

ENGLISH EDITION

NEWS



The world of Lehmann Group
Blumer-Lehmann AG | Lehmann Holzwerk AG | BL Silobau AG
No.12 2019/20

The fascinating world of wood – an inspiration and an obligation



The potential of our raw material, wood, is far from being exhausted.

Dear Readers,
Have you noticed? Our news is now presented in fresh clothing. We always question even proven formulas and are moving with the times. To give you an easier overview, you can now find the products and activities of the respective Lehmann Group companies divided across separate documents. You can also find further information in digital format. This is the result of much hard work on our new website over the last year. Please see for yourself at www.lehmann-gruppe.ch/en/

The 'Timber construction' document provides you with an insight into some of our recently completed structures as well as some projects that we will be delivering over the coming year. The outstanding project in terms of timber construction technology is surely the Swatch structure in Biel. We previously reported on the project two years ago. Now the construction has been completed, we wanted to give you a few additional insights. You can find further background information on the new building on our website.

The 6,500 spruce trees used for the new Swatch building grew back in less than half a day. Did you know that 10 million m³ of wood grows in our forests throughout Switzerland every year? And we do not use all of that by a long way. The forests are actually becoming over mature because less wood is being harvested every year. This trend is impairing the vital protective function of forests and increasing the economic risks for forest owners. That is why our commitment to wood as a sustainable raw material remains as strong as ever. **We are dedicated to ensuring that the value chain for the forestry sector and timber industry remains in Switzerland, creating jobs and improving the Swiss climate balance with its positive effects.** This is a major reason why we continue to invest in our value chain at Erlenhof in Gossau, promoting a model that is gaining increasing significance and attention. Independence from fossil fuels is equally as important as increasing the processing volume of timber from Swiss forests. Investment in various technologies that help us to utilise our raw material for attractive and competitive products have been and will continue to be made. You can learn more about this in our 'Wood processing' bundle.

The many new silo constructions that we have been able to deliver throughout Switzerland and Europe are made from Swiss wood. The three major projects for the Federal Roads Office (FEDRO) are filled with Swiss salt. And in the canton of Grisons up on the Bernina Pass, you can also experience Gossau know-how in wood processing even though there is nothing to see that resembles wood at first glance. To find out more, read our 'Silo construction' document.

We are noticing that planners, architects and clients are thinking about how they can contribute to a sensible and CO₂-neutral culture in construction, not just in Switzerland but around the world. This inevitably involves timber construction and we look forward to seeing many tall and spacious timber structures emerging in various cities around the world. We are particularly pleased that we are supporting this trend with our know-how and actively accompanying developments with our offices in Luxembourg and Australia. This is also a way of exporting our unique Swiss raw material.

The potential of our raw material, wood, is far from being exhausted. Our fascination with wood remains both an inspiration and an obligation. We are an active partner of numerous research projects in Switzerland and abroad in order to continue to push technological boundaries and refine new applications. This has produced the 'Urbach Tower' project and 'UWood' surface treatment. And, at the other end of the value chain, I work personally to promote the sustainable management of tropical forests and establish this as a business model. This will allow local cycles to be closed in emerging markets, promoting value creation and added value and, ultimately, allowing pioneering and locally produced timber constructions to emerge.

Consequently, there is currently no end in sight to our fascination with wood. We are even more ambitious to work together with our customers and personnel to continue along the timber trail and to portray our material in the proper light – sustainably, consciously, traditionally, innovatively and with modern work tools, methods and technologies. We will keep you updated and thank you sincerely for your interest and collaborative partnership.

Katharina Lehmann
CEO Lehmann Group | Delegate of the Board of Directors

Legal notice

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Our 2019 in facts and figures

Every day, we are fascinated by how all the divisions of our group of companies – sawmill and planing mill, timber and silo construction, waste timber processing and energy production – interlock like cog wheels and influence each other. This sustainable cycle based around the natural resource of wood is supported by over 320 employees, including 19 apprentices.



90% of spruce and fir from the region is processed by us in our sawmill.



Our specialists delivered a total of **154 timber construction projects** around the world.



Every day, 25 lorries delivered a total of **130,000 m³ of logs**, of which we **utilise 100%**.



2,300 t of salt is held by Europe's largest modular silo system that we installed in Chur.



27,000 t of pellets were created from residual timber and **13,500 m³ of bark** was utilised.

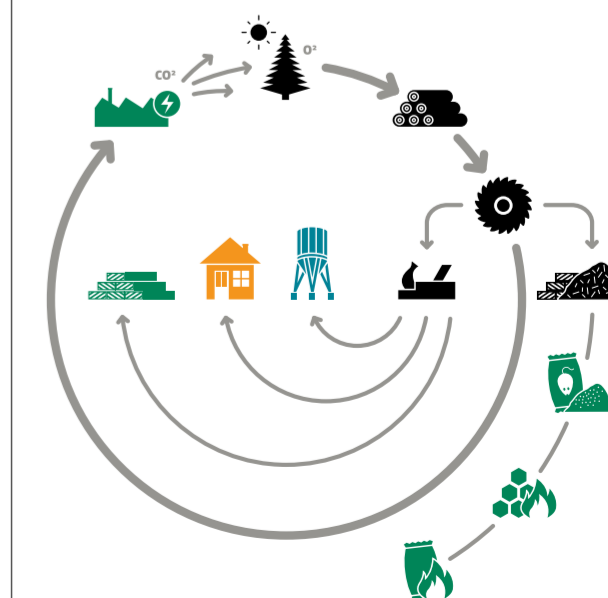


Record: 69,000 m³ of sawn timber.

We have never produced more sawn timber since our sawmill opened in 1875.



Our production facility produced approximately **370 timber modules**. That is equivalent to a **train measuring 3.3 km in length**.





Frank Stolz
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Dayne Davis
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SMELL THE TIMBER

And perhaps the scent of the whole world. With more than 300 employees, Lehmann Group is a place of work, a business centre and an inspiration for customers and partners from around the world. We are always seeking new applications for the high-tech material of wood and pursuing pioneering ideas. Hence, we are always on the lookout for dedicated people who share our fascination with wood.

→ Find out more at:
www.lehmann-gruppe.ch/en/jobs



WELCOME

The booming interest in sustainability and timber construction is noticeable from the demand for visits to our company premises at Erlenhof. More and more interested groups from near and far are contacting us to expand their knowledge of the sustainable construction material and its potential applications. More than 1,000 architects, students, partners and customers took the opportunity to dive into our world of wood in 2019.



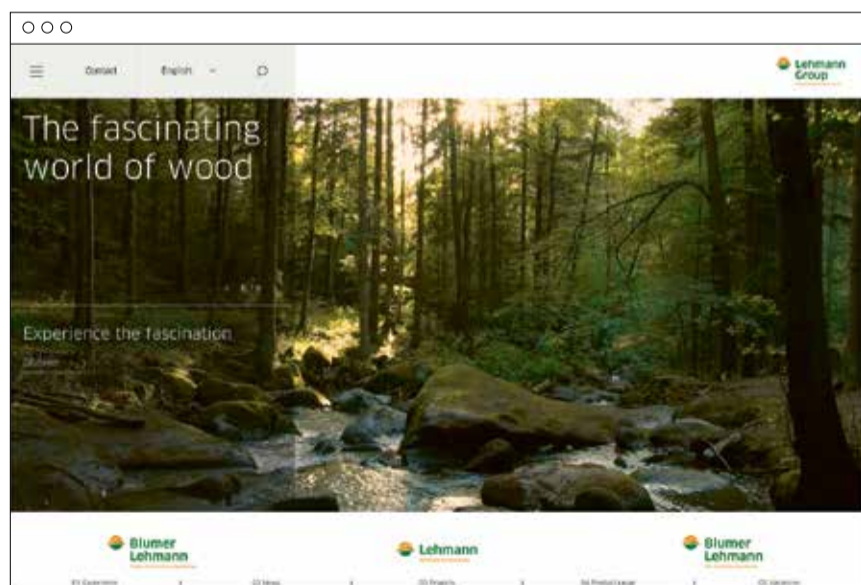
Casting our net wide

Timber construction is in the ascendant and is meeting with great interest far beyond our national borders. Responsible clients, architects and investors are embracing the potential of timber construction. As are we. We can see the demand for innovative, sustainable timber constructions. As timber specialists, we also

want to make our extensive know-how increasingly available outside of Switzerland. To this end, we are now represented by Frank Stolz in Luxembourg and Dayne Davis in Australia under the Blumer Lehmann brand.

CELEBRATIONS

Celebrating special occasions together at Erlenhof – our family culture connects us and builds trust.



DIVE INTO THE FASCINATING WORLD OF WOOD

We invite you to visit our new website. We bring you news and information from our companies, stories on all aspects of wood and plenty of useful information on the most natural material of all. Please go to lehmann-gruppe.ch/en and let us know how you enjoyed your visit.

→ Visit our new website: lehmann-gruppe.ch/en

SILO FACILITIES ENGINEERING



BL Silobau AG

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17,000 components for the
largest modular
silo system in
Europe

Find out more
on page 2

Silo facility comprising 17,000 components

The largest modular silo facility in Europe with state-of-the-art technology was recently commissioned in Chur. The system provides for the winter road services on the A13 motorway from Bad Ragaz to Reichenau, on the cantonal roads in the surrounding side valleys and the town of Chur.



Superlatives and large numbers are required to describe the new silo facility in Chur. 400 plans were drafted by the project management for the system's 17,000 components. Around 40 semi-trailers transported more than 300 t of material to the construction site at the Chur South motorway junction. The five silos hold a total capacity of 2,300 m³ of salt and the brine facility 80,000 litres of ready-to-use brine. They ensure the winter road services on the 80 km stretch of the A13 motorway between Reichenau and Bad Ragaz along with the cantonal roads in the side valleys and the town of Chur.

The high art of logistics

For project manager Sascha Aerne, the logistics and the precise timings of the lorries in particular were a big but fascinating challenge. The unloading of the semi-trailers, the crane work and the assembly work for the silo facility had to be coordinated meticulously. 'We were allocated a storage site for the interim storage of the construction material in Chur. Nevertheless, the challenge was managing the works and transport to

allow everybody to work continuously. This meant unloading a semi-trailer forty times and utilising the material immediately. Once the last crane motion was complete, the next lorry had to be in place for unloading the material. Only at that point was there enough space on the storage site for another lorry load of material. And only then did the construction team not need the crane for the assembly work. 'Just in time' was the operative phrase. If too much material was left on the construction site, there would be no space to work. If there was no material left, the assembly team would have to wait. That was the logistical challenge.'

Effective winter road services centre

The team from BL Silobau started the planning in December 2018. Work on the construction site commenced in May 2019. As general contractor, we assembled the striking salt silo and brine system on the foundations already laid by the client. All four silos, each with a capacity of 500 m³, for the canton of Grisons and the silo with a volume of 300 m³ for the town of Chur are housed in the new winter road

services centre. Since September, the facility has also included a brine system with two brine storage tanks, each holding 40,000 litres, a brine generator and an operating room. Other facilities include a kitchen and toilet, which are incorporated into the overall facility as a modular construction. The concept from Marcel Liesch Architekten AG, based in Chur, required 1,500 m² of rhomboid cladding in larch wood for the 17-metre-high facade that extends around the entire silo facility. The sloped elements with soffits create a unique tiered effect reminiscent of a fir tree.

Strategically smart salt purchasing

Traffic on the Grisons motorway and in the town of Chur had increased in past years. Until recently, the winter road services were accommodated in a small

The challenge was the meticulous coordination between assembly and transport.

warehouse with limited storage capacity. The canton of Grisons and the town of Chur therefore decided together to build an effective joint silo facility for large volumes of salt and brine. This was not only intended to provide for the winter road services in winter when temperatures remain low and there is frequent snowfall. The modern silo facility also allows the operator to purchase sufficient salt in summer on favourable terms. The large storage capacities of the new facility with 2,300 m³ of salt and 80,000 litres of brine can cover almost an entire cold and snowy winter.

→ For more on the project, visit: blumer-lehmann.ch/silo/chur

THE LARGEST MODULAR SILO FACILITY IN EUROPE

Floor area:	505 m ² (18.1 x 27.9 m)
Height:	17.7 m
Dead weight:	approx. 300 t (excluding foundations)
Components:	17,000 pcs
Capacity:	Silos: 2,300 m ³ of salt Brine storage tank: 80,000 l of brine
Automation:	Full automation
Weighing:	Weight measurement via strain gauges on the silo foundations



2

1 The entire facility is optimally located on the Chur South intersection.

2 Loading lane for filling the spreading vehicles.

3 Brine system with a capacity of 80,000 litres.



3

Interview with Christian Ryffel



Head of Operations
District 1 Chur, area unit V
Civil Engineering Office of Grisons

Mr Ryffel, the silo facility in Chur is currently the largest example of such a modular facility in Europe. Why did you opt for a facility of such a remarkable size?

CHRISTIAN RYFFEL The size of the new facility was based upon the long-term average con-

sumption of gritting material, which is around 2,400–2,600 t of salt. The old facility could only hold a third of the required volume.

What are the benefits of the size and large capacity of the silo facility for you?

In recent years, it was always a challenge to store the required volume of gritting material. Depending on the amount of precipitation, the stored volume would diminish rapidly and we would be close to running out of salt. This has been defused by the new, larger storage capacity that also allows us to benefit from the favourable price of salt in summer. The location is another big advantage. It is only a short distance from the spreading routes and the drivers of the spreading vehicles no longer have to drive into the town, which significantly reduces driving times.

