

performance

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Our magazine for timber construction

Issue 23 | 2024



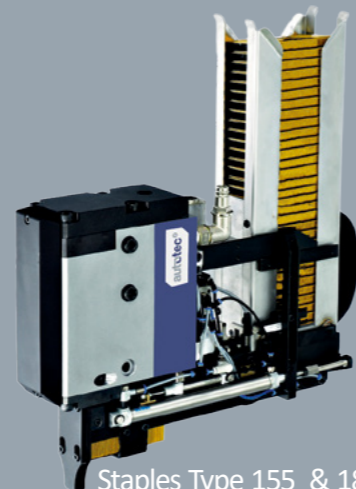
Prospects of timber construction



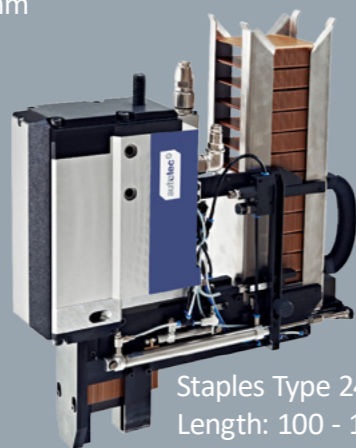
FOR AUTOMATION



Nails Type BDC, TC, K-Coil
Length: 50 - 90 mm



Staples Type 155 & 180
Length: 32 - 65 mm



Staples Type 246
Length: 100 - 160 mm

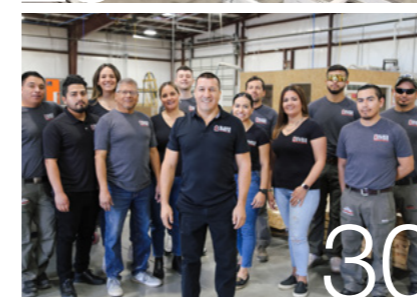
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performance

Our customer magazine "performance" is published once a year and offers information about timber construction. In addition to the latest technologies, we present current trends. In addition, carpenters and prefabricated house manufacturers from all over the world report on their experience.

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SAVE THE DATES

We look forward to meeting you at the following trade fairs and events:

September 2024

- 11.09. **Holzbau-Tag Zimmerei Braumandl**, Geslau, Germany
- 19.09. - 21.09. **Jahrestagung 81 fünf**, Leipzig, Germany
- 19.09. - 20.09. **EastWood**, Leipzig, Germany

October 2024

- 07.10. - 11.10. **BCMC**, Milwaukee, Wisconsin, USA

November 2024

- 13.11. - 14.11. **WEINMANN Treff**, St. Johann-Lonsingen, Germany

December 2024

- 29.11. - 01.12. **Internationales Holzbau-Forum (IHF)**, Innsbruck, Austria

May 2025

- 15.05. - 19.05. **LIGNA**, Hannover, Germany

SAVE THE DATE

WEINMANN TREFF 2024

Visit our in-house trade fair and experience WEINMANN machines live in action!

November 13 –14, 2024

St. Johann-Lonsingen

from 9 am to 5 pm

For more information and registration for the event, see:



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“In this issue, we would like to focus on serial refurbishment and possible opportunities for woodworking shops as well.”



Dear readers,

It is with great pleasure that we present the 2024 edition of performance to you today. It contains inspiring customer success stories, exciting interviews and important points for your information.

Even though economic challenges and global market changes in the construction sector were evident in the past year, new market segments have nevertheless developed. In this issue, we would like to focus on serial refurbishment and possible opportunities for woodworking shops as well. A rapid development in timber house construction is also emerging away from the DACH region, in particular in the growth in prefabrication and automation.

The numerous conversations with our customers were the inspiration for the topics in this issue. We would like to give you an insight into the success stories of our customers, as well as illustrate the opportunity to work together as partners in the woodworking industry. In addition to the WALLTEQ M-300 multifunction bridge, which has already been presented as the ideal solution for prefabrication and automation in demanding woodworking shops, this time we would like to present the granIT Basic, a new solution for digitalization in small and medium-sized businesses. Now that's something to get excited about!

We are firmly convinced that, in addition to technical innovations and solutions, a comprehensive range of services is also of critical importance. From competent advice from our partner SCHULER Consulting, to training for your employees in the WEINMANN Academy, to servicing your machines and systems, our specialists offer our customers unique added value at WEINMANN.

At this point, I would like to express my personal thanks to all customers who have given us and you insights into their businesses — this is a true partnership!

With best regards from the Swabian Alps,

Josef Zerle

WEINMANN worldwide – HOMAG makes it possible

The great thing about the interaction between WEINMANN and HOMAG is that expertise is never far away. No other team offers such an extensive network of service and sales expertise alongside a wealth of experience in the field of timber house construction. In addition to sophisticated WEINMANN technology, HOMAG also offers consulting on an equal footing (SCHULER Consulting) and high-performance software (granIT) in its portfolio. The in-house WEINMANN Academy also offers a unique range of training and further educational opportunities for users. Our range in the field of solid wood is rounded off with the combined expertise of the SYSTEM TM and KALLESOE brands.

We therefore have well over 140 years of experience in the timber house construction segment in terms of wood and cutting optimization, as well as CLT and GLT applications. You benefit from this every day.

HOMAG – Your Solution



14
production sites worldwide



61
exclusive sales partners worldwide



20
sales and service companies worldwide

~30%

of the global market share
(furniture production)
⇒ world market leader



~7.000

employees worldwide



1,6 billion
sales worldwide



Prospects of timber construction

An interview on serial refurbishment from the perspective of timber construction companies.

Timber construction and its market segments are currently experiencing a structural change. Many timber construction companies are no longer primarily active in the single-family home construction sector and are instead branching out into other sectors. These include multi-story buildings, modular timber construction, extensions or the renovation of existing buildings. Serial renovation is an increasingly popular topic among timber construction companies. Matthias Schlosser, Managing Director of the ZimmerMeisterHaus (ZMH) Group and Dr. Stefan Bockel, Head of Product Management at WEINMANN, discuss the work of ZMH and the emerging opportunities and challenges of serial renovation for woodworking shops.

INTERVIEW: Alisa Schoch

PHOTOS: ZimmerMeisterHaus

Mr. Schlosser, please could you briefly introduce yourself and tell us a little about the history of ZMH?

Matthias Schlosser (MS): I have been Managing Director of the ZMH Group for three years. Before this, I was on the Executive Board of ZMH for 26 years. The group was founded in 1987 by 17 timber construction companies who joined forces to promote timber house construction. ZMH has made a significant contribution to the development of timber house construction over the last three decades.

You have already mentioned the change in the timber construction industry in recent years. How has the awareness of customers regarding timber construction changed in recent years?

MS: First and foremost, we have to spend far less time persuading customers to choose timber construction, since many of them are already aware of its advantages. Being able to provide our products and services even more efficiently makes timber construction even more attractive to end customers. Furthermore, customers expect a certain degree of efficiency, for example through the use of trained specialists or, above all, a reduction in bureaucracy. I think we're on the right track here.

As the focus on sustainability and energy efficiency continues to increase, it is not only the construction of new buildings that has changed — the renovation of existing buildings has changed too. What are the main reasons your member companies

have for getting involved in serial renovation?

MS: It is a question of preserving the value of a building, because serial renovation is a sustainable form of value enhancement. A "house-in-house" solution offers a much higher level of quality than merely covering an outer wall with full thermal insulation. This allows us to maintain and even increase the value of the building structure. In addition, we are able to implement these solutions more quickly.

Dr. Bockel, are there any other parties who are interested in increasing the value of the building structure aside from the end customers and wood construction companies?

Stefan Bockel (SB): It is certainly also an important topic from a banking per-

spective: If large sums are invested in renovation, determining whether this will increase the value or is merely for maintenance is crucial.

Mr. Schlosser, do you see any other positive aspects of serial renovation besides energy efficiency and value preservation?

MS: One big advantage is that serial renovation is particularly attractive to end customers thanks to support from legislators. This provides major incentive for our companies to be active in this segment.

Serial renovation is not only more efficient, but also more socially acceptable and less stressful for tenants, because the elements, including windows, are mounted on the existing building over just a few days.

In your opinion, what opportunities does serial renovation offer your members? How is this different from the process for new construction?

MS: The greatest opportunity lies primarily in the development of an additional business area. What's more, this segment may compensate for the decline in the single- and two-family home segment, since large volumes are involved in the serial renovation sector. Especially when it comes to supporting tenants, the process of serial renovation differs from new construction projects as the buildings are occupied. If, for example, the heating systems are being renovated in addition to the facade, craftsmen must also enter the apartments — for serial renovation this therefore requires completely different concepts and different construction site management. Active ►



Picture: Stefan Bockel (left) and Matthias Schlosser at DACH+HOLZ International 2024 in Stuttgart.

