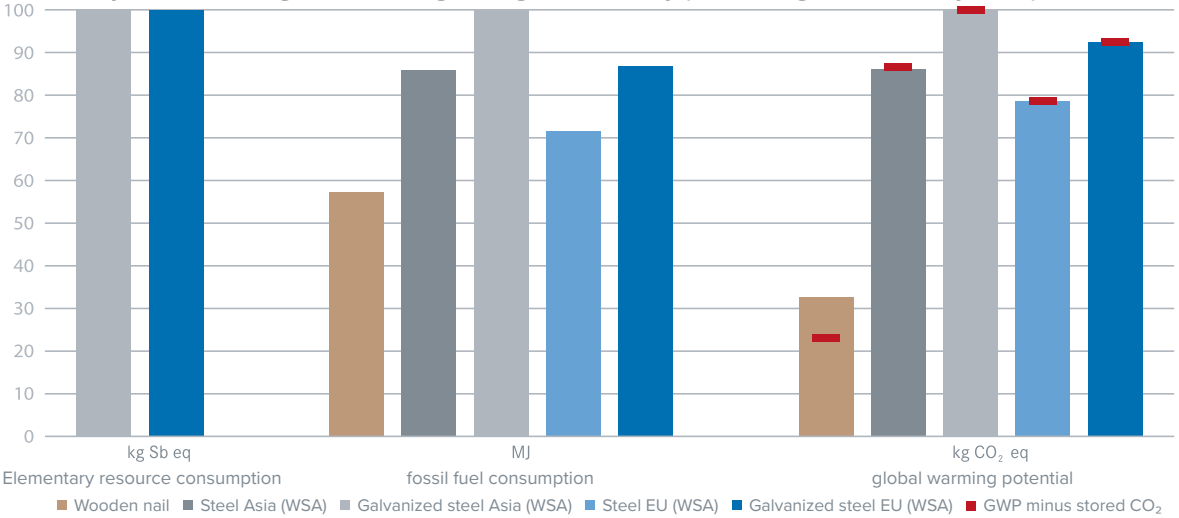
INDIGENOUS BEECH WOOD
THE RAW MATERIAL FOR LIGNOLOC® WOODEN NAILS

Beech is the wood best suited for the manufacturing of LIGNOLOC® wooden nails, because its vertical growth gives it the most homogeneous cell structure.
The nail is hardened by compressing the cell structure and permeating it with resin. This also gives the wood tremendous durability – outdoors as well.
Since beechwood is an indigenous and renewable raw material, this is particularly good for our environmental balance and rounds off our ecological approach to timber construction.

LIGNOLOC®
offers great potential for
sustainable construction and living.

EXEMPLARY ECOLOGY
75 % LESS GREENHOUSE GASES THAN METAL NAILS

From production through recycling, LIGNOLOC® wooden nails distinguish themselves with their environmentally friendly properties. European beech is a renewable raw material with short transport distances. According to a study from the Nova Institute, production of a LIGNOLOC® wooden nail generates only 25 % of the greenhouse gases generated by producing a technically comparable steel nail.