What do you see as the greatest benefit in terms of operations and user friendliness of the new facility compared with the previous winter road services solution?

The salt from the silos is loaded significantly faster. Previously, the salt was stored loose in a ware-

house and loaded with the wheel loader. Now, several vehicles can be loaded at once.

As the operator, how would you assess the collaboration with BL Silobau AG during the planning and implementation of the facility?

As the future operator of the facility, I was impressed by their broad-based expertise from an operational standpoint, particularly with regard to the procedures of winter road services. The collaboration was always very open, honest and competent. Questions that arose were always clarified and handled promptly. All in all, it was a very constructive collaboration.

The silo facility is now operational. What are you particularly pleased with?

The facility is obviously the highlight of the forthcoming winter services season. In-depth instruction has been completed, the first vehicles have been loaded and our personnel are delighted with this successful project. I am confident that we will also be pleased with the silos during peak season.

Outstanding user friendliness and storage capacity

In western Switzerland, two state-of-the-art silo facilities have been created with impressive storage capacities and modern operating systems. We delivered the entire impressive facilities at both locations for the Federal Roads Office (FEDRO) that have amazed both experts and the general public.

The lorry driver carefully positions the loading area of his lorry beneath the hopper of the salt silo. The livecam of the salt manager immediately transmits the type and size of the lorry and shows the driver the optimal filling position on the screen. The driver now triggers the filling with salt and stops the procedure again at the push of a button. The salt manager takes care of everything else, including, for example, saving the salt volume taken in the corresponding customer account on the online portal.

En français, s'il vous plaît

'Fortunately, we also speak French at Blumer Lehmann,' says project manager Martin Bischof. 'This meant that we could also elegantly fulfil the client's one challenging condition. All plans, operating instructions and documentation had to be prepared in French.' Yannick Neumann, our head of modular construction sales in western Switzerland, therefore attended construction meetings, took on the site management and communicated eloquently in his native French. The plans were translated by the team.

The round silo facility in Domdidier

With two silos, each holding 600 m³ or a salt content of around 1,440t, the facility in Domdidier is the largest round silo facility in Switzerland. The six-strong assembly team required 17 days to deliver the two massive round silos. The facility has been operational since October.

Well protected against all weathers

The entire facility stands on a steel substructure. For the facades, a cubic steel substructure was built around the silo construction. This was fitted with weather-

boarding in larch wood on both sides. The transparent polycarbonate panel installed in the side wall of the facade allows adequate light into the driveway. Half of the silo facility is covered. The roof and a special windnet protect the hopper area below, as well as the hydraulics and control boxes, from rain and wind. The client also wanted a special rust-resistant solution for an area where salt and moisture can cause rust: a floor grating in GRP plastic for the surrounding platforms.

Less complexity, more safety

'Like in Fribourg, the entire new facility in Domdidier was built on the work yard of the municipality or town,' explains project manager Martin Bischof, who was responsible for both silo projects. 'Previously, both localities had stored the salt for their winter road services in salt warehouses. The complex method of having to load a lorry via conveyor belt is now replaced by convenient hopper filling from the silo.' In Domdidier, too, a salt manager monitors the filling volumes, corrects the lorry position, controls the lorry filling and ensures maximum safety during work.

The driver triggers the filling of his lorry at the push of a button.

One tender, two silo construction contracts

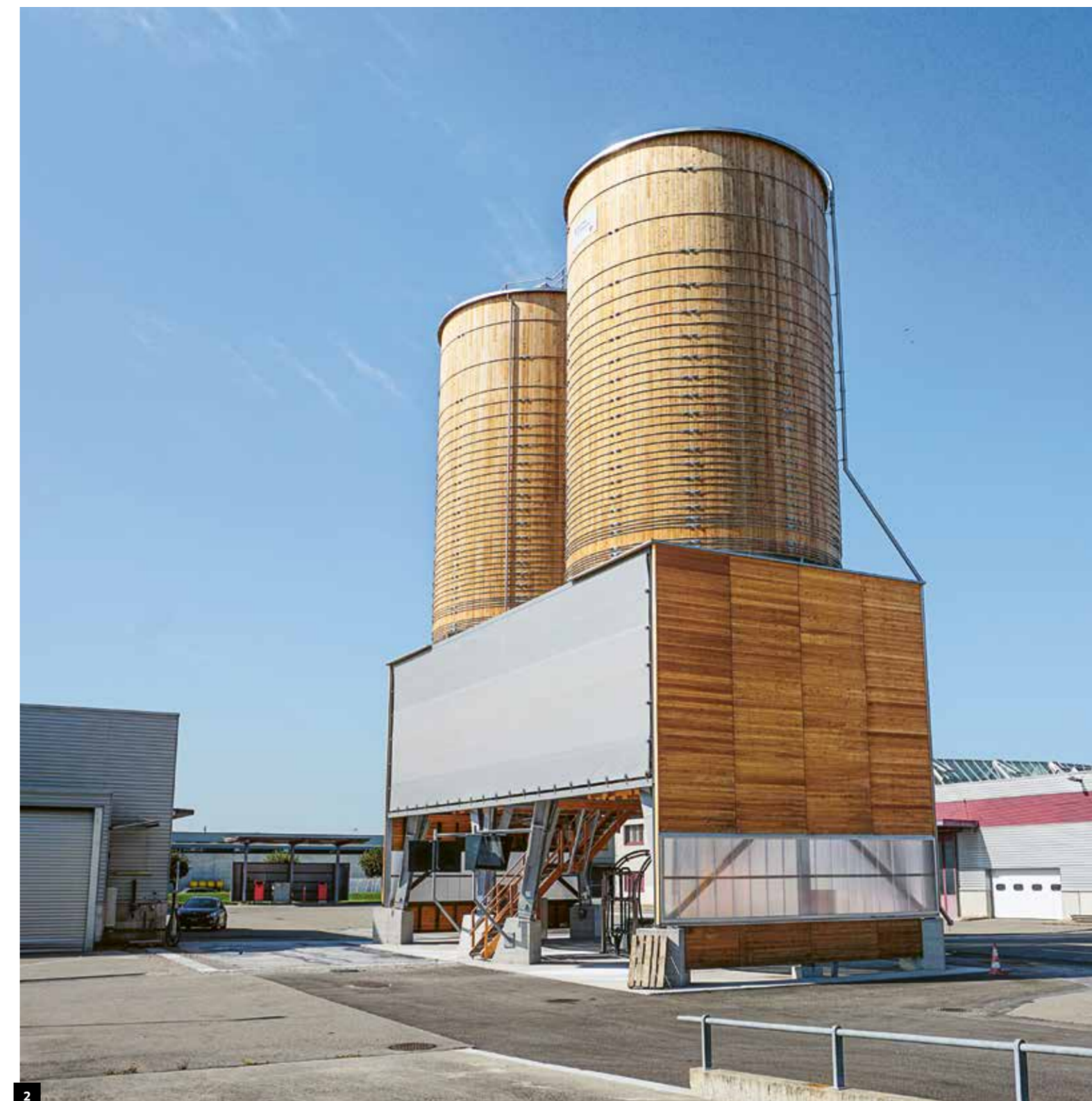
The new-build silo facility in Fribourg, located directly on the Fribourg North motorway exit, is highly user friendly. The same state-of-the-art system is used by the facility in Domdidier. The client, FEDRO, invited tenders for both projects in a combined submission and we were awarded the contract.

The modular silo facility in Fribourg

Planning for the silo facility in Fribourg commenced in early 2019. The assembly and construction work was completed between 18 July and 4 September and the facility was ready for operation on 1 October. With an average of 5 to 6 installers, 20 lorry loads of silo material and facade substructure and our own crane, the assembly team delivered the facility within 29 working days.

Four silos, one brine facility

Four modular silos, each with a storage capacity of 400 m³, clad completely with a sheet metal facade on the upper portion and with transparent polycarbonate panels on the lower portion, make up the entire facility. A platform level with the hoppers connects the four silos, allowing personnel to walk around the silos. An existing brine system was integrated into the salt manager's system, allowing the brine to be filled just as easily and quickly at the push of a button. The collection is then displayed to the salt manager directly after filling.



- 1 The livecam allows the driver to move his lorry into the optimal filling position. It also displays the salt volume collected during filling.
- 2 The round silo facility in Domdidier includes two silos, each capable of storing 600 m³ of salt.
- 3 The modular silo facility in Fribourg comprises four silos, each capable of holding 400 m³ of salt.

Wooden heart with a concrete shell

Construction works for the new maintenance support point for the Civil Engineering Office of Grisons on the Bernina Pass were completed in autumn 2019. The new construction significantly improves the facilities and conditions for efficient and economical road maintenance services on the pass. A significant contribution to this is the new silo facility with a storage capacity of 400 m³ for storing salt and grit. The team from BL Silobau AG delivered the timber core for the concrete silo tower and the associated operating system.

Previously, there were no modern facilities for efficient road maintenance on the Bernina Pass. Thanks to the new support point, this is no longer the case. Intensive engagement with the sensitive landscape and careful handling of the local nature were the core principles of the architectural design from the outset and a key component of the project designed by Bearth & Deplazes Architekten. Thanks to its semicircular construction, the new building blends optimally into the natural terrain. The curved facade and free-standing silo tower are connected via the concrete material and redefine the location on the Bernina Pass shortly before the top of the pass.

The entire maintenance support point is organised on one level. The support point includes accommodation for two operation personnel along with a lounge, wash system, indoor parking and a filling station for the vehicles. The silo is positioned precisely in the centre. One special feature of the building is that it is covered with earth, incorporating it into the distinctive local topography and renaturalising the scars in the landscape accumulated over the years. The architectural quality and the technical and financial logic combine to create a project with a high-quality user experience.

From the outside, the timber interior of the silo tower with the concrete facade cannot be seen. How-

ever, it is precisely this timber core that ensures the concrete is not corroded by the salt stored in the tower. The elaborate lining or, more precisely, the made-to-measure production of the indoor silo required precise manual work from our installers on site. Three to four personnel worked for around twelve weeks on the Bernina Pass at more than 2,300 m above sea level under particularly unusual weather and assembly conditions.

Firstly, they installed a rear-ventilated vertical layer in timber slats. This was installed specially into the Halfen framing channels, embedded in concrete, using Halfen screws. This avoided damaging the sealed concrete layer. A horizontal layer with pre-curved timber components produced at Erlenhof followed next.

The final layer to be installed over the top was the vertical double tongue and groove casing boards. The majority of the components were cut directly on the construction site and hoisted up to temporary installation levels using a winch. Level by level, this is how the made-to-measure timber silo was created behind the external concrete shell. The round enclosed silo is also divided into two storage chambers via a partition: one chamber for grit and the other for salt.

Inside the concrete tower, a staircase leads up to a windowless room on top of the silo, the 'camera obscura': this allows the surrounding landscape, a Unesco World Heritage Site, to be projected onto the wall from outside through a small hole (20 mm diameter) in the wall. The best part is that, going forward, visitor groups will be able to book trips to the site, giving the support point a tourist use.

PELLETS OR WOOD CHIPS

When it came to partial replacement of its heating system, Bühler AG, based in Uzwil, opted to increase its use of sustainable fuels. This was why the firm asked us to construct a new timber silo for the storage of pellets or wood chips as an addition to their existing concrete wood chip bunker. The silo is equipped with two different widths of pipe, offering the ability to fill it with pellets or wood chips. Going forward, Bühler AG wants to produce its own wood chips from the timber packaging and transport material it accumulates daily in large volumes.



ON AN INTERNATIONAL STAGE

Around half of all projects completed by our silo construction team (AG and GmbH) are outside Switzerland. Over the last 35 years, we have completed thousands of projects: from small silos to fully automated winter road services support points and individual overall solutions. In close cooperation with our customers, we engineer economical solutions for winter services of different shapes and sizes in our plants located across Switzerland and Germany. The systems are installed ready for operation by our assembly team directly on site. Our focus is increasingly on automation and modern conveyor technology for silos and containers. The skilful combination of innovation, expertise and tradition contributes decisively to the successful implementation of domestic and international projects.



Two log silos in Vienna, each with a capacity of 500 m³.



SILO WITH A LAKE VIEW

The municipality of Beinwil am See combined the fire service and building department into one new lakeside location, developing a new work yard site for the project. As part of the new construction, we installed a square timber silo (E4) on the site with a capacity of 50 m³ for the storage of road salt for winter road services. With its colourfully painted timber facade boarding, the silo blends in visually with the other buildings on the site and fits perfectly into the surroundings. We completed the silo at our Erlenhof production site in Gossau and transported it as a whole to Beinwil, where it was installed by two of our personnel within half a day.

→ Timber silos are our core area of expertise. For more on our wide range of timber silos: blumer-lehmann.ch/silo/holzsilos

Upgrade in the work yard

In 2013, we successfully installed two round timber silos for the canton of Appenzell Ausserrhoden in their work yard in Heiden, each capable of holding 300 m³ of salt. Around six years later, we have now upgraded the existing silo facility with state-of-the-art technology. Over the last few years, we have seen that a combination of road salt and salt solutions, i.e. the use of wet salt, achieves very good results for winter road services. And lowering salt usage reduces the negative impact on the environment. This trend has also been followed in Appenzell Ausserrhoden, where facilities are now being upgraded with a brine production system.



Above: Thanks to its semicircular construction, the maintenance support point blends optimally into the natural terrain.