ZimmerMeisterHaus
So geht Holzbau

The ZimmerMeisterHaus (ZMH) Group consists of around 100 German timber construction companies and aims to encourage its members to share their knowledge and experience, thus helping them to position their companies in the best possible way. With a strong focus on marketing, experts, knowledge and products, ZMH has become a well-known professional network in the new construction, extension, residential and commercial construction sectors. Members benefit not only from the many years of experience and expertise of their peers, but also from a broad network of experts and market partners.

Pictures:
Renovation project completed by ZMH Manufaktur Holzbau Kappler. The facade elements are prefabricated and then installed at the construction site.

construction site communication with the customer's on-site contact should also be a priority.

What skills do your member companies need to successfully carry out serial renovation?

MS: To successfully implement serial renovation, having the relevant expertise is of fundamental importance — a prerequisite that all our member companies fulfill. Although there does not appear to be much difference in the manufacture of exterior walls in serial renovation when compared to conventional residential construction, the digital integration of building technology poses specific challenges for larger order volumes. To achieve greater cost-effectiveness, more intensive discussion is therefore required. As such, companies should always deal with the digital recording of the buildings. Some companies can already handle this internally, while others can purchase these services from selected partners to secure an optimal position in the serial renovation sector.

Mr. Bockel, what role do you think automation plays in serial renovation?

SB: The relevance of CNC machining in the serial renovation sector should not be overlooked, as it encourages effective prefabrication and can meet the highest quality requirements. It is also important to note that elements for new buildings can be produced using the same tech-



Photo © Holzbau Kappler/ZimmerMeisterHaus

nology. This means that manufacturers not only have a wider portfolio, but can also make better use of their own systems. The topic of work preparation is also highly relevant from the manufacturer's point of view, as it ensures that project-specific requirements can be prepared and automatically processed to the greatest possible extent.

Mr. Schlosser, how much potential do you think automation has for serial renovation?

MS: Automation could certainly further optimize serial renovation processes and tap into the potential of the sector. Regarding the use of CAD (computer-aided design) programs, there are only a few obstacles in this sector that would prevent the effective use of these technologies. As soon as the elements have

been drawn up and the machine data has been generated, it is fundamentally irrelevant whether the elements are used for a normal house or a serial renovation. In this context, however, it is important to remember that successful implementation is largely dependent on construction site management and project management expertise.

In addition to opening up a new market segment and the increasing attractiveness of the serial renovation method, companies also have to deal with new processes and structures in the production process. What obstacles do businesses have to overcome in the serial renovation sector?

MS: Over the last ten years, the timber construction industry has developed considerably, especially in the area



Photo © Holzbau Kappler/ZimmerMeisterHaus



Photo © Holzbau Kappler/ZimmerMeisterHaus



Photo © Holzbau Kappler/ZimmerMeisterHaus

of apartment construction. This trend continues, but we also need appropriately qualified specialists to meet market demand. This is why it is essential to nurture new talent and to adapt training to current market developments, which requires the participation of schools, universities and higher education. In addition, technologies for increasing efficiency should be standardized. Another important political aspect is the different state building regulations across the federal states of Germany, which creates additional bureaucracy in the construction sector. As a result, I hope that this will become more standardized in the future.

At present, the construction of single- and multi-family homes is on the decline. In your opinion, how important is the serial renovation segment

for your member companies in the current market circumstances?

MS: In my opinion, it is important to take advantage of the opportunities that arise. Every company has an opportunity to build a further foothold by opening up a new business sector, regardless of whether this sector is a replacement for a discontinued segment or not. Nevertheless, it is important that our members adapt to this specific market segment and win over the right customers because they have the expertise and knowledge to meet the requirements of this market segment.

SB: Serial renovation is a hot topic at the moment, with small and medium-sized projects in particular being implemented. It offers woodworking shops the opportunity to widen their portfolios and



Photo © Holzbau Kappler/ZimmerMeisterHaus

Picture: Multi-story construction prior to renovation by ZMH Manufaktur Holzbau Kappler.



Photo © Andreas Fischer GmbH/ZimmerMeisterHaus



Photo © Andreas Fischer GmbH/ZimmerMeisterHaus



Photo © Andreas Fischer GmbH/ZimmerMeisterHaus

Pictures:
A single-family home before and after renovation by ZMH Manufaktur Andreas Fischer GmbH.

to counteract any market fluctuations in the new building sector more effectively. Another interesting aspect is the current development of renovation specialists in the market. However, the transformation of existing buildings deserves greater political focus, as sustainable construction methods for new and existing buildings are vital in order to meet societal demands for increased climate protection.

What recommendations would you make for companies that want to progress in this sector?

MS: I believe that it is very important to ensure good organization within the company, with which, for example, membership of ZMH can help. Our manufacturers thrive on discussing their experiences and benefit enormously from the expertise within the group. To avoid possible mistakes and ensure an efficient company structure, this point should be a priority in my opinion. To promote the exchange of experiences, we proactively invite our member companies to

meetings where colleagues talk about their experiences and share valuable insights. This practice has proven to be very valuable and is an exclusive offering made possible by ZMH organizing project groups and experience exchange groups (Erfas).

How do you both see the short- and medium-term market developments in relation to serial renovation?

MS: As a participant in this industry, I consider the developments to be extremely positive. Wood as a renewable raw material has now become very appealing to customers. There is also a significant market for the energy-efficient renovation of older buildings. Under these conditions, I am not worried at all. The ZMH Group is well-networked and, thanks to the organized exchanges, forms the foundation for everyone to profit on the market.

SB: From my perspective, there will be strong growth in the volume of small

and medium-sized renovation projects in particular. Major construction projects will also increase due to the development of specialists. Furthermore, I can definitely imagine this segment being served by woodworking shops as well as by some specialized industrial companies in the future. The increase in value and sustainable construction methods will certainly promote timber construction, but we also need to leverage further potential for efficiency in the industry so that we can become even more competitive in comparison to conventional insulation systems and take on a greater volume of the market.



Partnership in timber construction

If you look at a new housing estate made up of single-family houses, you might get the impression that a lot of these houses are like peas in a pod. In contrast to a single-family house off the peg, Engelhardt + Geissbauer sets their focus on individuality. Founded 33 years ago as a small carpentry business in Burgbernheim, in Franconia, Germany, the timber construction company has since become a story of success, with increasing specialization in wood frame construction. To this day, the innovative solutions from WEINMANN help to equip the company for the future and ensure high quality in timber construction. However, the company is still shaped not only by steadily increasing demand, but also by a turbulent market environment and challenging times. Together, we discuss major events, superb cooperation and what makes a good partnership.

INTERVIEW: Alisa Schoch | PHOTOS: Engelhardt + Geissbauer



Stefan Bauereiß
Managing Director of Engelhardt + Geissbauer.

WEINMANN and Engelhardt + Geissbauer have been working closely together for several years. How did you first come into contact with WEINMANN?

SB (Stefan Bauereiß): Contact was first made in 2012, when we wanted to purchase an assembly table. At that time, we already had two assembly tables from other manufacturers and were thinking about expanding production by one table and broadening our capacities. It was more of a coincidence that

we found out about WEINMANN. This resulted in an appointment with a sales representative from WEINMANN. When we explained our thinking, he looked at us in surprise and said, "It's not an assembly table you need; you need a multifunction bridge." Finally, we bought a bridge and at the same time decided that we needed a new hall to house this and the existing assembly tables, which we then built. However, during the course of the discussions, we also realized that the multifunction bridge only works▶

if the framework conditions also match. Allowing such a machine to fall from the sky into the production hall will not result in an optimal production process. Material supply, disposal and many other factors have to be consistent in order for a specific workflow to occur. It was precisely this issue that became the subject of the first consulting discussion. So that's how we arrived at our first plant, which was installed in 2013.

After many successful years, the hall fire in 2021 was a major incident. Can you tell us a little more about what happened at the time?

SB: On May 13, 2021, there was a fire in the production hall due to a short circuit on a compressor. Unfortunately, this happened on a public holiday, Father's Day of that year, which meant that the fire wasn't discovered until late. On that day, our wall line, a multifunction bridge and four assembly tables fell victim to the flames. That very evening, we discussed the next steps for the company. We called WEINMANN the same day and explained our problem. It was immediately clear to us that we would not be able to recreate production 1:1, as we were at the absolute capacity limit at the time with 35–40 houses per year. However, we quickly decided to expand production and build a new hall. As a result, we have more than doubled the capacity of the exterior walls. A pure roof line is now installed in the old location that burned down. I wouldn't wish an experience like this on any colleague with a wood processing business. In the aftermath, you have a great hall and a good production setup — but it's not a journey you want to go through regularly.