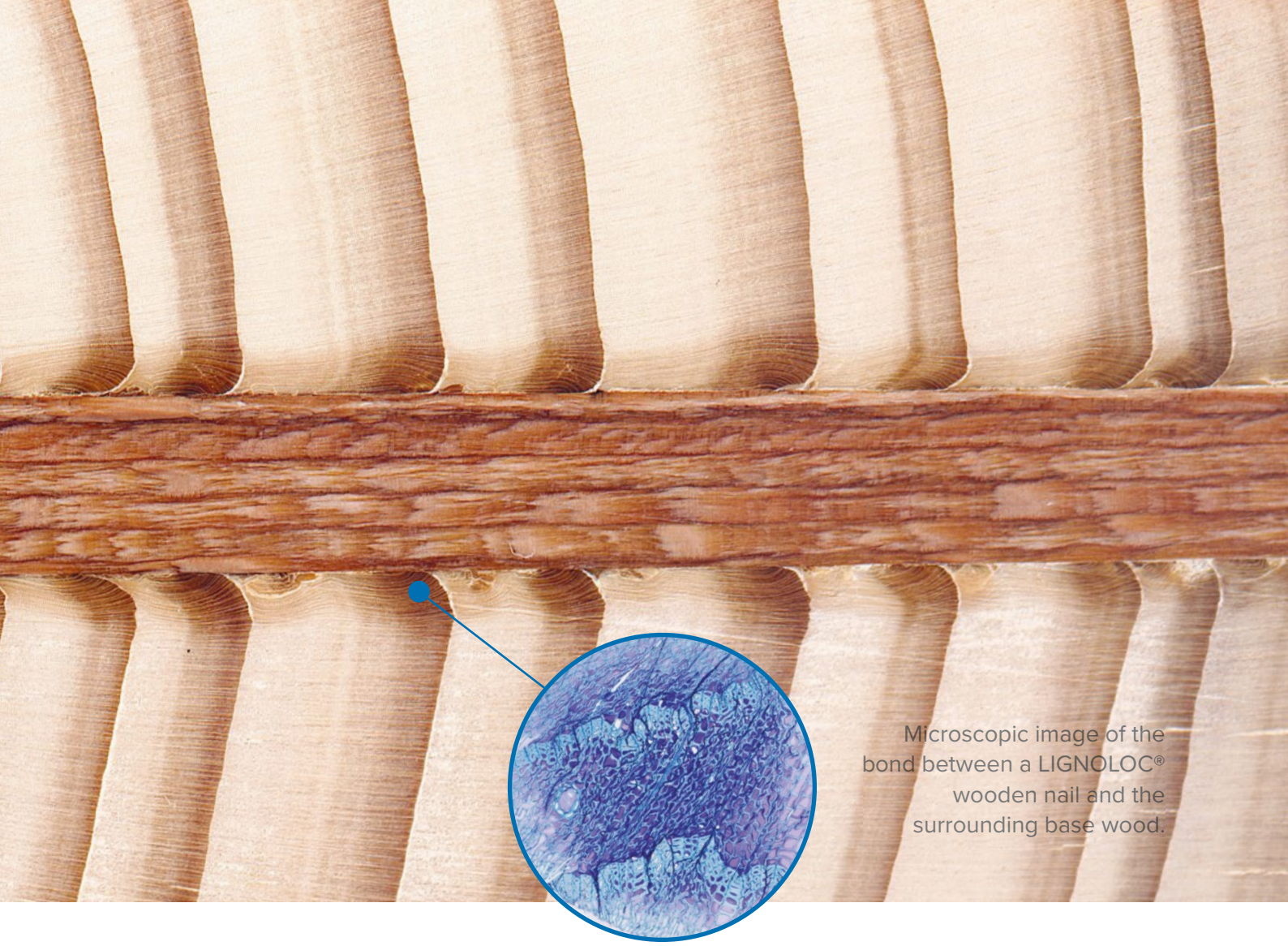


The graph shows the relative impacts of the LIGNOLOC® with 3,7 mm diameter compared to a functionally similar steel nail with 2,8 mm diameter made of European or Asian steel with or without zinc coating. LIGNOLOC® performs better in use of resources of elements and fossil fuels and it has a smaller impact in CO_2 emission. The red line is an indicator for the stored amount of biogenic CO_2 within the nail. Source: Nova Institute