Right: The custom-made timber silo behind the concrete shell is only visible from inside the building. The staircase inside the concrete tower leads up to the 'camera obscura'.



Your contact for silos and winter road services facilities

Individual requirements mean fascinating challenges to us. Do you need made-to-measure dimensions and capacities or the integration of existing buildings? Do you have special requirements in terms of appearance or functionality? For more than 35 years, we have been developing individual complete solutions for silos and winter road services facilities at home and abroad. Regardless of the size of the system, your vision of round or square timber silos, an overall concept or an architecturally extraordinary gritting material facility, our

team will strive to produce just the right facility for your requirements. They know how to optimise work procedures and how to get road salt on the road as quickly as possible. On our website, we show you further reference projects of all shapes and sizes in Switzerland and many other countries across Europe that are ensuring safe roads in snow and ice.



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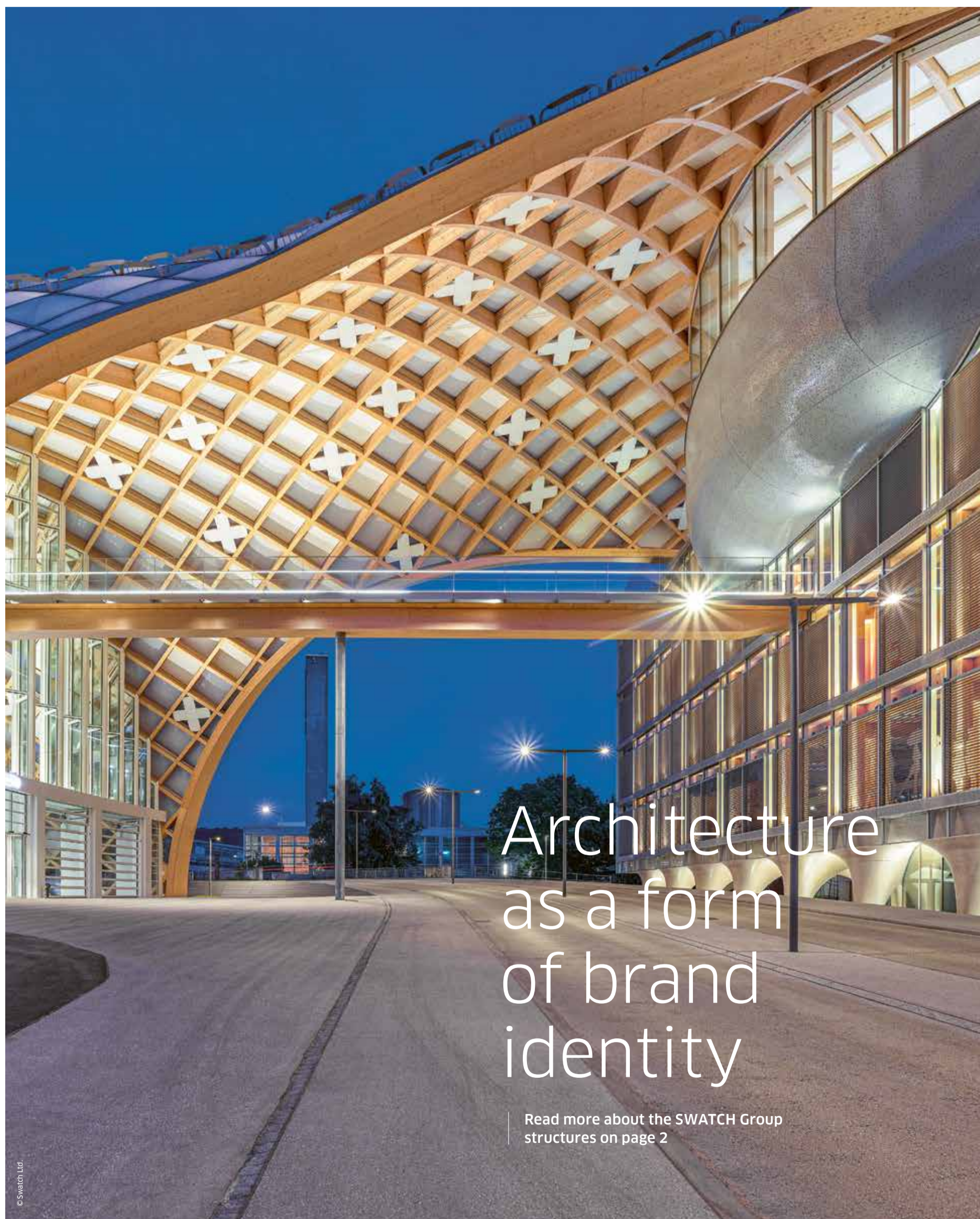
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TIMBER CONSTRUCTION ENGINEERING



Blumer-Lehmann AG

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Architecture
as a form
of brand
identity

Read more about the SWATCH Group
structures on page 2

A milestone for modern timber construction

In February, Swatch opened its new headquarters in Biel. This was the fifth project we have delivered in conjunction with Japanese architect Shigeru Ban. The spectacular structure impresses with its Free Form supporting structure comprising a gigantic timber lattice shell.

The curved timber frame construction of the Swatch headquarters sweeps elegantly across the site, finishing over the roof of the Cité-du-Temps museum building. The connection between the two buildings creates a covered meeting area. Three buildings on the Swatch Group's site bear Shigeru Ban's signature. As a logical consequence of the client's sustainability objectives, all three buildings were designed in wood. And each of the three buildings, the Swatch building, the Cité du Temps museum building and the Omega production facility, express the character of each brand via the timber construction technology used.

Planned precision via 3D modelling

Everything about the recently completed building with its serpentine timber lattice structure is exceptional. With an area of 11,000 m², it is the largest lattice shell produced in the company's history. And the most challenging. 'The design and the individual beams are enormous and precision requirements were very high. Yet all of that can be achieved with timber construction,' says project manager Felix Holenstein.

The supporting structure is covered with a shell comprising various facade elements. These include enclosed and insulated elements, transparent glass elements with solar shading, photovoltaics or air cush-

ions finished with ETFE foil as well as optically and acoustically effective inserts in the form of Swiss crosses as well as a number of large balcony openings. What's more, each of the 4,600 beam elements of the lattice supporting structure is unique.

Together with our long-standing partners, timber construction engineers SJB Kempter Fitze, the specialists at Design-to-Production, engineers and architects, we developed a detailed coordination model as a starting point for the planning. When the decision was taken in 2015 to integrate the building technology and all pipes and cables for the electrics, air conditioning and sprinkler system into the supporting structure following the award of the tender, the details had to be revised yet again. This meant additional rounds of coordination with the timber construction engineers and specialist planners to plan and test all openings down to the last drill hole. Once the detailing was complete, the 2D plans could be parameterised for 3D modelling. Based upon this 3D model, three different types of blank were then defined in laminated timber: 'straight', 'single-curved' and 'double-curved'. This parameterisation also allowed the 16,000 steel components and 140,000 connectors to be reduced to a few types.

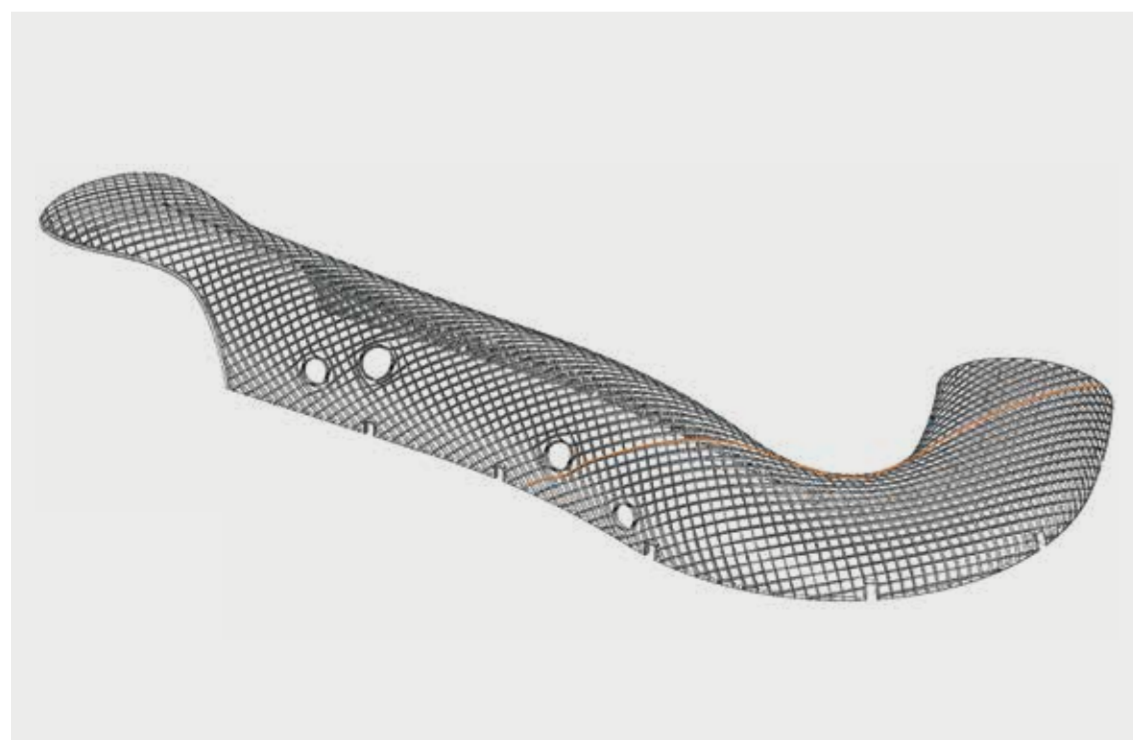
The right component at the right time

The components were produced on five machines simultaneously in four shifts at our Erlenhof site as well as by external partners. Precision and a careful process were important to ensure that the right raw material and corresponding production data were always available for the respective machine. The same applied to logistics and assembly. These had to be conducted according to a precisely specified plan and checked regularly. 'The greatest challenge was to have the right components on the construction site at the right time,' recalls Felix Holenstein. 'This would not have been possible without three-dimensional planning using a 3D model and corresponding logistics planning.'

With an area of 11,000 m², it is the largest lattice shell produced in the company's history.

The unconventional structure with its sensational architecture undoubtedly has enormous promotional reach as a landmark – for the Biel region, for Switzerland and for modern timber construction worldwide.

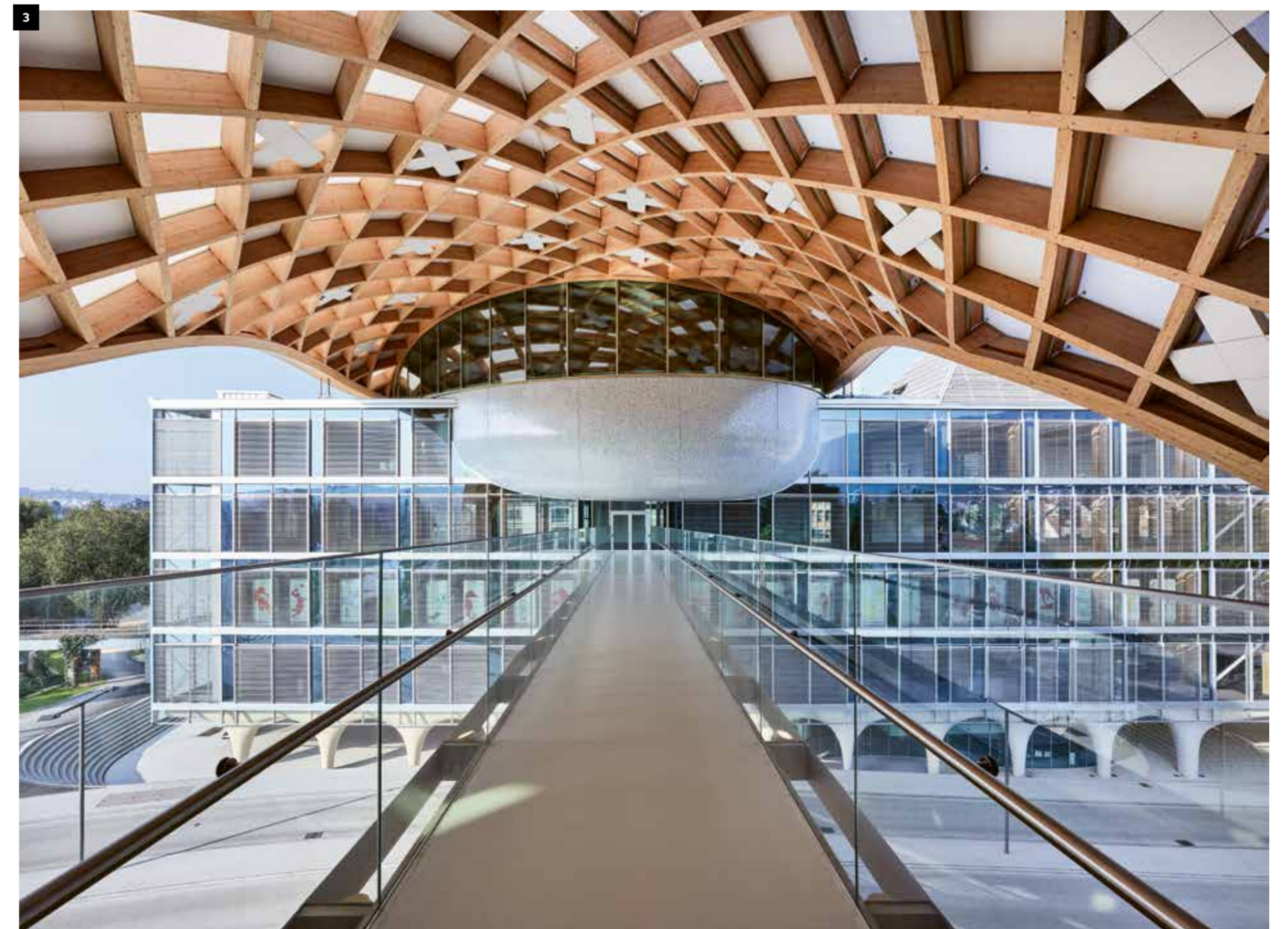
→ For further information and images on the unique Swatch project as well as interviews with the project managers and Shigeru Ban, visit: blumer-lehmann.ch/swatch