This must have been a very stressful time for you and the team at Engelhardt + Geissbauer. How did WEINMANN support you in these difficult times?

SB: We have always maintained good contact with WEINMANN. We already

had a friendly relationship with our salesperson Stefan Rach — he looked after us very well back then. Without WEINMANN, we would not have been able to rebuild in the time it took. My aim was to be producing again a year after the fire, which included the construction of a new hall and a new production line. Despite all obstacles, we managed to complete the new hall by Christmas 2021, which meant that WEINMANN was able to begin setting up the system the following January, as agreed. Of course, there were discussions, but we noticed that everyone involved tried to work together rather than against each other. Even when things became really tight and critical, we tried to find joint solutions together with WEINMANN — and always on an equal footing. That was impressive. Assigning blame was never the order of the day. We thus found a solution for every problem, and we eventually achieved the overall goal through these solutions. Looking back, it was even fun.

In your opinion, what are the hallmarks of solid cooperation between two companies?

SB: In a partnership, it's important to work together on an equal footing. There will always be situations in which one participant is better positioned than the other. But there will also be situations in which it's the other way around. In my opinion, this balance should not be exploited by either party. In particular, in times of material shortages and the associated price increases, we made note of who we can and cannot work well with. My mantra here is to achieve a certain continuity on a level playing field. It's also fun to be there for each other every now and then — it means that you can get through anything together.

What do you appreciate about working with WEINMANN?

SB: I appreciate that we act on an equal footing and do not exploit each other.



Pictures: WEINMANN customer Engelhardt + Geissbauer focuses on individuality for its single-family homes.



This is fun, and for me, essential for long-term cooperation.

In the past, you have not only relied on systems from WEINMANN, but you have also used services such as production support from the WEINMANN Academy. Would you recommend WEINMANN solutions to other companies with regard to the range of products and services, and if so, why?

SB: Yes, I would recommend them, because they work. Ultimately, this also includes the development that WEINMANN has undergone. The WEINMANN experts know exactly what they are doing and have implemented numerous systems for a range of customers. The solutions are simple for carpenters. There are other competitors, but the machines for house construction have to be designed properly and be able to withstand certain loads. It's not just a table, a bridge or software that brings success — all influencing components

in a system must be ideally coordinated with one another, and WEINMANN is streets ahead in this regard.

Your company has developed steadily over the years. What's the outlook for the future? How will your company continue?

SB: For us, the aim is to continue to grow every year. I still see a lot of potential in multi-story residential construction and commercial construction. This is the segment in which we want to be even more active. In general, I think timber construction in Germany still has a long life ahead of it. I think that at Engelhardt + Geissbauer, we are now very well positioned, particularly due to our latest investment in the exterior wall line.

Pictures: On the production line, the frame work is created in parallel on two element tables and then processed by the multifunction bridge.

“The WEINMANN experts know exactly what they are doing[...]. The solutions are simple for carpenters“

Stefan Bauereiß
Managing Director
Engelhardt + Geissbauer

VIDEO
Curious?
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into production at
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Process steps “shortened”



Picture:
Michael Schäpers, Head of Research and Development, B&O Bau GmbH.

“For me, this is the only way to achieve a continuous, material-efficient production process as found in the automotive industry.”

Michael Schäpers,
Head of Research and Development,
B&O Bau GmbH

With the development of a production-optimized modular system, B&O Bau enriches its portfolio with a very interesting offer.

WRITTEN BY: **Dr. Joachim Mohr** | PHOTOS: **B&O Bau GmbH, Fabian Wolf**

Creative handling of the raw material is an integral part of the DNA of timber construction, which provides the industry with new building materials and systems time and again. In view of new business areas and market participants, the incentive for new developments is particularly strong at the moment.

So you should be prepared for surprises. Visitors to the new production plant of B&O Bau in Frankfurt (Oder) will experience one of these surprises. This is not only because of the equipment supplied by WEINMANN Holzbausystemtechnik, which is already worth seeing for itself with a fully automatic frame work station, four multifunction bridges, a blow-in bridge and three rows of work and turning tables. What is particularly surprising is the product that runs through the

production line.

The difference is already evident in the frame work station. According to B&O Bau Development Manager Michael Schäpers, this is one of several unique products developed during planning discussions with WEINMANN. Equipped with a robot, the station processes studs that are processed on a BEAMTEQ B-660 in the neighboring hall and supplied via a fully automatic storage system.

What is unusual about this process is that thanks to special software, the robot not only positions timber frame constructions, but also studs on studs: after being deposited, the new stud is connected to the previous stud using four shaft nailers. **This results in a load-bearing, solid component**

made of a vertical solid construction on timber, the top and bottom plates of which lie not above the upright wood, but rather on the sides of the component as slim LVL belts.

Regularly recurring stops in the belts ensure that the component remains dimensionally accurate over the entire length. Depending on the static requirement, stronger load-bearing supports (steel, laminated veneer lumber, etc.) can be installed between the upright timbers. Windows and doors are not cut out as with other solid construction systems, but rather are bridged by lintels in a way that saves on resources.

For Michael Schäpers, "this is the only way to achieve a continuous, material-efficient production process as found in the automotive industry. I save processing time, I don't lose any time and money disposing of offcuts and don't have to pay for the material that was in the openings."

Serial timber construction for 5 to 8 floors

Avoiding the use of horizontal timbers in the static load-bearing wall core already gives a hint that B&O Bau is reaching for the skies with its wall construction. In fact, the focus is primarily on multi-story construction of between five and eight stories. To be exact, high-quality and cost-effective multi-story construction in (almost) pure timber construction: On the construction site, the seam between walls and ceilings is provided with a kind of ring armature made of reinforced in-situ concrete.

The high quality of the wood components is achieved, among other things, by high mechanical precision and a double-layer wall structure: solid components and timber frame constructions produced alternately are combined with each other at the end of the first production phase, whereby the solid components act as load-bearing elements, while the timber frame constructions act as insulating elements.

On the way through the production line,

the components pass through further new developments, such as a WALLTEQ M-300 insuFILL with a cleaning mechanism that ensures the contact surface of the insulating plate is clean after each element. Another special feature is the "backflushing mechanism" that returns most of the residual insulating material contained in the blow-in lines back into the storage container.

This makes the weighing process more precise — the insulating material returned is weighed again — and the "back-flushing" also simplifies the process of changing the insulating material, as insulating material remains in only one short supply piece. Depending on the customer's requirements, cellulose or mineral fiber insulating materials can be blown in in Frankfurt (Oder). The four large insulating material storage tanks, including the supply for the insulating material packages, are an in-house design by B&O Bau.

At the end of element production, both elements are joined together on a turning table. Placed on top of one another, they move on a mobile work table to line three, where both layers are screwed together — the modified fastening units with 200 mm long screws are another unique feature in the line.

The production process is completed by the attachment of the facade sealing sheet, the mechanical placement and fixing of the slats and contra slats by two multifunction bridges and finally, the assembly of the facade.

Complete supplier across the whole of Germany

The company that developed the wall construction is just as complex as the construction itself. The family-run B&O Gruppe has been involved in renovation for 30 years and has been active in wood and wood hybrid construction for 15 years. Today, the group of companies is divided into the main divisions B&O Service and B&O Bau (which deals with construction).

While B&O Service is responsible for ►



Picture above:
Construction project by B&O Bau.

Pictures below:
Development of a multi-story construction by B&O Bau in Fürth.





Pictures page 18:
Gantry for feeding studs to the robot of the frame work station.

Pictures page 19:
A robot automatically inserts a stud.

service areas such as supporting residential complexes, including repairs and breakdown service, B&O Bau acts as the general contractor for turnkey construction projects.

As such, the company carries out new buildings and extensions, builds over parking lots and carries out renovations — including, with increasing frequency, serial renovations, which are regarded as a "significant growth market."

B&O Bau employs around 750 people — including 350 craftspeople — at regional sites throughout Germany. The projects are planned by internal or external planners of the group, with each planner specializing in the respective construction task. In some cases, the components for implementation come from external partner companies whose timber elements are still used in corresponding projects. In other cases, the group is increasingly producing at its own sites, such as bath modules in Croatia, and in-house production of ceilings is also planned.

A modular system for serial construction

To achieve this, a low-cost wall system is not enough. The paradigm shift is made possible only by combining a minimum use of resources and automated production of highly standardized components with a largely automated digital process that can shorten entire process steps using a BIM model created with Revit.