HIGH HOLDING POWER THANKS TO
LIGNIN WELDING

SCIENTIFICALLY CONFIRMED
LIGNOLOC® NAILS WELD WITH THE SURROUNDING BASE WOOD

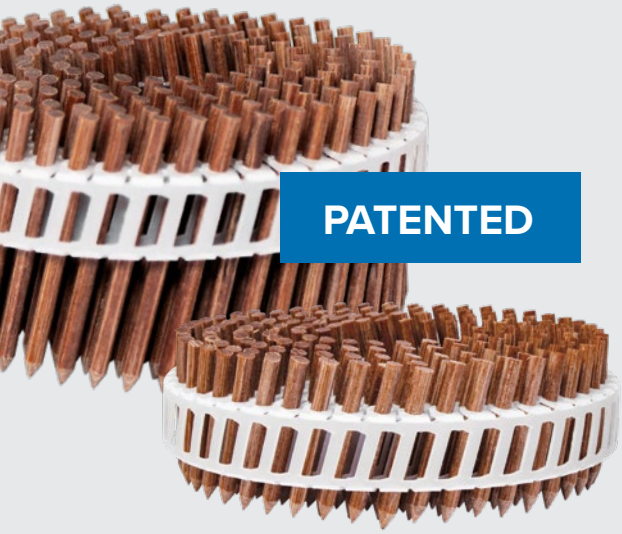
The special design of the LIGNOLOC® nail tip and the large amount of heat generated by friction when the nail is driven in cause the lignin of the wooden nail to weld with the surrounding wood to form a substance-to-substance joint.
Wooden nails behave differently to nails made of metal. Apart from the mechanical differences of the materials, wooden nails have a significantly rougher surface.
This natural surface roughness is required to facilitate the lignin welding process. The LIGNOLOC® pneumatic nailers from FASCO® supply the necessary power for this process, because, in principle, the higher the insertion velocity, the better the nail welds. The phenomenon of lignin welding was established in 1998.



Microscopic image of the bond between a LIGNOLOC® wooden nail and the surrounding base wood.

The lignin welding effect of LIGNOLOC® has since been verified by BECK in collaboration with scientists at Hamburg University by means of UV-scanning of the cell structure (see illustration). The European Journal of Wood also picked up this subject in a scientific article in January 2018.

THE LIGNOLOC® F44 SYSTEM
THE FIRST COLLATED NAIL MADE OF WOOD



LIGNOLOC® F44 WOODEN NAILS*

Diameter:	3,7 mm I 0.146"
Lengths:	38 / 50 / 55 / 60 mm I 1 ½ - 2 ⅜"
Material:	Compressed beech wood
Colour:	Natural
Coil capacity:	170 nails
Collation Type:	15° coil **LIGNOLOC®**
Flexural strength:	1400 Nmm

LIGNOLOC® F44 PNEUMATIC NAILER*
FROM FASCO®

Height:	322 mm I 12.67"
Width:	130 mm I 5.12"
Length:	275 mm I 10.82"
Weight:	2,40 kg I 5.29 lbs
Pressure:	7 - 8 bar I 100 - 120 psi
Actuation system:	Single shot & contact actuation
Loading:	Coil

* Subject to change without notice

THE LIGNOLOC® F60 SYSTEM
THE NEW DIMENSION IN COLLATED WOODEN NAILS

LIGNOLOC® F60 WOODEN NAILS*

Diameter:	4,7 - 5,3 mm | 0.185" - 0.209"
Lengths:	65 / 75 / 90 mm | 2 ½ / 3 / 3 ½"
Material:	Compressed beech wood
Colour:	Natural
Coil capacity:	94 | 100 nails
Collation Type:	15° coil **LIGNOLOC®**
Flexural strength:	2250 - 3560 Nmm

LIGNOLOC® F60 WOODEN NAILS WITH HEAD*

Diameter:	4,7 mm | 0.185"
Length:	58 mm | 2 5/16"
Head:	6,3 mm | 0.248"
Material:	Compressed beech wood
Coil-capacity:	100 nails
Collation:	15° coil **LIGNOLOC®**

LIGNOLOC® F60 PNEUMATIC NAILER*
FROM FASCO®

Height:	387 mm | 15.24"
Width:	142 mm | 5.60"
Length:	369 mm | 14.53"
Weight:	3,95 kg | 8.70 lbs
Pressure:	7 - 8 bar | 100 - 120 psi
Actuation system:	Single shot**
Loading:	Coil