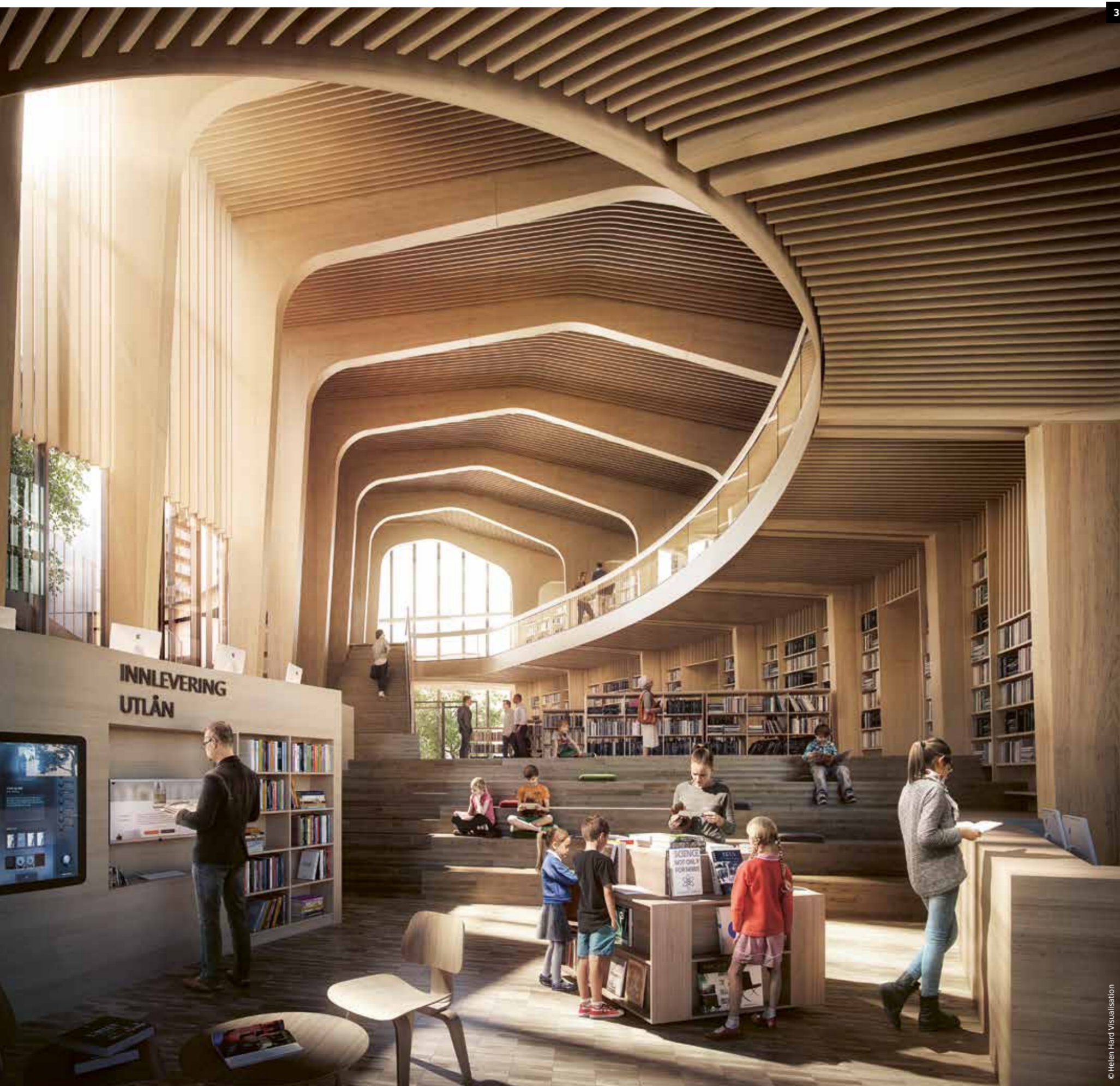
3D model of the Swatch building. Parameterised planning processes and precise manufacturing and production methods enabled the implementation of the free-form lattice timber structure in huge dimensions. In orange: the longest beam used measures around 130m.



1 The Swatch building is the new landmark of the city of Biel. It elegantly demonstrates the forms that modern timber construction can take.
2 Facade elements in various materials create the shell of the support structure.
3 The impressive organic shape of the 240-metre-long new Swatch building meets the roof of the new Cité du Temps. This is home to the museums of the Omega and Swatch brands.



© Photos: Swatch Ltd.



A stylish frame for the village library in Nord-Odal

A village in Norway received an architectural highlight in timber construction for its library. For the striking framework beams, the Blumer Lehmann team proactively sought out the optimal design solution with no visible steel connections.

If you drive north-east from Oslo for an hour, you reach a quiet part of the country around the Storsjøen lake. There is nothing much to see besides forests, meadows, villages and churches. Next year, however, Nord-Odal will be known far and wide as the village with the sensational timber structure. The municipality itself instructed Norwegian architects Helen & Hard with the construction of 'Samling', the timber construction project that won the tender competition. The 'Samling', meaning 'collection', will be a public building comprising a library, a bank branch with counter area, offices and ten apartments.

Library as a meeting place and passage
The floor plan of the building evokes a snail shell. The two halves of the building are arranged around a courtyard. To the north-east is the single-storey library with gallery, to the south-west lies the bank branch and on the three floors above are the apartments. In the locality of Nord-Odal, the 'Samling' represents the first stage of the structural development of the village. The structure will connect the main road, the park, the church and the community hall through

its location and the inviting main entrance and route through the library will create a connecting passage where village residents can meet.

Striking and sophisticated frame constructions
'Our order largely consisted of planning, producing and delivering the load-bearing timber components. We also had to combine two different constructions,' says David Riggenbach, project manager for Blumer Lehmann. 'The floors, load-bearing walls and roof surface were made from large cross-laminated timber panels. Impressive special beams in laminated timber dominate the appearance of the main supporting structure in the bank branch and library. These solid frames arranged in star shapes, with their curved inner contour, lend the structure its character, which is why the architect imposed such high quality requirements on these components.'

The corner joints of these framework beams proved relatively complex and less than straightforward to implement. That is why the Blumer Lehmann team were all the more determined to take on the

responsibilities of planning and production when the contracts were awarded. We assured the client and architect that we would find an optimal solution for implementation with no visible steel connections.

The design solution was quickly found. Steel rods would be glued into the wood in the factory using a special adhesive and would not be visible. Putting this into practice, however, required some effort. On the construction site, each beam had to be connected with two posts to form a rigid frame using simple push-fit connections. To achieve this, the production team in the factory at Erlenhof had to essentially create a ready-to-use construction kit, documented with

We delivered a complete construction kit for all load-bearing structural elements.

calculations and the necessary approvals in English. This was because the responsible engineer had to be able to monitor and audit the calculations and modify them where necessary. In addition, the prepared components had to be capable of being assembled quickly and reliably.

Components with detailed assembly instructions
Because assembly was not included in our services, our project team prepared everything even more carefully than usual and provided detailed documentation. 'We planned, produced and delivered a complete construction kit for all load-bearing structural elements, although it is unusual for us to not assemble these ourselves,' says Dave Riggenbach. 'However, to allow the Norwegian assembly team to cope well with the components we produced and to meet the desired quality, we drafted detailed assembly plans. In addition, one of our assembly personnel supported the Norwegian team on the construction site.'

The sensational building is scheduled for completion in early summer 2020.



- 1 The shell construction of the Samling is completed. The specially developed framework beams are highly visible.
- 2 The floor plan of the Samling in the shape of a snail shell.
- 3 Visualisation of the completed construction. The wood lends the library a pleasant atmosphere.
- 4 The Norwegian assembly team received the finished load-bearing structural elements from us supplied in a complete construction kit including detailed assembly instructions.

The load-bearing trees of the Cambridge Mosque

The Cambridge Mosque opened in April 2019. The mosque provides a space for meeting and reflection for Muslims and people of other faiths. At an early design stage, we advised Marks Barfield Architects on the feasibility of the building. Later, we developed, produced and assembled the unique timber construction with its Free Form roof using 30 tree-like timber supporting structures.

'The fundamental idea was based upon the image of a grove of trees,' says architect Julia Barfield. This denotes nature as well as a connection between western and Islamic culture. The objective was to develop a British mosque for the 21st century. Local inspiration

Elaborate production

The beams were produced from single and double-curved source elements in spruce laminated timber, known as blanks, which were all processed on our 5-axis CNC machine. Tricky and time-consuming: to process the components, which were curved on all sides, the production team constantly had to calculate two tensions at the same time for the CNC processing – for the component itself and for the counter-mould. To assemble the interweaving branches, the prefabri-

cated timber components were put together on site by our assembly team to create a treetop effect and lifted into the space using a crane.

'Wood as a construction material was a logical consequence for respecting the client's expressed desire for sustainability.'

Julia Barfield

The trees in the interior spaces form an octagonal structure with their branches, symbolising the rhythm of life.

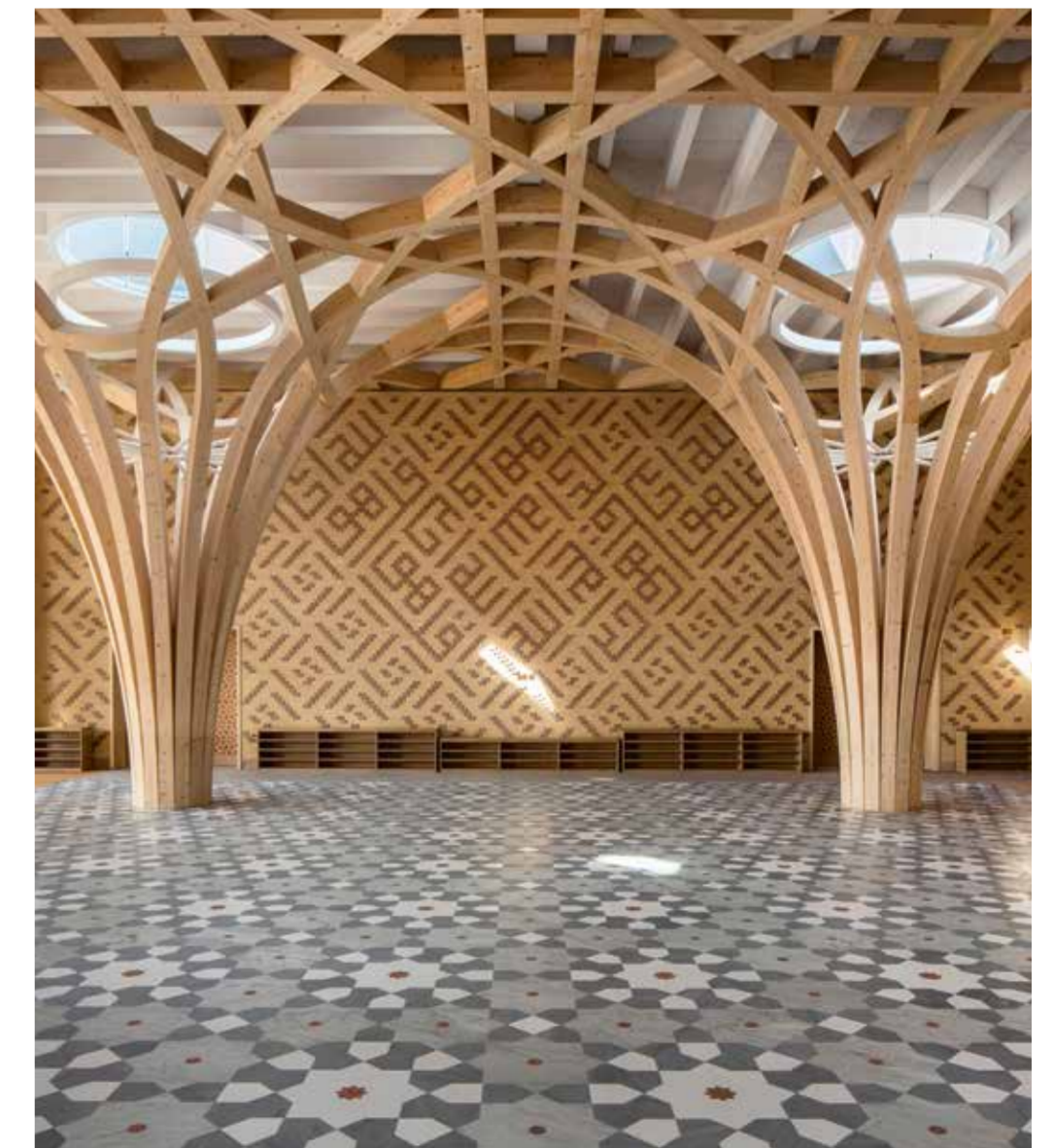
was taken from the chapel of King's College, Cambridge, with its Gothic fan vaulting. The architect adds: 'Wood as a construction material was a logical consequence for respecting the client's expressed desire for sustainability.'