"Based on the clearly defined performance of the profiles installed in the wall, the system can tell me, for example, immediately after the design is completed, which stud in the wall is stressed 23 percent and which is stressed 89 percent," explains Michael Schäpers. In plain text: A large part of the static basic data is output automatically and only needs to be checked. "Thanks to our static tools, we can also proceed in an extremely material-efficient way, meaning that the walls contain exactly the right amount of wood and not one millimeter more."

The prerequisite for this is a largely



standardized production toolkit and a comprehensive digital library in which all components and details of the construction system are stored — the mammoth task within the project, which required a great deal of effort and knowledge. On the basis of the data generated mainly in the regional companies, the planning software can also calculate the thermal properties of the selected building shell, for example, so that the building physicist can derive an assessment from a building physics perspective directly from the planning.

The end-to-end digital process also includes third-party trades such as electrical installation: If a socket is planned in the 3D model of the design, the circuit diagram is automatically updated in the background, while a bore hole for the socket and, behind this, a fire protection layer with cable guides are created in the CAD system.

The work preparation is shortened significantly by the processes developed by B&O; Schäpers speaks of a reduction from around 60 down to a maximum



of five days per building. "While a work preparation employee draws each building from scratch for individual planning, our element production comes primarily from the finished design and the library behind it."

The savings potential from the planning process is enormous, with Michael Schäpers estimating up to 50 percent. The modular design system is fully flexible for all typings, which means that very individual solutions can be implemented.

Since the load-bearing system, insulation level and facade form a multi-layer system, the load-bearing core — normally made of 12.5 cm thick studs — can be reinforced by larger cross-sections depending on the structural design. The customer, who sees the building in advance in the BIM model, can choose a different facade from the modular system, but also a different insulation level. This means that a whole range of wall and ceiling systems, development cores and proven details are available to the customer during the planning phase.▶

“Two and a half months after commissioning, we are achieving a solid 80 to 85 percent of the target cycle in all parts of the plant. This means that we can now produce a load-bearing wall, which in a conventional line would be subject to 40 minutes of trimming alone and would take around four to six hours in a woodworking shop, in just 60 minutes. Everyone involved can be proud of this.”

Michael Schäpers

This flexibility also has other advantages: For example, it enables CO₂ to be stored permanently in the solid core of a reversible building, the facade of which can be easily renewed after the end of its service life and the insulation level of which can be replaced with new materials at any time if higher requirements come into force.

In production, the three-layer model has the essential advantage that timber frame elements for low-rise buildings that are efficient for living spaces run through the system without any changeovers. The company also offers solutions for these elements. The same applies to timber frame elements in serial renovation, which currently accounts for the majority of orders in Frankfurt (Oder).

Excellent cooperation produces excellent solutions

With the Frankfurt (Oder) plant, B&O Bau has succeeded in achieving something that, in retrospect, borders on a miracle for Michael Schäpers: **"In around two years, we have created a radically new construction system and the associated production plant."**

The idea arose at a meeting of the management in 2021, when founding shareholder Dr. Ernst Böhm suggested that the production process should be taken into the company's own hands in the future: "It was already clear at that time that the demand for affordable housing could only be met by a comprehensive process optimization. It was therefore clear that the development of multi-story construction would be moving toward industrialization. If we wanted to be involved, we had to take on a pioneering role and set new standards in planning and production."

For Michael Schäpers, who had been designing heavy equipment for several years as a wood engineer, the development of the new modular system began with a blank sheet of paper and visits to component manufacturers and machine manufacturers — initially with little success. It was only the option offered by



WEINMANN of combining a frame work station with a robot that led to the idea of producing a solid wall element from studs: "The machine can do this at high speed. **In this way, we achieve high material efficiency with a low-cost raw material range, an extremely high load capacity and a through-feed process in which all machines are integrated via the MES production control station from granIT.**" WEINMANN was open to new developments, "so we went through the system point by point until the machine layout was finished." B&O initially used the consulting services of SCHULER Consulting, "which was very helpful to get us going, since we practically started from scratch.

In view of our very specific wishes, however, we quickly got into the planning phase with the development departments and soon arrived at the current layout. A good solution was found for every task thanks to cooperation on an equal footing. Today, as a wood engineer, there is nothing that makes me nervous about the machines in our plant. WEINMANN also proved to be very well positioned when it came to topics such as preventive maintenance and preventive unit monitoring."

"Two and a half months after commissioning, we are achieving a solid 80 to 85 percent of the target cycle in all parts of the plant. "This means that we can now produce a load-bearing wall, which in a conventional line would be subject to 40 minutes of trimming alone and would take around four to six hours in a wood-working shop, in just 60 minutes. Everyone involved can be proud of this."

Pictures:

Overview of the frame work station, one of the multifunction bridges and the material bunker for the blow-in bridge.

Picture on the right:

The thermal shell and the solid wood wall are joined using the butterfly turning table.

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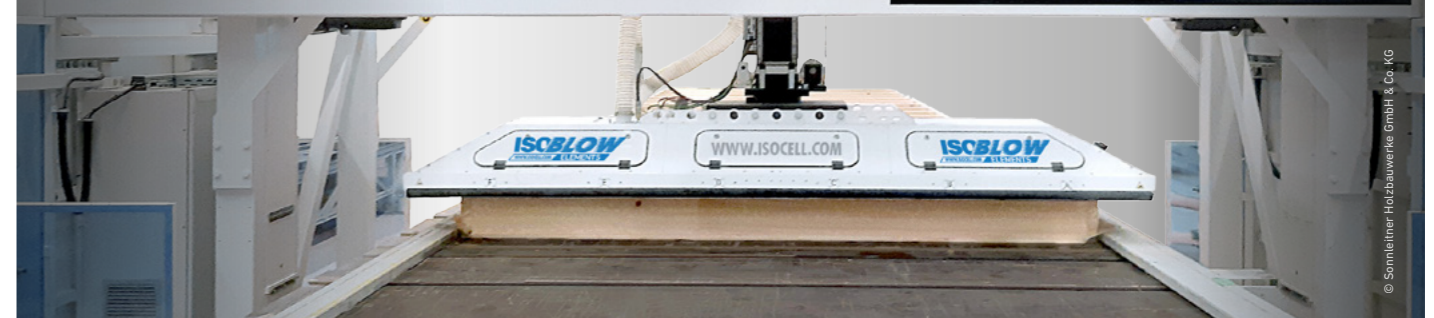
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The next steps into automated off-site construction in the USA

Casey Harless, National Sales Manager for Off-Site Construction from STILES Machinery recently had the opportunity to sit down with Blake Schwieters from JL SCHWIETERS CONSTRUCTION to review their off-site construction process. As the Plant Manager of SCHWIETERS in Hugo, Minnesota, Blake oversees all prefab operations. His responsibilities include overseeing the team, ensuring safety compliance, managing project details, and keeping costs within budget. Blake plays a critical role in implementing continuous improvement strategies, including their new truss division.

The new WEINMANN line purchased by JL SCHWIETERS is designed to maximize the efficiency and ergonomics of the employees. Allowing for JL SCHWIETERS to produce a superior product quickly and accurately. Framing of walls starts on the WEINMANN framing station FRAMETEQ F-500. This machine enables automated framing with highly accurate indexing, cutting, and nailing and is operated by just one employee. After that the wall panel is automatically moved to a powered buffer table BUILDTEQ A-500 which allows to add blockings to the wall panel and offers some buffer space between the framing station and further process steps. Tacking of the sheathing for exterior wall panels is done on another BUILDTEQ



A-500, with additional clamping units to secure squareness of the element. With the multi-function bridge WALLTEQ M-500 the wall panel will be finally processed. That includes automated nailing and routing of rough openings, like window and door openings. Due to high quality requirements of JL SCHWIETERS the wall panel is clamped on another BUILDTEQ A-500 WEINMANN table with a stud straightener to avoid shiners, when nailing the sheathing. This additional support allows the customer to produce high quality products and reduce rework at the end of the line. The final BUILDTEQ A-500

WEINMANN table is used as an off-load table, to stack the wall panels and do the final quality inspection.

INTERVIEW: Casey Harless

PHOTOS: JL SCHWIETERS CONSTRUCTION

Could you tell us about JL SCHWIETERS CONSTRUCTION and the types of projects you work on?

Blake Schwieters (BS): SCHWIETERS specializes in turnkey framing solutions for residential and commercial buildings by manufacturing, delivering, and installing building components. We are committed to excellence, a com-

Picture right: Blake (left) and Pat Schwieters (right) discuss the advantages of the new WEINMANN line.

Pictures below: Overview of the automated production of JL SCHWIETERS CONSTRUCTION for manufacturing wall and floor elements.