PATENT PENDING

* Subject to change without notice

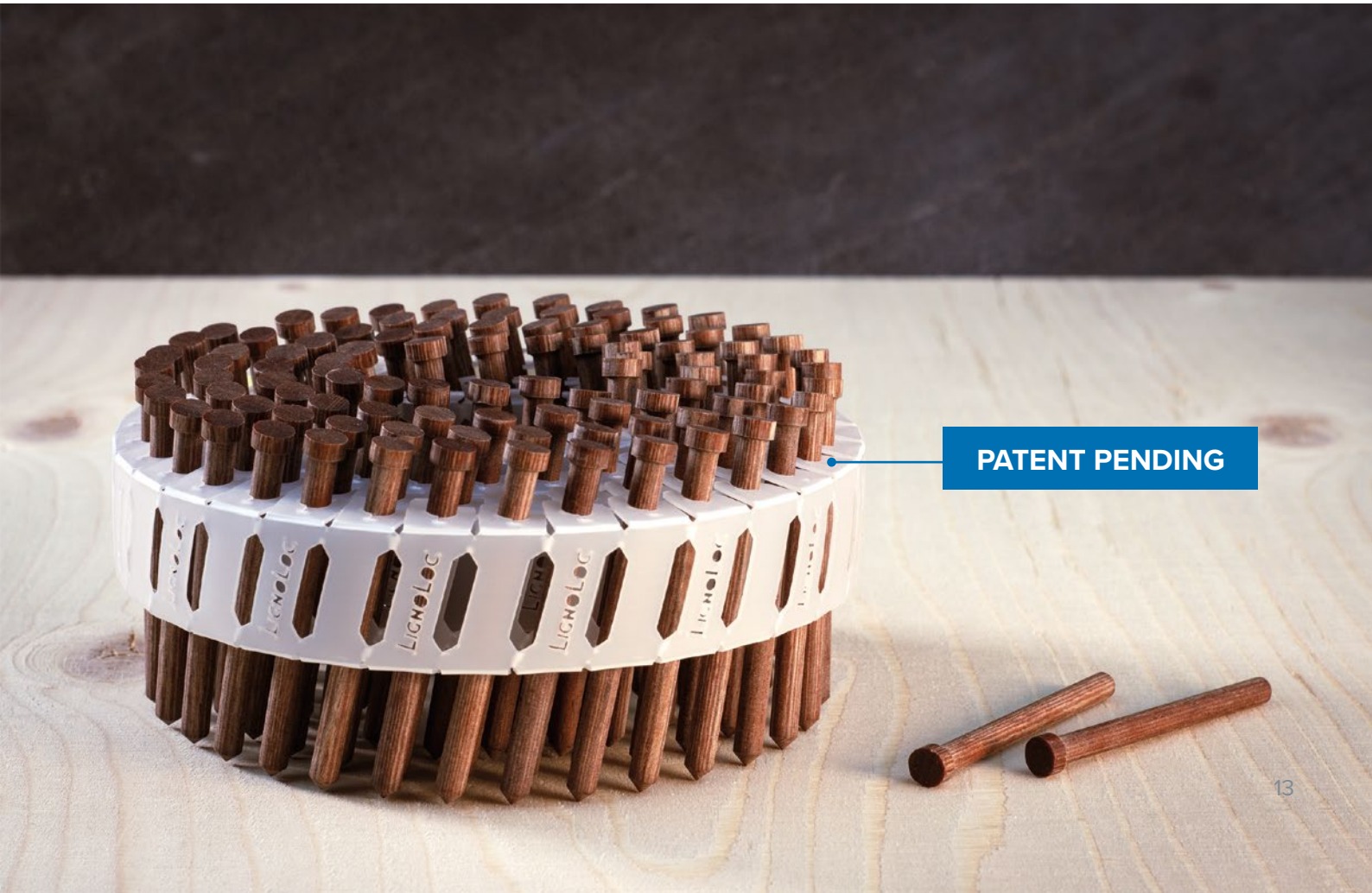
** Switchable trigger for contact actuation is included for self-assembly

LIGNOLOC® WOODEN NAIL WITH HEAD FOR FAÇADES

At **BECK** in Mauerkirchen, we are continuing our 360-degree approach of the wooden nail system. We are working on ecological expansion stages in terms of material selection and on expanding the areas of application. In January 2022, the time will come for the next development stage of the **LIGNOLOC®** wooden nail technology: the wooden nail with a head for façade construction. It has a blunt anti-splitting point and is suitable for the most common softwood façades as well as a variety of other applications, both indoors and outdoors, such as privacy screens, garden houses, garden pavilions, room dividers, etc.