Islamic ornamentation

The primary element of the supporting structure design is an octagonal star, a traditional feature of Islamic architecture. These can also be found in various ornaments and geometric patterns all around the mosque. Likewise, the trees in the interior spaces form this octagonal structure with their branches, symbolising the rhythm of life. This produced the aesthetics of the building, which finally resulted in the design of the supporting structure.

Parametric planning

The curves and interlacing elements arising from the geometric design of the supporting structure were planned and produced entirely with wood, in line with the concept of the 'ecological mosque' by our Blumer-Lehmann AG Free Form team. In conjunction with the digitalisation experts at Design-to-Production, we developed a detailed parametric CAD model of the timber construction. Working from the architects' design drawings, the team worked closely with the engineers from SJB Kempter Fitze to create the complete digitalised prefabrication and assembly concept of the construction.



Free Form geometries: visually alike yet so different

The geometries of many Free Form constructions may look similar at first glance. Upon closer inspection, however, there will be some clear differences between the constructions. And that has consequences.

Curved designs, such as the trees in the Cambridge Mosque and other Free Form structures, can be planned and implemented in different ways. 'The success of Free Form structures is partly based upon the fact that the architects can obtain the relevant information from us while developing the idea,' says Kai Strehlke, who is responsible for digital CAD/CAM processes at Blumer Lehmann. 'The earlier they come to us with questions, the better they understand the consequences of the design for Free Form implementation and can incorporate this know-how into the planning.'

Their final decision is dependent on the aesthetics, the concept and the design. However, their decision on three issues directly impacts the complexity of the construction project and costs: the choice of blank, the production and the assembly.



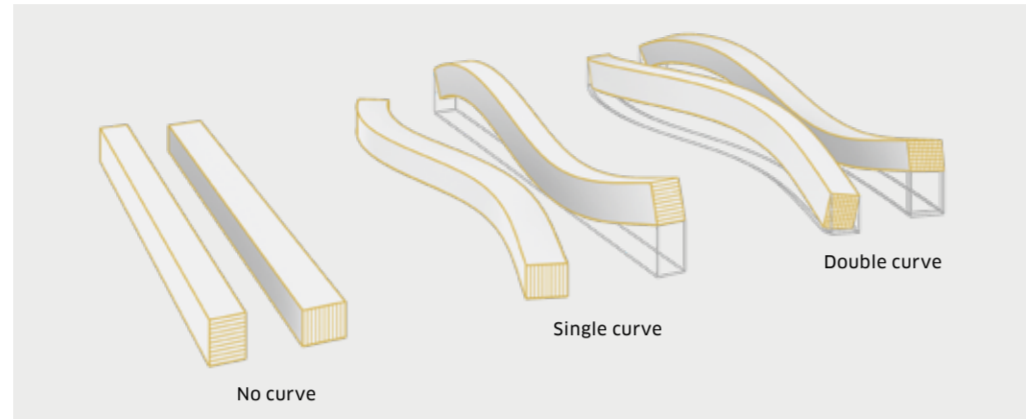
Conclusion

Kai Strehlke, Head of Digital Processes for Blumer Lehmann concludes: 'For architects and planners, we therefore recommend discussing your design concept with us at the earliest stage possible. We have experience with the widest variety of construction methods and know exactly which type of planning and production suits which construction. Together with our

The question of aesthetics, which determine the design, has far-reaching consequences.

customers, we often wrestle with these questions using a 1:1 scale model, which we call a mock-up. Our clients always benefit from this process, whether in terms of evaluating costs, timings or a precise planning process.'

1. BLANKS

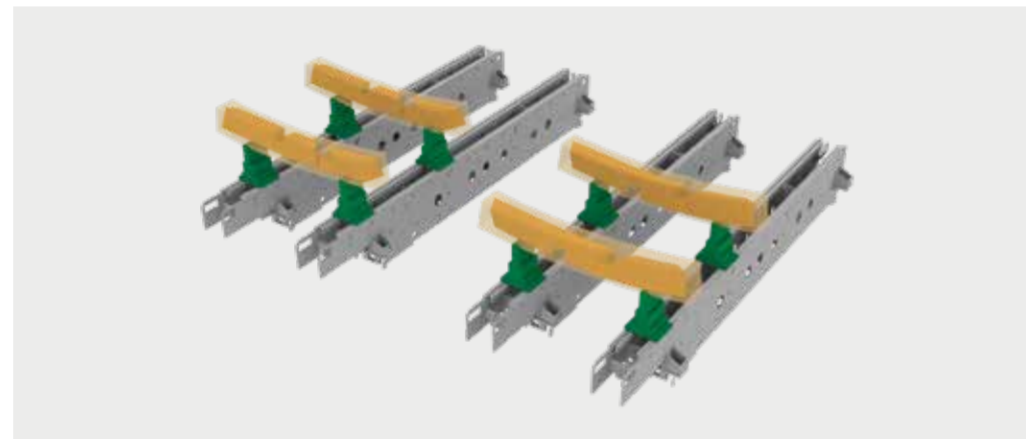


The choice of blank - straight, single-curved or double-curved - depends on:

- > Grain cutting angle
- > Maximum curvature of the component
- > Volume to be chipped off
- > Clamping during processing
- > Costs of the blank

The grain cutting angle is decisive for the load-bearing capacity of a component. Double-curved blanks offer the advantage that their grains run parallel to the load-bearing axis. The maximum curvature defines the lamella strength and impacts the costs. Double-curved blanks can be up to fifteen times more expensive than straight blanks.

2. PRODUCTION/CNC PROCESSING

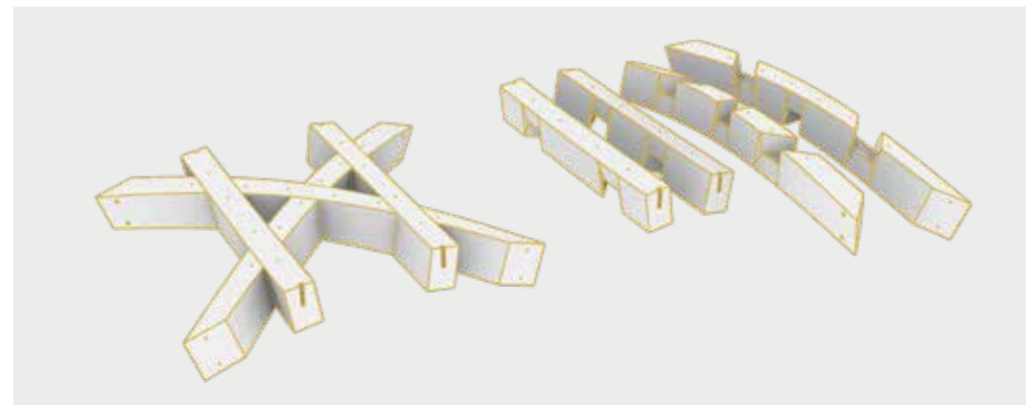


For the traditional beam joining*, we work with industrial standard processes that enable a continuous process chain from digital design to completion on our Hundegger K3 or Hundegger Robot-Drive trimming lines. On Free Form projects, however, these process chains are missing. What's more, with blanks using traditional beam joining, we only have to process joints and sections. Curved components must

also be processed lengthways. You also have to clamp them and use special counter-moulds to ensure a perfect component is produced at the end.

*Beam joining: joining is the dimensionally correct marking, processing, fitting together and labelling of sawn timber and logs for supporting structures, components and mounting parts in carpentry.

3. ASSEMBLY



In Free Form, we are continuing the tradition of pre-fabrication using new technologies. To ensure an efficient construction process, we shift the complexity into the pre-fabrication. This allows the parts to be assembled like a puzzle during construction. Normally, the maximum size of the parts is determined by the trans-

port. On some projects, all components are delivered into the construction vertically from above via crane, which is relatively simple. However, if components have different directions of entry, the assembly must be planned particularly precisely and carried out with millimetre accuracy.



Space for art and culture

An extraordinary roof construction in the shape of a barrel roof, similar to a traditional Zollinger roof, will set the new Kulturhaus Rain in Kleindöttingen apart. Going forward, the replacement building will provide the residents of Böttstein with a unique space for art, culture and other community events.

Incorporating the Zollinger roof into the plans was the client's idea. We developed the roof construction further and optimised the technical production and assembly processes. The unique shape of the roof was a challenge for our timber construction engineers as, in addition to the special construction method of the

were also used in the interior design. The walls were clad in Topakustik panels while the flooring is in oak parquet. Large windows on both sides allow plenty of daylight into the space. The large quantity of wood lends the room its almost meditative effect. Looking from the entrance, the view towards the stage almost gives the impression of being in a church.

On the exterior, architect Raphael Haefeli of Haefeli Architekten based in Döttingen also relied completely on the effect of the natural material wood. He opted for spruce facade cladding in dark-painted tongue and groove boarding.

The large quantity of wood lends the space its almost meditative effect.

roof truss, they also had to incorporate four curved hips into the plans and calculations. For structural reasons, the internal walls were also suspended from the roof construction. However, our small, effective team managed all of the timber construction tasks, planning, engineering and statics highly efficiently and in close collaboration with the client and architects.

Wood on top, inside and outside

In addition to the roof structure, all interior and exterior walls and the roof are also made of timber construction. The incomparable effects of wood as a material

WHAT IS A ZOLLINGER ROOF?

A Zollinger roof is a cantilever roof construction in which identical prefabricated individual elements create a diamond-shaped supporting structure comprising a network of beams. The construction method was developed by Friedrich Zollinger, head of building control for Meersburg, at the start of the 20th century.

The lamella construction method was primarily used for curved roof structures. The curvature of the roof surfaces means that the ridge does not require any separate supports. The roof void can be freely designed and used. The standardised dimensions of the lamellas enables prefabrication in large unit numbers regardless of the building. Despite these benefits, however, the construction method did not establish itself. The detailed construction is very time consuming and the static calculations are demanding.

Sources: wikipedia.com, baunetzwissen.de



A wooden magician's hat

The replacement building for the Otarium at Knies Kinderzoo in Rapperswil caused a sensation before construction work even commenced. The plans, documentation and reports on the construction promise an extraordinary piece of architecture.

The 26-metre-high tower in a curved timber supporting structure is the eye-catcher of the building and yet another exceptional Free Form construction from our timber construction specialists. The new building, inspired by architects Carlos Martinez Architekten AG, was described as a bold, innovative design by Rapperswil councillor Thomas Furrer, Head of Construction, Transport and the Environment. The extraordinary building design evokes a magician's hat. The cantilever roof, designed as a prismatic shell structure, is surrounded by irregularly shaped sheet metal sheds. The building is constructed entirely of timber, enabling efficient construction and assembly. The tower is clad with a metal facade. In addition to the planning, we were also responsible for the 3D modelling.

regarding the design of the metal facade, emphasizing: 'We definitely do not want to move towards being an amusement park.' The music to be played during operation of the new building played an important role in this regard. To allay concerns of neighbours of the children's zoo, the facade is finished with sound insulation. The Blumer Lehmann team is also installing acoustic internal cladding and supporting the builder with cladding for the internal walls. Construction work commenced in autumn 2019. The new building will ideally open in late summer 2020.

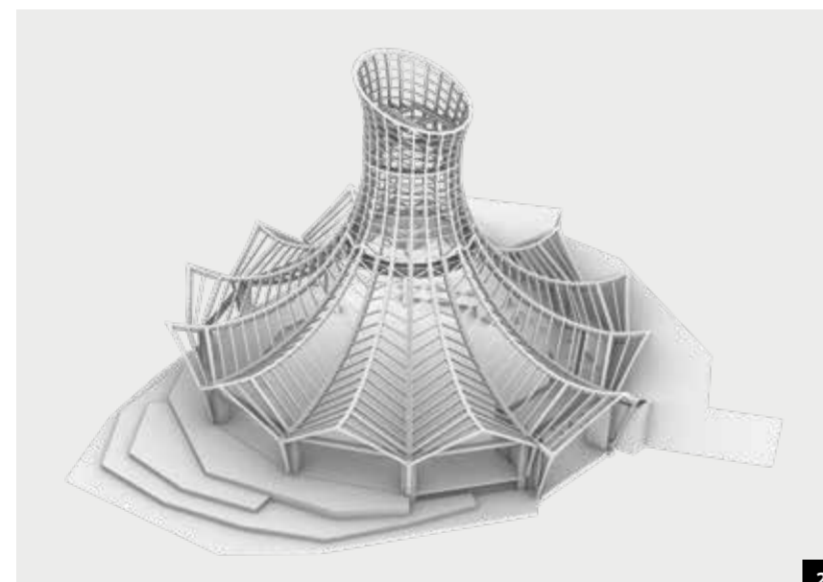
Animal attractions to replace sea lion shows

The sea lions previously kept in the Otarium left the children's zoo at the end of October 2019. Instead, the replacement building will host events with a new direction all year round. With a capacity of approximately 500 people, the building will be suitable for a variety of uses and will be equipped with a retractable stage platform and an extending stand. We are preparing the implementation planning based upon plans from the architect. The general planners Stefano and Maurizio Ghisleni of GHISLENI PARTNER AG coordinated the details, scheduling and costs for all works. Primin Jung Schweiz AG was responsible for planning the supporting structure and structural engineering. The project managers and representatives of the Knie family were given an impression of the enchanting effect of the magician's hat during a visit to the mock-up, the 1:1 scale model, at our production facility. Various curtain colours were also tested. What colour is it going to be? That will also be a surprise.