Photo © JL SCHWIETERS CONSTRUCTION



Photo © JL SCHWIETERS CONSTRUCTION

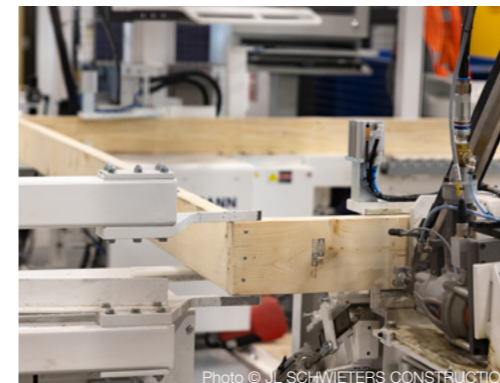


Photo © JL SCHWIETERS CONSTRUCTION

mitment that is reflected in high-quality craftsmanship and professionalism on every project.

Can you tell us more about how you learned about STILES and WEINMANN equipment for your business?

BS: Before engaging with STILES, I had limited knowledge about WEINMANN equipment. JL SCHWIETERS has been producing wall panels for 20 years and has been in the industry for 40 years. I became a part of the team in 2013, and being an engineer, I was naturally interested in the machines and equipment



Photo © JL SCHWIETERS CONSTRUCTION

we use. I researched to find the best wall panel line. However, during that time, limited options were available in the market. Although some US manufacturers had been around for a while, I didn't find their level of automation to be on par with what we had in our facility. Then, I found WEINMANN through an internet search on wall panel lines and watched several videos about the equipment. That's when it all began.

When you first connected with STILES, what were your initial impressions of STILES as a distributor of WEINMANN equipment?

BS: My initial perception of STILES was based on the equipment. To me, I don't differentiate between STILES and WEINMANN. In my mind, they are the same, and I associate the quality of the WEINMANN equipment directly with STILES. Unlike some equipment distributors who take an arm's length approach, selling you the product but refusing to support it, STILES stands out as different. Regarding the product, it was

clear that STILES is the only one doing that level of service and automation. I wasn't entirely aware of the scope until I entered the sales cycle and understood how big WEINMANN is in Europe and how many lines are operating there. But after talking to people in the industry, it was evident that if you want that level of quality and precision, WEINMANN is the answer.

Could you elaborate on your process of comparing different equipment brands before selecting WEINMANN?

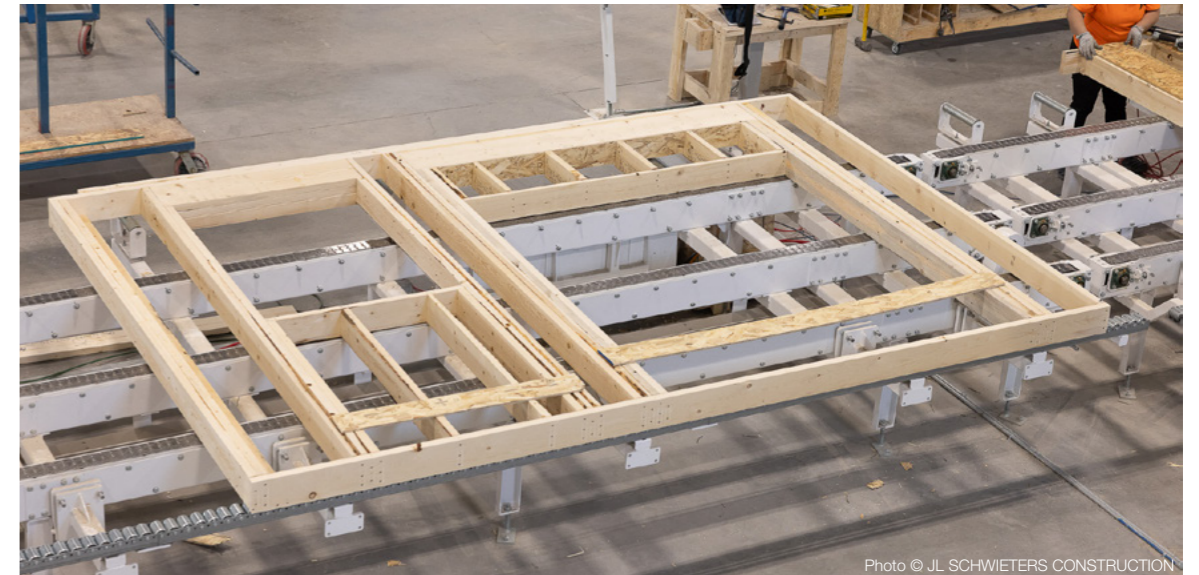
BS: Our new manufacturing facility comprised seven buildings, covering almost 500,000 square feet. Half of the facility was constructed before the recession, while the other half was built post-recession in the spring of 2019. We expanded into truss manufacturing and added another wall panel line. Unfortunately, we didn't have the budget for a WEINMANN line then, so we opted for a local wall panel line instead. It turned out to be a wise decision, as it is a great

entry-level line with good value for the price. However, I always knew I wanted to invest in a WEINMANN line for additional automation. I know that many other manufacturers are in a similar position when considering taking the next step in the automation curve.

Based on the STILES service and the reputation of the WEINMANN brand, the decision was easy to make, despite other equipment options available on the market. Other equipment suppliers lack a significant presence in the US, and we wanted a well-developed support structure for our equipment. SCHWIETERS has been in manufacturing for many years, and we understand the importance of having a solid support structure. At the end of the day, we are carpenters and wall panel manufacturers dedicated to producing high-quality products for our customers. We prioritize our craftsmanship and rely on Stiles for support and service to ensure our equipment runs smoothly.

Since purchasing the WEINMANN line, have you needed to seek out service or support? If so, how has your experience been?

BS: We have been in touch with STILES for support since day one, and we communicate with them quite a bit. We understand it's a custom piece of technology, not an iPhone you can buy off the shelf, so we expect it to have some quirks and setup time that we need to figure out. So far, our experience with STILES support has been very good. The STILES support techs are doing a phenomenal job, especially the one that installed our line. He was extremely helpful during the setup of the machine, and I almost wished that I had talked to him before buying the tools for my line. Another positive experience was placing a parts order, which was like ordering from Amazon in a good way. It was seamless, and everything was delivered quickly.



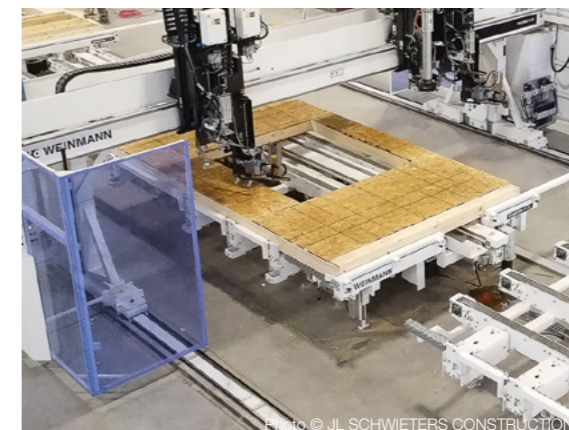
Were there any other advantages SCHWIETERS experienced while working with STILES throughout the sales process?

BS: Based on our experience, having a supplier who can help with plant layout and provide assurance that machinery will fit in the space can make a significant difference. Having a partner who can offer guidance and support in this area has been critical. STILES provided valuable insights on optimizing production processes and integrating machinery into our existing facilities. WEINMANN equipment is highly customizable, and it can be overwhelming to select the right options. The way we build today is different from the way we built on our existing line, and it can be challenging to imagine what the new line will be like. We visited a large facility in the US manufacturing with WEINMANN equipment. When I saw their line, I could base our line on what they bought because I knew they think the same way we do. I learned a useful hack that has helped us maximize the use of this equipment, having up-cut saws on the framing station. Overall, I'm happy with all our selections for the line. Having such references in the US is a big advantage when working with STILES, as seeing the WEINMANN equipment up and running is a value-add compared to other equipment manufacturers.



How has your team benefited from STILES training programs while implementing the new equipment?

BS: I think the training is tough because, while the STILES support techs did a great job since day one, it's hard to train on this equipment. You can work on how the buttons work and how production is supposed to flow, but the real training comes when there's an issue, such as when the machine breaks down. It's hard to do that not in a production flow. Together with STILES, we also found a solution for that. It's essential for us to operate the equipment ourselves for a while to gain proficiency in handling it. Following that, we will undergo additional production support trainings with the STILES support tech to enhance our equipment operation and maximize the effectiveness of the new production line. This paid service is a valuable addition offered by STILES.