Diameter:	4,7 mm | 0.185"
Length:	58 mm | 2 5/16"
Head:	6,3 mm | 0.248"
Material:	Compressed beech wood
Coil-capacity:	100 nails
Collation:	15° coil **LIGNOLOC®**
Tool:	**FASCO®** F60 CN15-PS90-H LIGNOLOC® (older tools can be retrofitted)

AVAILABLE
from Q1/2022



Compatible with LIGNOLOC® with head

PATENT PENDING

LIGNOLOC® F60 PNEUMATIC NAILER*
FROM FASCO®

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Loading:	Coil
Tool:	**FASCO**® F60 CN15-PS90-H LIGNOLOC®

* Subject to change without notice

** Switchable trigger for contact actuation is included for self-assembly

LIGNOLOC® WOODEN NAILS: KEY BENEFITS

QUICK PROCESSING – NO PRE-DRILLING*

LIGNOLOC® wooden nails are fired in pneumatically. This completely eliminates the need for pre-drilling* and gluing, such as that for wooden dowels, thereby saving time and money.

CORROSION-RESISTANT AND DIMENSIONALLY STABLE

LIGNOLOC® wooden nails cannot rust and their special composition makes them resistant to swelling and fungal infestation. They are suitable for use in utilisation categories 1+2 as per Eurocode 5 / DIN EN 1995-1-1.

* For wood weighing 350 to 500 kg/m^3 and in compliance with edge distances specified in Eurocode 5

ECOLOGICALLY MORE SUSTAINABLE THAN METAL NAILS

From production through recycling, LIGNOLOC® wooden nails distinguish themselves with their environmentally friendly properties. Furthermore, the material uniformity has thermal benefits – the wooden nails form no thermal bridges.

POST-PROCESSING WITHOUT ANY TOOL WEAR

LIGNOLOC® wooden nails conserve cutting tools and saw blades. Post-processing of prefabricated wooden elements or machining is simplified because of no metallic foreign bodies.

USE IN ECOLOGICAL WOOD PROCESSING
METAL-FREE AND SUSTAINABLE

The LIGNOLOC® system from BECK opens up countless application options for you – whether it be indoors, in covered outdoor areas or in areas susceptible to corrosion:

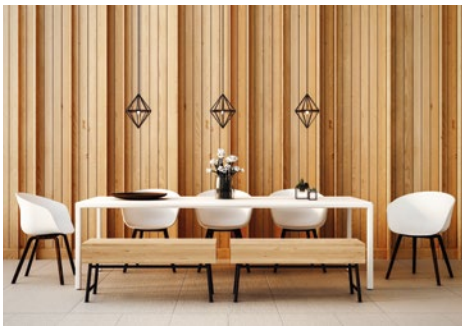
- Laminated wood construction and solid wood wall systems
- Solid wood applications
- Decorative interior timber cladding
- Wooden furniture
- Sauna construction
- Floors: OSB and solid wood floorboards
- Reclaimed wood processing
- Boat building
- Wooden coffins
- Fixing boards
- and many more

RECLAIMED WOOD PROCESSING

LIGNOLOC® wooden nails made from old wood blend harmoniously into the wood structure and do not need to be concealed after installation. This time benefit makes wood recycling even more attractive.

INTERIOR TIMBER CLADDING

For aesthetic reasons, interior paneling made of wood is mostly fastened invisibly. With LIGNOLOC® wooden nails, these panels can now be mounted visibly as well.



WOODEN FURNITURE

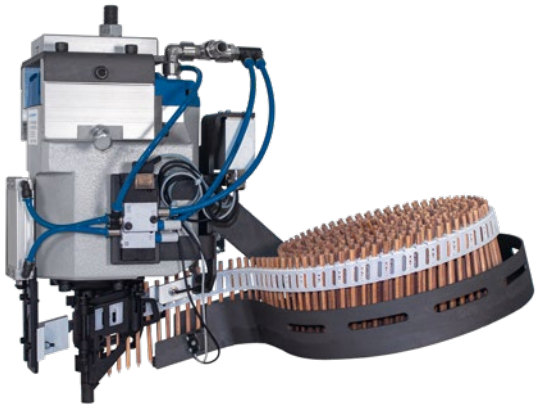
Wood is alive – LIGNOLOC® lives along with it. LIGNOLOC® wooden nails are ideal for use in natural furniture production, lending its appearance a finishing touch, both indoors and in covered outdoor areas.