Internal and external sound insulation

The surface of the 'magician's hat' will, however, be matt and not shiny as shown on the construction documents, explained Franco Knie as he informed local residents of the building plans in person. Knie added that the client, Knie Schweizer National Circus AG, also contacted the Sempach ornithological institute

- 1 How the magician's hat will look. The eight large windows will allow plenty of daylight into the space when required.
- 2 Model of the timber supporting structure.
- 3 Various events will be held in the magician's hat from artistic presentations to banquets.



Exemplary standard for modular educational buildings



Our newly developed modular base models for educational buildings are used when authorities are seeking an efficient and flexible solution. In addition to short planning times, modular construction allows rapid production, a short installation time and reliable cost planning and scheduling.

Developing, learning, changing, trying out new things – the atmosphere in school and educational institutions is dynamic by nature. Rigid structures are out of place. It is thus only logical that educational buildings should offer a particularly high level of flexibility.

Extensive experience in the planning and building of modular constructions for educational institutions, such as the successful Züri Modular ZM, inspire

us to constantly think ahead. Added value for clients and users is central to our approach, including rapid delivery of the buildings, flexibility in planning and a healthy learning environment. We developed two new base models for illustration with the objective of offering future clients a number of construction kits for modular educational buildings that can be designed individually according to their location and use. They have a range of applications as modular educational

buildings, whether as children's daycare centres, kindergartens or school buildings from lower primary to grammar schools. They can also be used for modern school and care concepts. Planning requirements are limited as the base models already fulfil all legal standards as well as energy and structural requirements. And thanks to serial production and the high degree of prefabrication, production costs can be kept low. Nevertheless, base models keep all options open for school communities, urban planners, care institutions and other decision makers and clients to adapt their school building, kindergarten or day nursery precisely to requirements and the existing site area.

Variable base models

From a floor area of almost 400 m² for educational buildings with up to 70 places to a maximum size of approximately 700 m² and 360 learning places, both

base models offer all necessary functions. Naturally, everything in between can also be implemented. 'Both models allow individual floor plans and room sequences and can be extended as required, e.g. with classrooms and separation rooms, seating areas, recreation rooms and even a canteen, kitchen or assembly hall,' says Lukas Osterwalder, educational buildings project developer. The wet rooms and infrastructure rooms will be equipped individually for the requirements and number of learning places.

Interview with Lukas Osterwalder, educational buildings project developer

Standard with ample freedom of design

The diverse design options are only possible due to standardised modules, which determine the basic grid of the building. One classroom combines at least three modules. All other additional main and infrastructure rooms adopt the same basic grid. Depending on their size, these comprise one or more modules and can be combined according to preference or stacked up to three storeys high.



Both models allow individual floor plans, room sequences and can be extended as required.

There is also ample freedom of design in the interior. A selection of acoustic systems is available for the ceiling cladding, while wood-based panels or plasterboard can be used for the internal walls. Additional interior design options, such as a choice of floor coverings, furnishing or materials and colours of the surfaces lend the rooms their individual appearance. The facade can be designed by clients according to their own vision with various wood types, surface treatments or other construction materials. This gives school buildings, children's daycare centres or kindergartens an inviting appearance and allows them to blend into their existing surroundings.

Lukas, Blumer Lehmann has been building modular constructions for various uses for many years. What prompted the development of base models for modular educational buildings?

LUKAS OSTERWALDER That's right. We have already amassed extensive experience in modular educational construction. Our promise in developing the new base models is to resolve the structural considerations to such an extent that we can react quickly and efficiently to the large demand for learning places and reduce planning costs to a minimum for our customers. This puts us in a position to offer educational buildings at an even more attractive price-performance ratio. This also allows us to enter new markets. We have identified particularly high demand in Germany.

What are the most important criteria that the base models should fulfil?

First and foremost, they have to fulfil legal requirements in terms of the number of learning places, infrastructure and technical facilities, for example. We also place great importance on our modular constructions being sustainable. The modules offer a long service life and high quality. Following their intended period of use, they can also be rebuilt elsewhere. The standardisation of the dimensions and systems also offers the advantage, for example, that two buildings previously used at separate locations can be combined and used at a new location.

What challenges emerged during development? Were there any issues that required a special solution?

One challenging aspect was unifying the relatively complex legal requirements to simplify the planning processes. We strive for maximum standardisation for subsequent production. However, customers should still have the opportunity to design the building, internally and externally, according to their requirements. Another unique feature to Germany is that standards are different in each federal state. That starts with the classroom size.

What situations are the base models used in?

Our base models are perfectly suited to providing temporary educational buildings at short notice where the customer wishes to configure the building to their own individual requirements. Where necessary, subsequent relocation of the buildings is also taken into consideration.

What fundamental considerations are central to the planning of modular educational buildings with base models?

From the client's perspective, we recommend preparing a longer-term strategy prior to ordering temporary school buildings. The City of Zurich has been doing this in an exemplary manner for many years. The framework credits for school buildings are approved by the electorate for several years. The City can then respond relatively flexibly to changing requirements. Pupil numbers can often vary drastically from year to year. You have to remember that the political approval process for new school buildings is normally very prolonged.

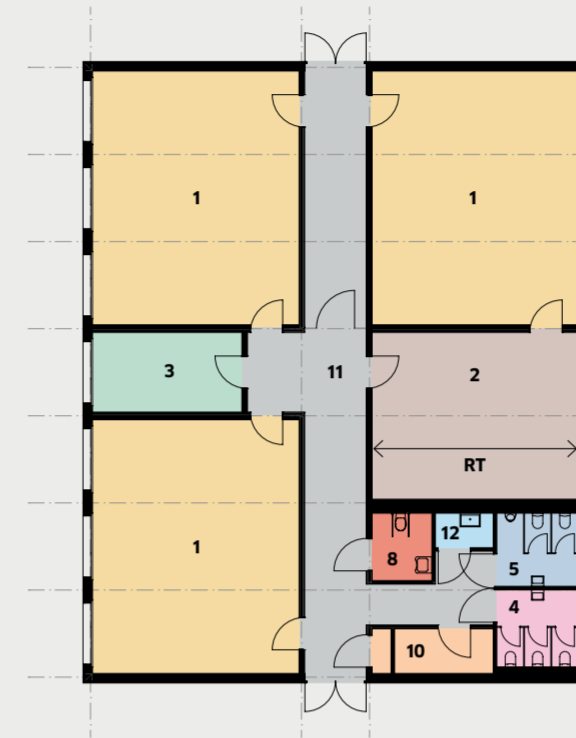
How will modular construction continue to evolve?

What are the project developers at Blumer Lehmann working on and what objectives are they pursuing?

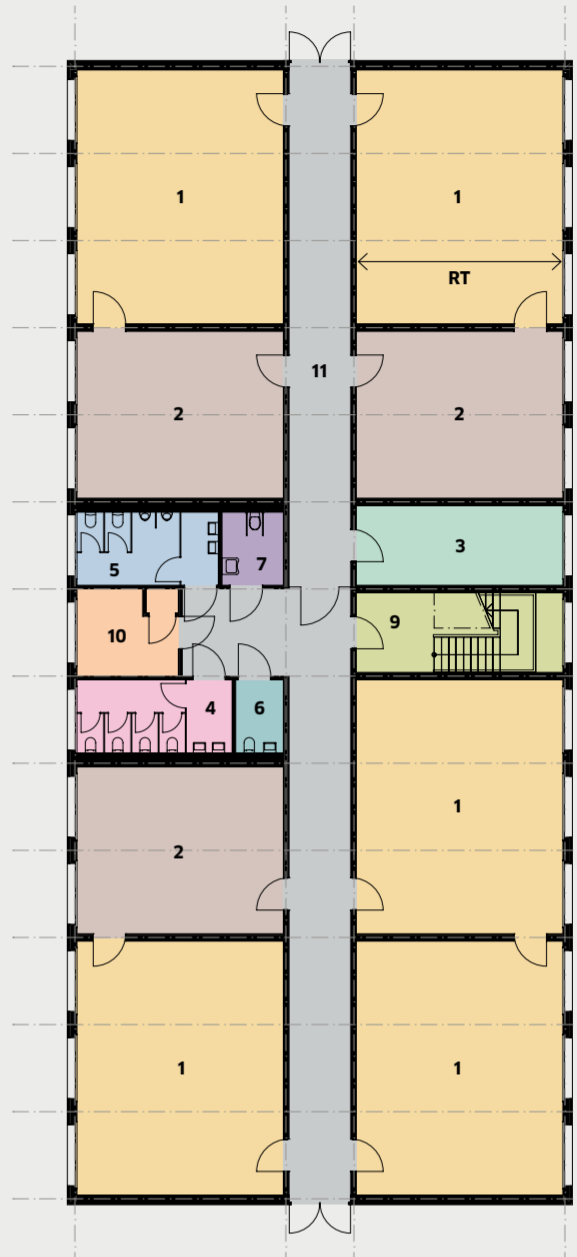
I am convinced that modular construction will play a major role in future, going far beyond educational buildings and into urban development and housebuilding. You hear more and more discussion of inner-city densification and modular construction is perfect for this. We want to help with actively shaping these issues.

→ For further information on our school buildings: blumer-lehmann.ch/schulbau

Small base model



Large base model



- 1 Classroom
- 2 Group room
- 3 Teachers' room
- 4 Girls' WC
- 5 Boys' WC
- 6 Teachers' WC
- 7 WC
- 8 Teachers' WC/
- 9 Stairwell
- 10 Technical room
- 11 Corridors
- 12 Cleaning room

RD Clear room depth of both models 7.58m



Standardised modules offer versatile design options for educational buildings such as day nurseries, kindergartens and schools.



The interior can be designed according to individual requirements, from the choice of materials for floor coverings, walls and ceilings to colours and furnishing.

Temporary structure in modular construction for St. Claraspital

Not for the first time since it opened its doors in 1928, an extension is required for the St. Claraspital. Patients' requirements are changing. A hospital is even less able than other businesses to relocate or close its operations during building alterations. Sensible and well-planned temporary buildings are called for and, thanks to a change in legal provisions from 2018, a temporary hospital in timber construction is also possible.

Increased requirements for a temporary hospital

'The structural requirements of a temporary hospital building are significantly higher than those for other modular constructions,' says our project manager Christoph Halter, who was responsible for the planning and production of the timber construction. 'For example, we had to fulfil the provisions of quality category QSS2 for buildings with use as a lodging establishment A. In addition, all structural components were encapsulated. This means they are protected on all sides with cladding that conforms to fire protection category RF1, ensuring at least 60 minutes' fire resistance in the event of a fire.'

The basic technical fit-out of the modules also meets a very high standard. Electrically conductive floor coverings were installed in some areas and all modules were fitted with heating and cooling ceiling

panels. This allows the temperature in each room to be controlled individually.

Flexible modular construction with benefits

A short construction time thanks to prefabrication in the factory was the decisive criterion for selecting modular construction for general contractor HRS. The window for delivery to the hospital and on-site assembly was limited to just two and a half days. This again required precise logistics and assembly planning by our team.

Not only were the modules assembled in record time, but the overall planning and production time of

around 14 weeks in our factory was very short for the total of 22 modules, which are now occupied with various treatment rooms. The temporary building is expected to be used for two years. During this time, the use of the temporary building will change twice completely, being used by different departments.

However, we have saved the best for last. At the end of the period of use of the temporary hospital building, the client will benefit from our sale and buy-back model. We will take care of supplying the modules to new interested parties. Their use is still open, whether as temporary educational, residential or office buildings.



The Lattich is thriving

Modular construction in exceptional dimensions

Like a hospital, a hotel is reluctant to close its doors during alteration or extension works. Closed doors mean loss of revenue. Because noise emissions could also be reduced to a minimum during the alteration works, the client Bad Horn AG opted for a timber modular building. The client is replacing the east wing of its hotel on Lake Constance with a replacement build-

ing in modular construction. Assembly is scheduled to commence in mid-January 2020.

Room modules as guest rooms

This will create 42 new, spacious rooms, including 6 suites that meet superior standards in comfort. The ground floor will provide a lobby with bar as well as a new restaurant. The construction was planned by architect Thomas Mauchle from Abtwil. Josef Kolb AG was responsible for the engineering services. We are responsible for building 29 guest room modules. Our consortium partner is taking care of production of the suites and some special rooms in element construction as well as the production of the roof elements.

The widest modules to date

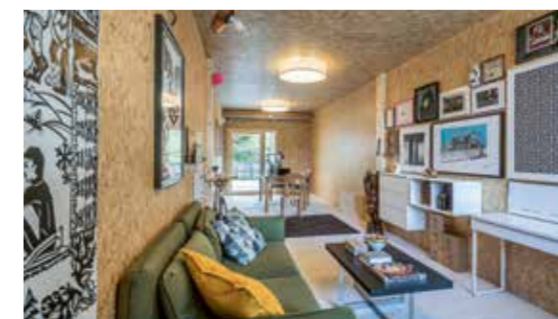
We will be producing the 29 modules at our factory in Gossau over the coming months. Here, we bring you

details of the complete fit-out with flooring and tiling, heating and other interior finishing. Even the balconies are already being placed onto the modules. The furnishings and some fixtures will be installed on site. One unique feature is the dimensions of these room modules. They are approximately 5.3 m wide, 9 m long and 3 m high, making them some of the widest modules we have ever produced. Once built, the modules must then be transported to the construction site. This will require special transport from Gossau to Horn. To avoid disrupting traffic excessively, the over-sized modules can only travel at night and require a police escort like those used to protect a special guest.