The partnership between JL SCHWIETERS CONSTRUCTION and STILES, featuring WEINMANN wall panel equipment, marks a significant advancement in off-site construction capabilities. Blake Schwieters, Plant Manager at SCHWIETERS, highlights the company's commitment to excellence and continuous improvement, particularly through the integration of WEINMANN's automation. This strategic decision enhances production efficiency and solidifies SCHWIETERS' position as a leader in providing comprehensive framing solutions.

Pictures: FRAMETEQ and WALLTEQ can be used to automate element creation and processing.

VIDEO
Wall production by
JL SCHWIETERS
using the
WEINMANN LINE



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Off-site wall panel production in the USA

When Jhon Castro immigrated to the United States more than 30 years ago, he began working in the construction industry. He recalls that these jobs were his only option to earn a living. Castro moved to Colfax, North Carolina, in the late 1990s and started his own construction business, Black Stone Construction. In the beginning, Black Stone completed roughly 15 single-family homes a year. Now, Black Stone is producing 900 to 1300 homes a year, including single-family homes and apartment complexes.

WRITTEN BY: **Hannah Bronkema**
PHOTOS: **BLACK STONE**

Despite the growth Black Stone had, they were consistently limited by the availability of local skilled labor. This hindered Black Stone's ability to increase the number of homes they could build annually. Castro began exploring the possibilities of using off-site construction methods to increase output. His search led him to STILES Machinery, and they recommended panelized construction using WEINMANN equipment. Black Stone invested in a WEINMANN production line, and they now build interior and exterior walls as well as flooring and ceiling panels in their facility.

Every panel is framed and prepared in the factory for on-site installation. Wall panel production must be prepared for all the on-site processing steps, including mechanics, electric, and plum-

bing. The main advantage for Castro of producing wall panels in a factory is that it requires less workforce than framing on-site. Black Stone can manufacture panels in any weather and work multiple shifts, significantly increasing output. Castro maintains his installation crews to ensure control over critical on-site processes, which is vital for scaling his business. He believes that off-site construction is the future of the housing market. However, on-site work is still essential, and employees must be trained and able to meet the rigorous physical demands required by this type of on-site work.

STILES Machinery is the exclusive sales and service company of the HOMAG Group in North America. The STILES team engineered the factory layout and improved the manufacturing process for Black Stone. Due to space constraints, the WEINMANN line was designed in a U-shape to fit their existing building. STILES provided significant support during the pre-sales and post-sales phases, helping Black Stone make the ramp-up phase as smooth as possible by offering various training programs to their machine operators. Once again, STILES' mission of "solutions built around you" was successfully demonstrated by helping a customer find the right solution. This project began a long-term partnership between STILES and Black Stone as Castro prepares to expand. Transitioning from on-site framing to utilizing automated equipment marks a significant shift for many in the con-



Picture above left: WEINMANN frame work station at Black Stone.

Picture above right: Managing Director of Black Stone, Jhon Castro.

Picture below right: Storage of finished wall elements.

In the beginning, Black Stone completed roughly 15 single-family homes a year. Now, Black Stone is producing 900 to 1300 homes a year, including single-family homes and apartment complexes.

struction industry. Initially, there is a training process to learn the various machinery functionalities, programming, and maintenance. As construction professionals acclimate to this new paradigm, they discover the benefits of increased precision, scalability, and productivity the off-site work offers. Although transitioning to off-site work may pose initial challenges for business owners, the benefits of increased efficiency, reduced labor costs, and improved project timelines ultimately validate the switch. Black Stone has achieved higher productivity with less waste and fewer workers while reducing the need for rework.

First, all the raw lumber is cut to size and then sorted based on how and where it will be used in the manufacturing process. Building of the wall starts on the framing station, a WEINMANN FRAMETEQ F-300. The powerTouch interface visually guides the operator to load pieces while integrated data flow spaces studs and subassemblies. When the frame is complete, it is moved from the framing station to a series of BUILDTEQ element tables. After transferring, the wall panel can be removed from the line as a complete open frame or moved to the following table to add sheathing.

The final two tables are designed to clamp the frame against an x and y stop ▶



to ensure the frame is square during the sheathing and machining processes. Once the OSB sheathing is applied and tacked, the frame is ready to move to the final table.

The final table is where the sheathing will be permanently attached and machined to complete the panel. These operations are done with a WEINMANN Multifunction Bridge. This bridge, a WALLTEQ, has one nail gun capable of firing up to five nails per second and a router for cutting the perimeter and rough openings needed for exterior walls or floor and ceiling panels. When the bridge is finished, the completed panel is labeled and moved off the line. The labeled panels are stacked in the order of how they will be needed on the job site and placed on trucks for transport.

The president and owner of Black Stone, Jhon Castro, is particularly impressed by how simple it is to operate the WEINMANN Multifunction Bridge. The operator presses a button, and the software-driven machine handles the rest of the process. With integrated software solutions, it has been easier for Castro and his team to keep up with their order book and produce high-quality panels in their factory.

Castro is already considering buying an additional WEINMANN line to increase the production of wall panels and expand Black Stone. He is particularly

fond of the German engineering of the WEINMANN machines and their level of craftsmanship.

These wall production lines are known for their speed, safety, and service—resulting in minimal downtime and enhanced operational efficiency.

Facing the challenge of finding skilled labor, Castro pivoted to panelized construction, significantly enhancing productivity by manufacturing wall panels, floors, and ceilings in all weather conditions and multiple shifts. Off-site construction requires fewer workers and improves quality control in a protected environment. Black Stone's success is attributed to the efficient use of WEINMANN's automated panel equipment, the support from STILES Machinery, and the integration of advanced software solutions, signaling a substantial shift in the construction industry towards off-site, automated production for increased efficiency, scalability, and quality.

Picture above:
The Black Stone Construction team.

Picture below:
Company building and logo.



VIDEO
Prefabrication of
wall elements at
Black Stone



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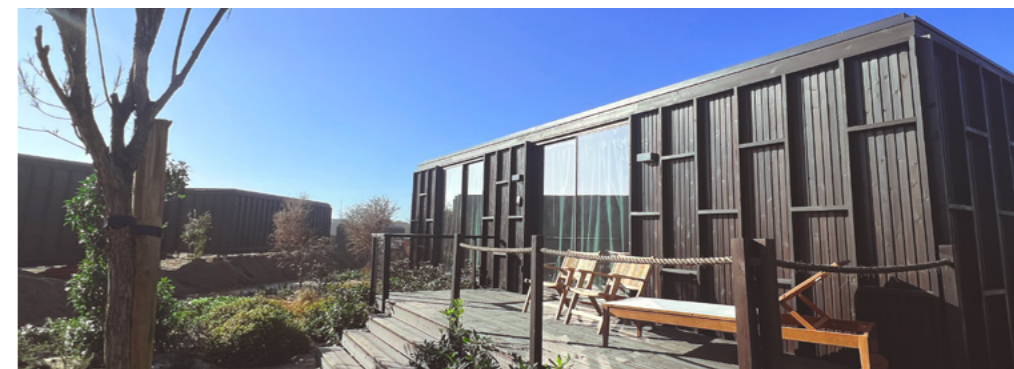
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1,000 sustainable houses per year

How Kōzōwood plans to increase its production capacity.

Timber construction company Kōzōwood draws its inspiration and motivation from its motto: "Where housing innovation is shaped." By combining tradition, modern architecture and technological innovation, Kōzōwood is transforming sustainable housing construction in Portugal and is raising the bar for the industry higher than ever before. The name Kōzōwood is a portmanteau of the Japanese word Kōzō, meaning "structures," and wood.

WRITTEN BY: Marlise Rabuske | PHOTOS: Kōzōwood

New ideas for timber construction

Kōzōwood is the result of a collaboration between the current CEO Nuno Carvalho do Vale and his wife Isabel Afonso, the creators of the Ooty brand, and José Cardoso Botelho, CEO of Vanguard Properties, one of the country's most successful property developers.

This joint venture has already completed a wide range of projects, most of which are focused on high-quality residential construction. The company's developments in Comporta, southern Portugal, are particularly noteworthy.

The two brands Kōzōwood and Ooty demonstrate the company's innovative approach, which focuses on efficiency, customer relationships and a high level of dedication to sustainability and qua-

lity. Kōzōwood is a pioneer in the use of wood as a key architectural element and is a strong proponent of the environmental and economic benefits that this building material offers.

The company's commitment to sustainability and forest management is demonstrated by its PEFC (Programme for the Endorsement of Forest Certification) and FSC (Forest Stewardship Council) certifications. These certifications mean that the company ensures that every piece of wood they use comes from a sustainable source. Every project is planned with the environment in mind, with sustainability being at the heart of every single phase of construction.