USE IN INDUSTRIAL PRODUCTION
TIME-SAVING MATERIAL UNIFORMITY

The ecological and functional benefits of LIGNOLOC® wooden nails can also be utilised industrially. LIGNOLOC® can be processed both with LIGNOLOC® hand-held pneumatic nailers and with LIGNOLOC® HEADs from FASCO® in automated systems.

FASCO® LIGNOLOC® HEAD*

Weight:	14 kg | 30.865 lbs
Operating pressure:	min. 7 - 8 bar | 100 - 120 psi
Firing speed:**	max. 4 shots per second at max. 14 m/min feed rate
Trigger system:	Pneumatic remote release
Magazine type:	15° plastic sheet of 850 LIGNOLOC® wooden nails Integrated belt separator



* Subject to change without notice ** Using a 50 mm coil LIGNOLOC®

Currently connection to the following systems is possible:

WEINMANN

techno wood the art of wood machining

CROSS-LAMINATED TIMBER (CLT) PRODUCTION GLUED AND VACUUM-PRESSED

LIGNOLOC® wooden nails for fixing the CLT visible layer are not only aesthetically more appealing than aluminium nails, they also cause no damage to the vacuum membrane of the press.

SOLID WOOD WALL SYSTEMS

LIGNOLOC® is an alternative to wooden dowels in solid wood wall construction, offering a metal-free, quick layer connection mechanism. In contrast to steel fasteners, the walls can be post-processed without cutting tool wear.

PALLET PRODUCTION

Pallets nailed together with LIGNOLOC® protect the transported goods and have no protruding nail heads to cause scratches. At the end of their service life, the pallets can easily be chopped up and recycled.

BETTER IDEAS – EXCITE

With LIGNOLOC® we have created a revolutionary product that excites with its unique vision and convincing features and wins awards such as the internationally renowned German Design Award for innovative product design, the Innovation Award Architecture + Building or the Green Product Award. We celebrate every award, but we are even more enthusiastic about the projects implemented and our customers' success with LIGNOLOC®. Because that is what it is about. Below you can see selected reference projects.

BUGA 2019

Garden Exhibition, Heilbronn, Germany (April - October, 2019)

SHIPWRECK LODGE

Skeleton Coast, Namibia (April, 2018)

STUDENT-PROJECT 1000x

SummerFAB at Wentworth (April, 2018)

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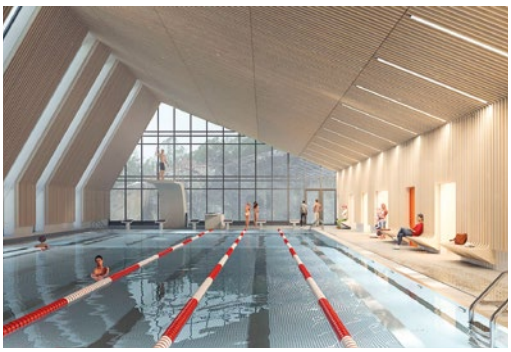
AWARDS

INNOVATIONSPREIS ARCHITEKTUR + BAUWESEN · PTIA 2018 TOOL INNOVATION AWARDS · EUROBOIS LAUREAT · Green Product Award Winner 2018

Green Product Award Special Prize 2019 Handcraft · GERMAN DESIGN AWARD WINNER 2020 · LIGNA INNOVATION 2017 Platz 3 · iNnoVATion Lauréat 2017 · 2018 Challengers' Award · materialPREIS 2018



SWIMMING HALL

HjeltefjordenArena, Norway (November, 2019)

FAMILY HOTEL

Wuyuan, China (2020)

BUTCHERY SALES ROOM

Lohrhaupten, Germany (April, 2018)

BECK is a family company founded in 1904. Since more than 85 years, BECK is one of the world's leading manufacturers of innovative fastening solutions.

Whether it be developments in response to customer requirements or to keep ahead of the market – innovation is the driving force behind BECK. The company's in-house R&D team searches tirelessly for new solutions to provide BECK customers with greater user comfort and cost-effectiveness.
BECK is now a globally active, family-owned company with sites in Austria, Germany, Italy, Poland and the USA.

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