HOW THE LATTICH WAS CREATED

The Lattich grew from an idea for making temporary use of the St. Gallen freight yard area as an affordable work and meeting location with development potential. Various investors are behind the project - one of which is Blumer-Lehmann AG. The building was designed by the Zurich-based construction firm in situ. Our timber construction and GC department was responsible for the detailed planning of the construction. The 45 work modules with an area of just under 30 m² were produced in our factory and equipped with heating, insulation, plumbing, electricity and internet connections.



Since spring, the Lattich timber modular construction has been pulsating with life as a temporary hub for creative people and innovative ideas in St. Gallen.

Many doors are left open. Voices burst out from the ateliers, studios, workshops, shops and offices in the Lattich timber modular construction onto the freight depot outside. The terrace in the external stairwell features garden chairs, tables and a barbecue. The notice board is filled with flyers and notices.

Lattich concept really works as a space for working together and interacting. 'You meet people and get to know each other,' says Christine Egli. 'In the brief time since the Lattich opened, we have already organised regular meetings. The Lattich community sets up working groups for general issues such as external lighting or better visitor guidance.' In her role as coordinator, Christine Egli takes active responsibility for tenant networking and issues. Her one-to-one conversations tell her that people feel at home in their offices and the community and are very satisfied with the infrastructure.

Tenants feel at home here. They appreciate the infrastructure and proximity to the city.

→ For more on working at the Lattich, watch the video interview with Christine Egli: blumer-lehmann.ch/lattich

For several months, the creative space has been used by people who work in the creative sector and for whom the temporary building was an opportune arrival at the end of 2018, including architects, a graphic designer and scenographer, an artist, an event planner, a space and traffic planner, yoga instructors, a musician and composer, an olive oil retailer, a painter and builder, metal workers, a geoinformatics specialist and an engineer. People use the space to pursue their business ideas or network as freelancers and particularly appreciate the interaction in the community.

Successful interaction

'I was specifically looking for a working environment that would bring me into contact with people from other professions and where I could be part of a creative community,' says architect Christine Egli. The



Christine Egli, an architect, works in the Lattich and is responsible for coordinating tenant-related issues. Like her, the tenants of the Lattich appreciate a working environment that promotes interaction.

The scent of wood is in the factory air

When it came to converting the heritage-protected former Maggi factory into a modern office building, Blumer-Lehmann AG had to call upon all of its expertise. And show a great deal of flexibility.

Where Maggi used to make soup, Givaudan is now advancing the world of fragrances. The flavour and fragrance manufacturer has transformed a heritage-protected brick factory in Kempthal from the 1930s into a modern office building with 200 workstations, meeting rooms, a cafeteria and orangeries. The first stage was to extend the previous three-storey Maggi with two additional storeys in timber construction. Outside, the rectangular stones, separated diagonally and mounted piece by piece on the new timber construction are in sympathy with the brick construction of the existing factory facade. Internally, the spatial structure of the large factory halls of yesterday have been retained and now comprise clearly structured, modern cluster offices. The two-storey extension includes the cafeteria, two orangeries with citrus and other plants and the executive offices.

Active carbon and volcanic perlite

Does the brickwork of the former Maggi factory still actually carry the aroma of soup and herbs? The fine noses of the personnel of fragrance manufacturer Givaudan should not be influenced in any way at their new location. That is why our project team wrapped all

of the old brickwork in a special film from the inside. This filters the air through an active carbon mat, purifying it before releasing it into the interior. The facade renovation also required an extraordinary solution. Owing to the heritage protection, the factory facade could not be refurbished from outside as per the standard process. Instead, once the interior had been stripped back to the brickwork, the Blumer Lehmann project team applied a special moisture-variable insulation. The reason for this was that this volcanic perlite insulating material has special structural properties, regulating the moisture content of the room air.

The LEED Gold award that the building ultimately received is recognised worldwide and states that the factory conversion has been developed, planned and completed in accordance with measurable sustainability criteria. 'In terms of our areas of responsibility, the certification means that all materials used are environmentally friendly throughout,' says project manager Joren Amrein, adding: 'Even down to the recycling, we had to demonstrate what will happen to the residual material accumulated and show that we would only use adhesives that did not exceed a defined VOC value for volatile organic connections.'

Wooden slats, know-how and plan B from Erlenhof

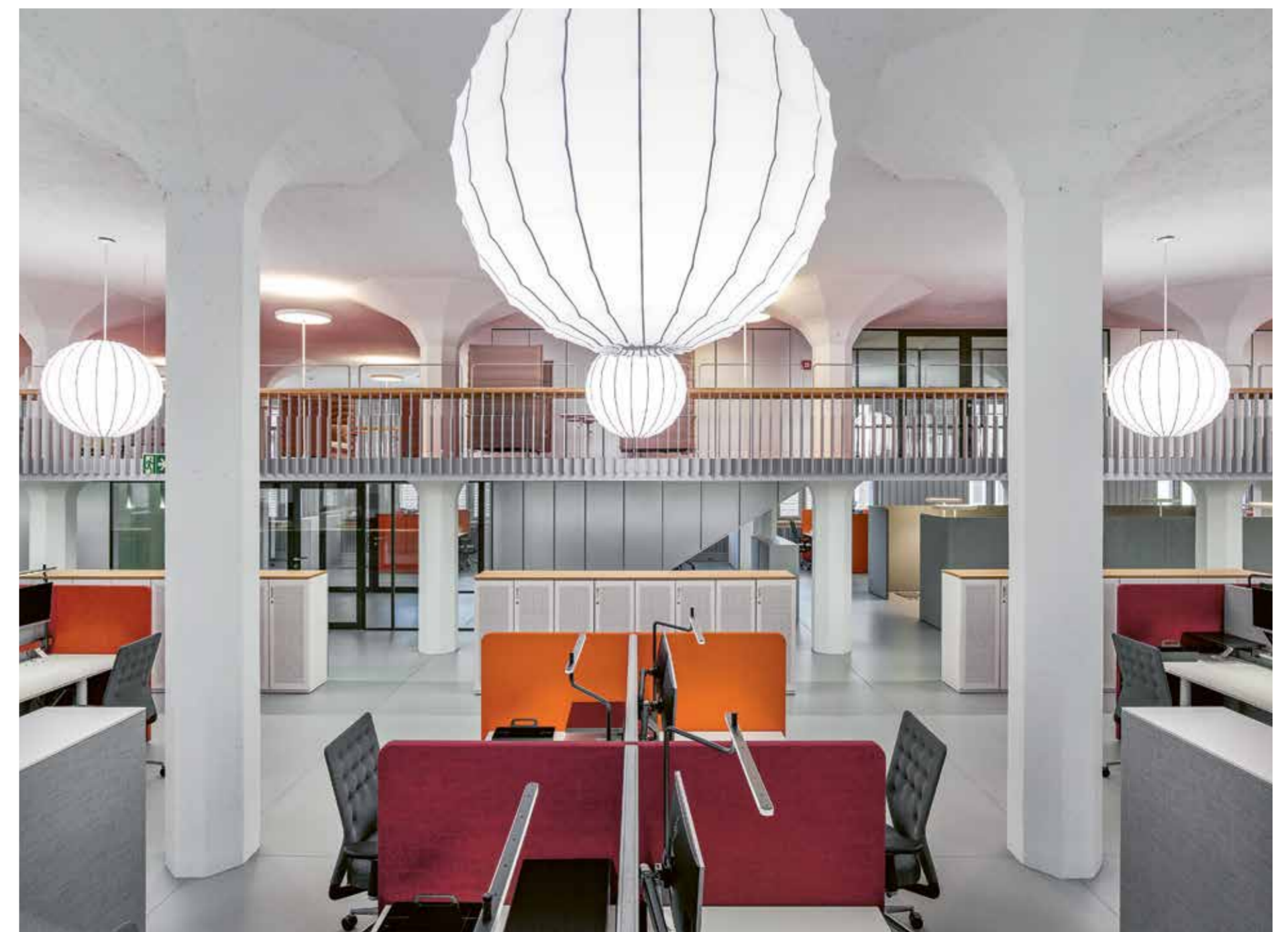
The acoustic slats came courtesy of sustainable forestry management from Swiss forests in knotless silver fir. For the total of 1,300 m² of wall and ceiling cladding, the project team installed 60 km of wooden slats, which is precisely the distance from Erlenhof to the construction site at the Maggi factory in Kempthal. What's more, not a single screw is in sight. This means every single wooden slat had to be fastened invisibly. Our experts repeatedly called upon their extensive know-how and experience to devise special detailed solutions for the many ceiling and window connections, concrete columns, lighting cut-outs and other exceptional situations. They were also required to

The conversion fulfilled the worldwide criteria of the LEED Gold certification.

plan flexibly and act swiftly. Owing to the long duration and high level of complexity of the project, as well as 'surprises' that the existing building fabric held in store, unexpected situations repeatedly occurred that required a new evaluation and an immediate plan B. Or, in the words of project manager Joren Amrein: 'Planning the whole complexity of the conversion on a computer is one thing. Piecing all of these elements together on the construction site and dealing with the many mutual dependencies was another challenge for our team on site.'

A question of attitude

Ultimately, the Givaudan repurposing allowed our conversion experts to prove all of their renovation expertise. Furthermore, with the conviction that 'everything is possible' and with careful organisation and constant communication with the architects at Ernst Niklaus Fausch Partner AG, Thomas Ringler of ppm Projektmanagement and other partners, our team reacted flexibly to changes in scheduling and the building plans time and time again. They also accepted additional responsibilities and found special solutions. 'Flexible and swift action is nothing out of the ordinary for us. We are not put off our stride very easily,' says Joren Amrein.





Historical gem brought back to life

With a high degree of sensitivity and know-how, the granary, a historical gem in Romanshorn, is being renovated. The Blumer Lehmann team renovated the timber construction and the historical roof and installed the shell of the loft apartments and the south-west facade.

Optimal structural qualities thanks to laser scanning

Firstly, our planning specialists made an exact recording of the interior and exterior using 3D laser scanners. They then used the scan data to create the 3D/BIM modelling for the timber construction production data and for the other works. The building, dating back to 1871 and with a total area of 10,000m², first had to be given the necessary stability. To this end, it was temporarily supported on countless tree trunks and its bearing structure, the ceilings above the ground and upper floor, were reinforced with a steel construction. At the same time, the walls and ceilings on the upper floors were removed, which was challenging from a structural perspective.

Once reset in concrete, the existing concrete columns and four new stairwells provided the final stability of the basic construction. A total of more than 200 pilings were necessary to give the 'new' granary stability for the next 150 years.

Atrium for apartments

On the upper floors and top floor of the building, we constructed the shell of the apartments and lofts on behalf of full-service general contractor Implenia. These works commenced in autumn 2019 and will occupy around 15 personnel every day over the coming months. Conducting the shell work for the apartments at great height within the building shell around the atrium was a further challenge. The solution comprised a high platform outside the building. Using a crane, we hoisted the prefabricated timber elements onto the platform and lifted them into place inside the building with another small crane. This resulted in the shell of the first three loft apartments, which was followed by the installation of the external walls to the atrium. This procedure was repeated until all twelve apartments were in place.

Combining the historical with the contemporary

The historic heritage of the building also includes the timber roof truss. Christian Giger, who is responsible for planning the conversion for Blumer Lehmann, explains:

'This will definitely remain visible in the two-storey loft apartments and complement the modern interior design.' We will improve the structural qualities of the roof and renovate the beams. To this end, in addition to the existing rafters, the construction will be reinforced with new purlins and rafters and blown with cellulose. In the sloping roofs, we are installing roof windows and sliding roof windows, which will transform the living room into a terrace at the push of a button.'



The historical timber roof truss will remain visible. This will complement the modern interior design of the two-storey loft apartments.

The works at the granary required much know-how and sensitivity. Ultimately, the combined variety of knowledge and expertise will create an extraordinary, sustainable construction. The impressive testament to the past will appear in its modern guise from summer 2020.

More room through additional storeys

Short on space? Rooms in need of renovation? Extensions and conversions in timber construction create space and improve energy values. An extension in timber construction makes sense in terms of load-bearing capacity and construction time as shown by the example of Dipl. Ing. Fust AG.

Even if existing buildings no longer meet current space requirements, they can still be the optimal workplace. Extensions or additional storeys in timber construction provide a building with more room, fulfil progressive energy standards and create new possibilities.

Weight favours timber construction

Older buildings often lack the structural load-bearing capacity to allow extensions or additional storeys in solid construction. With its low weight and good structural properties, timber construction is the perfect solution. The example of the Fust AG logistics centre in Oberbüren with its 6,000m² roof surface demonstrates how large buildings can be optimally extended via additional storeys while simultaneously guaranteeing the load-bearing capacity. The existing 15-year-old commercial building received a third storey in timber construction with a floor area of 81 m by 86 m, creating space for office workstations, sanitary facilities and a canteen. The canteen also provides direct access to a green courtyard terrace. Igenieurbüro K. Vogt AG from St.Gallen was responsible for the concept, the general planning and the structural engineering.

The crane stood at a height of 22 metres. A particular challenge for us because the entire goods handling process and logistics had to keep operating on the lower floors.