Strong expansion thanks to investing in state-of-the-art technology

In order to expand production, Kōzōwood invested in the expansion of its two core areas: The production of timber frame elements and cross-laminated timber (CLT). This laid the foundation for further company growth in the long-term.

Early on in its history, the company began using a WEINMANN production line for the prefabrication of timber construction elements. The production line was put into operation at the end of 2022 and now enables the company to manufacture 250 to 300 houses per year. To expand production further, the company also purchased a CLT line from System TM and Kallesoe, companies which are

also part of the HOMAG Group. The production lines used by Kōzōwood enable the company to achieve a level of efficiency, quality and customer focus that is unrivaled in Southern Europe.

To reduce the negative impact of the shortage of skilled workers, the company has also invested in internal training and international consulting services, which encompass employees in both the production and assembly departments.

Kōzōwood currently employs around 100 people and plans to increase this figure by an additional 150 in the near future. By 2025, the company aims to be producing three houses per day, thus making its mark on both the national and international markets.

To achieve this ambitious goal, investing in the right technology is key: Element production with WEINMANN machines begins with cutting and processing beams using the BEAMTEQ carpentry machine. The finished beams are then transported to the wall line or the roof and ceiling line. In the next step, the beams for wall production are precisely

positioned on the BUILDTEQ assembly tables and connected. Using vacuum lifters, the sheathing materials are ergonomically positioned on the frame works and then secured using a WALLTEQ multifunction bridge. Next, the elements are turned automatically to start the blow-in process for insulation materials such as cellulose or wood fiber. This process is CNC-controlled by the WALLTEQ M-300.

The insulated elements are then sheathed and secured. The components are transported onward to a wall slot, where additional tasks such as window installation or facade processing are carried out. In keeping with Kōzōwood's motto, the production of closed and insulated elements promotes the sustainability and ecology of timber construction and simultaneously meets the high level of demand for long-lasting insulation and sound insulation.

The technology used in the production lines enables Kōzōwood to build custom houses quickly and efficiently, while achieving an extraordinary level of ergonomics and productivity for its employees. In addition, prefabricating



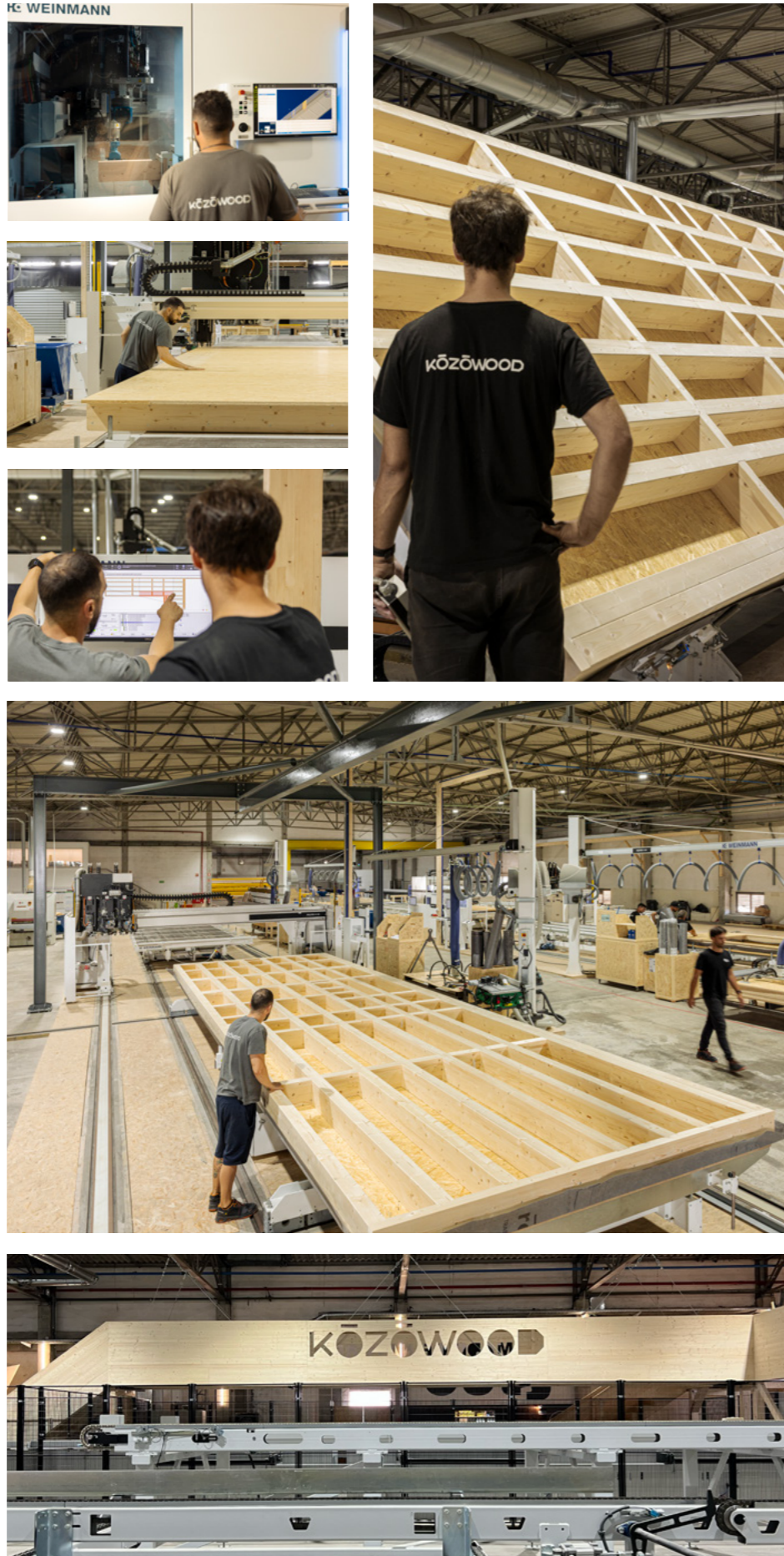
Picture: Marco Silva (left), Senior Sales Manager Portugal (HOMAG) and Nuno Carvalho do Vale, Managing Director of Kōzōwood (right).

Pictures above: Projects implemented by Kōzōwood.

the elements in the factory drastically reduces the construction time required at the construction site.

Közöwood as a case study

With impressive production facilities, a proactive attitude and qualified employees, the company has managed to grow rapidly and become a key player in the market. Közöwood is not only setting new standards for the Portuguese timber construction industry, but is also raising the bar for innovation and sustainability. The company pledges that every one of its projects will contribute to a greener and better future.



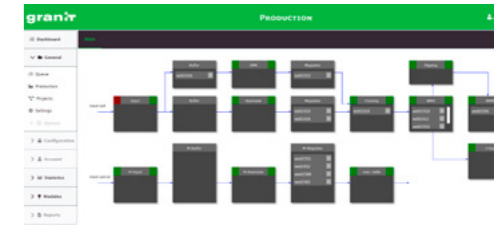
Pictures:
A carpentry machine, assembly tables and multifunction bridges in use at the Közöwood plant.

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The web-based software granIT enables the digitalization and management of production plants in timber construction. granIT can be used to define the production order of the wood frame construction elements at each workstation in the production line. This also includes the automatic provision of digital work instructions to manual workstations by using customer-specific end devices with an up-to-date browser. This means that you have a clear order and can work in cycles with a transparent overview of the overall progress of the construction project.



Pictures:
Efficiency in every detail: granIT guides you through the production process with clear structure and control.

Contact:
Do you have specific questions? Wolfgang Bock of granIT is happy to answer your questions and you can contact him at Wolfgang.bock@granit.de



HIGHLIGHTS:

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- Automatic control of up to two machines (WEINMANN/HOMAG).
- Modern 3D visualization of data records, production schedules and reports for optimal overview and control.
- Recording and evaluation of the booking times of all machine and manual workstations.

FUNCTIONS:

- **Work preparation:** Production orders are imported, sorted into an order and released for production at all stations by one employee.
- **Digital production and feedback:** Drawings of the frame work, the panel layers or their processing steps are created automatically based on .wup files. These can be printed directly or displayed as a PDF on a manual workstation and confirmed digitally.
- **Reports/project status:** All relevant information, such as the production status, the machine assignment or the project status, can be accessed via a web browser. You can design your own reports individually.

Unleash the full potential of production

With application-related production optimization from the WEINMANN Academy

From carpentry businesses to manufacturers of prefabricated houses, a multitude of timber construction companies have already been won over by innovative WEINMANN solutions that can cover the entire process chain from beam processing to element production. An optimally adjusted machine is crucial for efficient production. But what happens if the customer neglects certain factors and parameters of their machine years after initial acceptance and does not continuously adapt these to their current products? One frequent consequence of this is inefficiencies creeping into production and related activities. This is where the application-related production optimization service provided by the WEINMANN Academy comes into play to identify potential for improvement and create an optimal production environment. Dr. Sonja Engelhart, Head of the WEINMANN Academy, and application engineer Christoph Schroth, Team Leader Global Customer Qualification, talk about frequent errors, optimized work paths and other factors.

INTERVIEW: Dr. Sonja Engelhart

Christoph, over the past few years you have visited the premises of many existing customers – as an application engineer, what factors have you observed in our customers' work preparation that can lead to a reduction in production efficiency?

Christoph Schroth (CS): Work preparation plays a key role in automated production. Information about the materials and tools used, panel layers, indices, panel assignments, clamp spacing and blocked areas are specified here, as well as the processing and overcut or under-cut strategy. The amount of information that is also on the plans can quickly lead to errors. In addition, I often see customers using very small plans generated from the CAD program with the maximum amount of information included. Unfortunately, this leads to the plans becoming unclear and important information being lost as a result. However, if the

layers that are to be applied to an element are shown offset instead of on top of one another, processing information is displayed clearly and comprehensibly. If all information about a wall element is only implemented in a small A4 plan, colleagues in production often have no chance of determining the relevant layer and which details need to be taken into account.

Could you use a specific example to explain what consequences this could have?

CS: Production staff may misinterpret plans. Instead of the intended OSB panel, a fiberboard panel, for example, is then positioned. If the employee on the machine notices this error when starting the data record, they then have to remove the entire layer of positioned panels and lay the correct panels. If the plan is clearly designed in advance, this additional work step is not necessary. In this ▶

Application-related production optimization is a service provided by the WEINMANN Academy. It includes assessing the current state of production processes and providing tailored suggestions for optimization. The three main focuses are **quality of work preparation, influences on the machine, and production processes and the production environment.**



Picture:
Dr. Sonja Engelhart,
Head of the WEINMANN Academy.

example alone, we can easily be talking about additional time of half to three quarters of an hour.

Unfortunately, such incidents can also add up and delay the production process. How important is work preparation for efficient production?

CS: Work preparation is of great importance not only with regard to production, but also for the processes on the construction site. A shortfall of ten minutes in work preparation, for example due to time pressure or capacity bottlenecks, can mean an additional effort of two to three hours afterward. It is therefore worth working particularly precisely and carefully during work preparation to avoid errors later in production.

What actions do the experts from the WEINMANN Academy take to identify these described disruptive factors?

CS: On the one hand, we check the parameters of the subprograms and the tool databases as well as the machine hardware. On the other hand, we also assess whether the selected machining strategy is optimal and whether the correct tools and parameters are used for this purpose. However, the qualification of the employees is another aspect that must be taken into account on site in order to identify the negative influencing factors that could disrupt the production flow.

In your opinion, what increase in throughput can be achieved for the customer if work is carried out more efficiently both in work preparation and on the machine, and if the potential we have identified is exploited?

CS: For most customers I have looked after in the past, we have been able to increase efficiency by 10 to 20%.

The final area of focus in terms of application-related production optimization is assessing production processes and the production environment. What influential factors are checked here and, in your experience, where is there most commonly potential for optimization in practice?

CS: In this phase, the material quality and the material flow are assessed in particular. Together, we ask ourselves whether the material provision routes and the working paths taken by the operating personnel are efficient. Generally speaking, however, the working environment and the data flow are also taken into account. In practice, we often find that consumables and tools are positioned arbitrarily after delivery of the machine. After a few weeks, staff get used to the routes and material positions that have been created. However, in most cases, no time has been taken to consider whether the work routes in place are sensible. The same applies to the positioning of the production materials in the warehouse and warehouse logistics in general.

The potential for optimization found is unique and varies hugely from customer to customer. How do the WEINMANN experts document this potential?

CS: For lasting documentation, we use an assessment sheet in which our observations are documented using keywords. If necessary, images of specific situations are also taken make it easier to explain. At the end of the on-site visit, the documentation is discussed with the production manager(s). The customer will receive a detailed report, including the course of action that we have recommended. Minor optimizations, such as parameter settings on the machine, are made directly on site and noted in the documentation.

Overall, the process for analyzing the current situation is very extensive – how long do application engineers spend at the customer's premises on average?

CS: The exact duration heavily depends on the size of the machine pool or scale of production, as well as the type of machines. If we're talking about just one carpentry machine, it can be expected to take around one working day. As part of element production, the entire analysis can take two to three working days.

What financial considerations do customers need to take into account when implementing the recommended actions?

CS: Many optimizations are fundamentally free of charge for the customer. These are often minor reorganizations within the company. They can be optimized communication or shorter rou-

tes, for example, the implementation of which requires at most the buy-in from the company's workforce. However, other efficiency-enhancing measures do require a financial investment – for example, if a new rack contributes to the optimization of the warehouse and an accelerated material flow. In this instance, the customer must weigh up individually whether they wish to take up our recommended course of action.



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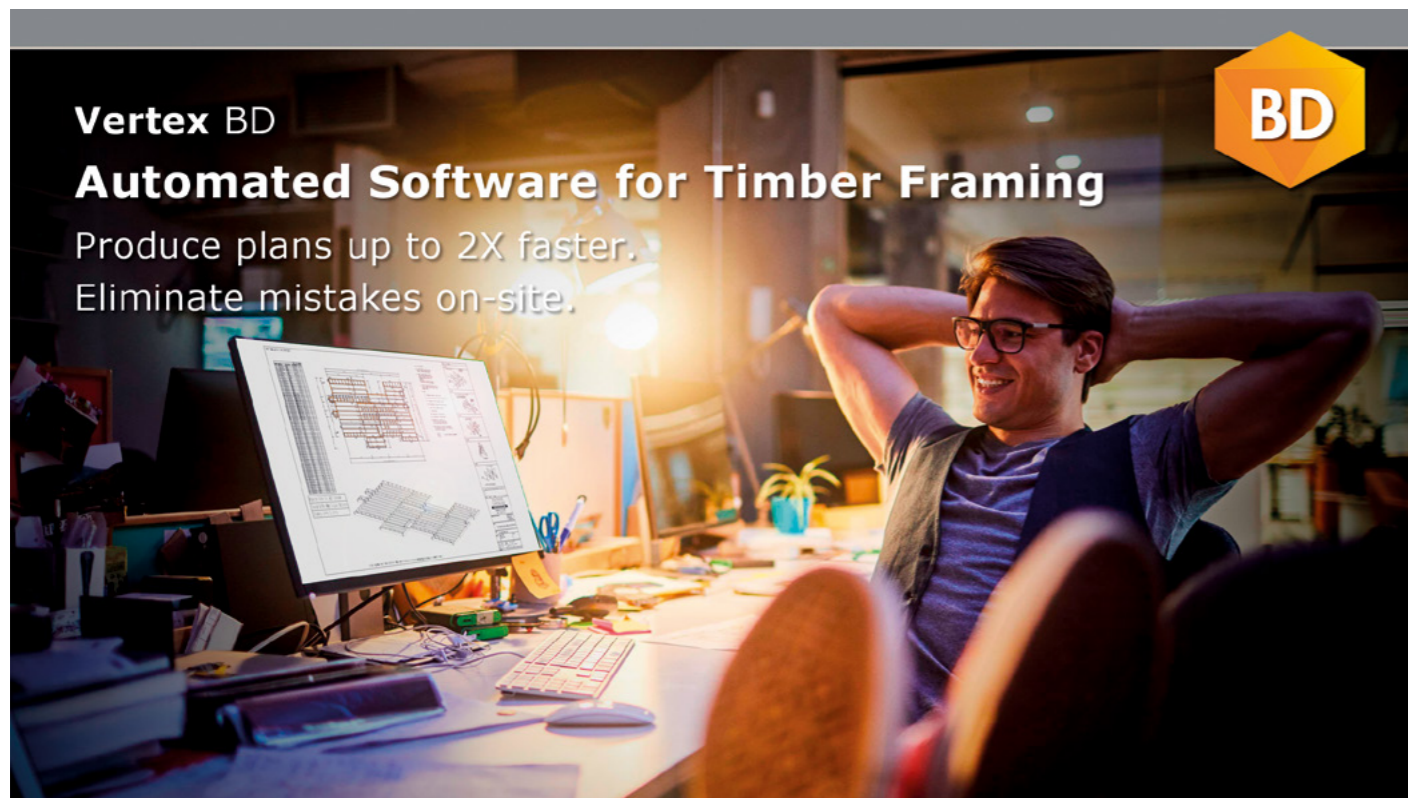
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