Short assembly times on the construction site

Approximately 550m³ of construction timber was used for the additional storey at Dipl. Ing. Fust AG. The timber elements for the exterior walls were prefabricated in our factory, transported in their entirety to the construction site and hoisted onto the existing building via a site crane. The crane stood at a height of 22 metres. This was a particular challenge for us from an assembly point of view, especially as the entire goods handling process and logistics of the specialist retail chain had to keep operating on the lower floors. 'Prefabrication in our factory enables very short construction times. Costs and schedules can be planned precisely and the building can often remain in use

during the construction phase. This is a significant benefit with space used for business purposes,' says our project manager Ruedi Rhyner.

Perfect combination of the existing and the new

Modern design, a comfortable indoor climate and progressive energy standards are not only features of new buildings. Existing properties can also fulfil the highest standards in architecture and energy efficiency via extensions and renovations. Our experts analyse, plan, advise, coordinate, implement and support clients on their construction project from start to finish. With their extensive experience and in-depth know-how, they can create a harmonious interplay of the existing and the new.

OUR OVERALL PACKAGE FOR ADDITIONAL STOREYS, EXTENSIONS AND CONVERSIONS

- > Complete recording of the building
- > Calculate cost-efficiency
- > Process funding proposals
- > Produce energy certifications
- > Calculate structural elements
- > Proposals for renovation
- > Plan implementation
- > Building application; planning application
- > Coordination of sub-contractors (if desired as GC/TU)
- > Production and assembly of timber constructions



Above: Since completion of the construction works, the additional storey in timber construction is indistinguishable at first glance.

Below: All materials were lifted onto the existing building using a site crane. The crane stood at a height of 22 metres in the centre of the construction site.

Schlösslipark residential complex – a sustainable investment

With its harmonious architecture and ideal location on the outskirts of St.Gallen, Schlösslipark has been well received. A significant factor in this response is that, from the initial idea to key handover, everything ran smoothly.



Architect and property manager Marc Pfister is responsible for delivering construction projects for Raiffeisen Pension Fund Cooperative.

You can find out more about the Schlösslipark residential complex in our in-depth interview with Marc Pfister: blumer-lehmann.ch/schloesslipark

Almost all apartments were let shortly before completion of the development in October 2019. The complex, comprising a concrete/wood hybrid construction with 60 rental apartments and 2 commercial units, blends in harmoniously with the surrounding area and is obviously highly attractive to prospective tenants. According to Marc Pfister, representative of the client Raiffeisen Pension Fund (PF) Cooperative, the construction project was exemplary from start to finish. This extends from the careful planning and implementation to the inclusion of the client.

Planned with an eye to the future

Tenant benefits were central to the project considerations. 'Tenants should like the apartments and feel at home,' says Marc Pfister. As the future landlord of the property, Raiffeisen PF is thinking long term when it comes to tenant satisfaction. This also explains the emphasis on sustainability. 'Sustainable materials are expensive but have a positive long-term effect on the property,' says Marc Pfister.

Architectural concept with plenty of wood

'The architectural competition for the Schlösslipark project was won by the concept from Holzer Kobler Architekturen GmbH, based in Zurich,' he explains. 'The concept is the perfect fit for the tenant segment and, with its evenly dimensioned buildings, is in harmony with the location and topography.' As confirmed by the lettings, the construction in timber elements planned from the outset had a positive impact on tenants. The timber construction also impressed the client with additional benefits. Marc Pfister explains: 'The prefabrication of the timber elements in the factory guaranteed us the desired large volume and precision of the components. This also reduced the on-site construction time.'

Developing solutions together

The careful planning and joint problem solving was a common thread throughout the entire residential development project. The client invested a large amount of preliminary work and clarified detailed questions with specialists at an early stage. We at Blumer Lehmann were also able to contribute our engineering expertise and timber construction know-how at an early stage of the project. We developed a durable, low-maintenance facade construction. Our suggestion of integrating the windows into the facade elements in the factory saved both time and costs.

Coordinating interfaces

The implementation, commissioned by full-service general contractor Stutz AG, was well organised and precisely planned. Marc Pfister described the implementation of the project as completely positive and very gratifying from an investor's perspective. He also added: 'I found the Blumer Lehmann personnel to be highly motivated professionals with a large amount of pride in their work. This had a direct impact on the high quality of the construction.'



© Photos: Raiffeisen PF Cooperative



'Green' Sunnehof residential complex in Fällanden

One thing was clear for the client Fokus Immo AG: the idyllic location near the village stream, the tree stock on the plot and the rural environment in Fällanden demanded an environmentally friendly construction. And as the client strongly associated sustainable construction with wood, timber construction was the

only option considered for the Sunnehof residential complex. The renewable construction material was thus selected from the outset for the residential development comprising 42 freehold apartments. For the client and architects, the principles of the 2000-watt society and the high-density construction of the six-storey, elongated building also represented the cornerstones that make the residential complex something particularly special: environmentally friendly, comfortable and attractive.

All aspects of timber construction

The fact that we received the timber construction contract, and at relatively short notice, represented a fascinating challenge for our planners and implementation

personnel in many respects. 'For us, this meant getting started with the planning immediately so that we could complete the assembly in time,' says Markus Rutz, Head of Sales for Blumer-Lehmann AG. The cross-laminated timber for ceilings and walls had to be ordered at almost the same time that we entered the project. The residential construction project allowed our specialists to prove our diverse timber construction expertise in a single project. The intermediate ceilings, for example, are constructed of a combination of wood and concrete. The visible wood creates a highly attractive living environment. The external facade with pre-weathered, vertical spruce cladding that lends the development its 'woody' character was implemented in classic timber framework construction. And one more construction method was used: the load-bearing and bracing interior walls are of solid cross-laminated timber panels. Hence, different construction types were used according to requirements.

Concern for the environment and benefits for the owner

The importance of sustainable construction to the client is also reflected by the Minergie-P-ECO standard and the geothermal heating. The apartment building is also fitted with a photovoltaic system and the apartments have comfort ventilation. This demonstrates once again that timber construction is particularly suited to fulfilling high standards in quality, comfort, energy, sound insulation and fire protection. The Sunnehof is an exemplary model of a sustainable, high-density residential complex and a green development in a green setting.

For more on the project, visit: fokus-realisiert.ch/wohnebaubauungsunnehof.htm

Modern sustainability

The two-storey building replacing a dated single-family house in St.Gallen was to be a timber construction. That much was clear to the young client from the outset. This was partly on aesthetic grounds but also for sustainability reasons. As a natural construction material, wood therefore dominates the building shell and is highly influential in the modern interior design. A modest material was selected for the walls and ceilings in the form of three-ply spruce cladding. The domestic softwood will also be used for additional interior finishing.

The contract was not awarded via the traditional sequence in this instance. It was the interior designer who recommended a renowned timber construction specialist to their client. The development of the existing architectural concept into a construction project fit for approval was handled by the architects and planners from our GC department. As part of our mandate, our team was also responsible for site management for the entire building shell and was, there-

fore, also the coordinator and interface for works to the building technology and windows.

The gem is scheduled for completion by the end of 2019. The client is satisfied with the work of Blumer Lehmann to date, as has been communicated to our assembly team repeatedly in the form of delicious snacks and an enjoyable topping-out ceremony. 'The passion for wood and craftsmanship was clearly evident every day on the construction site. We were impressed by the positive atmosphere on the construction site and, of course, the efficient and professional work of Blumer Lehmann', said the client in summary. Our own sentiments were expressed in a traditional German topping-out ceremony poem (translated):

*Today, we are all happy and proud,
of all our diligent work here,
The hearty craftspeople,
have shown complete faith in their skill,*

*And so, I wish with all my heart,
and all of a carpenter's might,
As I stand here proudly looking up,
Nadine and Thomas, good luck,
and enjoy your new home!*

The passion for wood and craftsmanship was clearly evident every day on the construction site.



Three-ply spruce cladding dominates the interior finishing.

Industrial warehouse for a panel factory

Almost two years after the major fire, the topping-out ceremony was held for the new Schilliger Holz AG building. It comprises the extended panel factory, the high-bay warehouse and the office space. We look back on a short and intensive planning and construction period that we completed thanks to our dynamic team.

Shortly after the fire in 2017, we started on variation studies for the implementation of the replacement building. By the end of the year, we were able to develop an optimised warehouse design for the client and prepare the corresponding groundwork for the

planning application. In summer 2018, we were commissioned to deliver the new building and set about the detailed planning of the building shell and the design statics of the supporting structure. By December, the shell was up and the 7,200m² roof was sealed! Next, the facilities were installed at a rapid pace. The first panels left the factory in Küsnacht in early summer 2019. Admittedly, the tight schedule was not en-

Here, we look back on a short and intensive planning and construction period.

tirely altruistic. We were delighted to once again be able to rely on the panel deliveries of our long-standing partner as quickly as possible.

We were not only responsible for the timber construction of the new panel factory, we also delivered the entire building shell as joint GC. In addition to the construction of the supporting structure with spectacular 35-metre-long beams, the wall elements and the roof components. This also included the delivery and installation of all windows, roof skylights and doors as well as sandwich panels, roofing and plumbing work and the installation of the Douglas fir facade. It was also one of the first properties to receive the innovative UVood® treatment. To find out more about it, read our 'Wood processing' news document.



Sustainable energy for local industrial operations

Sunscreen for wood

The issue of sustainability is also of visual significance in relation to the new energy plant. The construction is clad with spruce cladding in vertical offset boards. The offset reduces material waste. As a by-product, this also creates a visually attractive appearance. The spruce for the facade boarding also came from domestic forests and was processed by us at Lehmann Holzwerk. The surface was the second pilot project to be treated with UVood®, the sunsreen for wood. Just half a year after completion, the difference in colour from the few untreated facade boards used demon-

strates that the treatment works. The structure continues to impress with its noble paleness. It also shows a clear example of the different appearances of the pre-weathered wood on the roof edge and the wood treated with UVood® in the facade. Last but not least, the construction also demonstrates the openness of local industrial operations to innovation.

For further information, visit: uvood.ch

The new power plant for Schlachtbetrieb St.Gallen is being described as a flagship project. The slaughterhouse received a new wood chip heating system in mid-2019, which provides heat for a variety of purposes. The biomass comes exclusively from domestic forests and is burned to create energy that heats the water tank holding around 200,000 litres of water. Thanks to a sensitively controlled district heating network, this energy is supplied to various factory and office buildings in the neighbourhood.

Our timber construction specialists were responsible for the planning and implementation of the wooden external wall elements as well as the facade.

The issue of sustainability is also of visual significance in relation to the new energy plant.

The 11-metre-high wall elements are finished with glass wool insulation and were installed directly onto the concrete and steel construction on site. The load-bearing roof layer is also constructed in timber.



Tower made from self-forming timber

The Urbach Tower was one of the 16 attractions to behold during the Remstal Garden Show, which was held in Germany from May to October 2019 and showcased 80 km of the landscape. The unique timber construction can still be visited for a few more years. The extraordinary tower was produced with the aid of an innovative self-forming process for curved wood. The innovative tower construction required years of joint research work by the ICD and IKTE institutes at the University of Stuttgart in collaboration with Switzerland's ETH and Empa. Blumer-Lehmann AG and Lehmann Holzwerk AG were involved in the research project as industrial partners.

Researchers are speaking of a paradigm shift in the production of curved wood. This is because the cross-laminated timber components for the tower

were not bent into shape using machine power. When moist wood dries, it contacts more strongly perpendicularly to the grain than it does parallel to the grain. This material property was used deliberately in the production of the curved blanks. For the implementation of the Urbach Tower, we were able to use our entire process chain at Erlenhof: from cutting and processing the logs in the sawmill and planing mill to the drying process for the wood and the final processing and pre-assembly of the structure in our Free Form production facility.

For more on the project, visit: blumer-lehmann.ch/urbach-tower

NEW SCHOOL BUILDING IN AZMOOS

The municipal authorities in Azmoos deliberately opted for a timber construction in domestic spruce and silver fir. This was for reasons of active forestry management and CO₂ optimisation. The winning design selected from the project competition came from the Berlin-based team of architects Felgendreher Olf Köchling. We were responsible for the timber planning, production and assembly of the 2-storey timber element construction. The topping-out ceremony was held in summer 2019 and school operations should resume a year later, with space for around 140 children from kindergarten to year 6.



BICYCLE SHELTER AT HARVARD UNIVERSITY

The new Harvard University Science and Engineering Complex in Boston covers around 500,000m². This also includes a new bicycle stand. The design object was planned by the Boston office of Behnisch Architekten and comprises triangular roof panels in cross-laminated timber sitting on diagonal steel columns. The roof consists of 36 roof surfaces with individual 3D geometries. The shelter will be shipped to the USA as a complete construction kit.



FLORAL CASINO BUILDING

The image of a flower is the inspiration for both the exterior and interior shape and appearance of the Holland Casino in Venlo. Our Free Form structure in laminated timber rises up through the atrium like a flower on a stalk. The artfully curved supporting structure comprising some 300 Free Form parts measures 55m by 45m in the roof, is almost 25m high and supported by the stalk with a diameter of 3.2m. The design came from Amsterdam-based MVSA Architects. The opening of the casino is scheduled for the start of 2021.



Your contacts for timber construction projects

We love being inspired by ideas and driven by challenges. That is why we find ample motivation for intelligent solutions and approaches in every new customer project.

As experienced timber specialists, we are familiar with a wide range of applications in timber construction. And we are always eager to discover new ways of thinking and to expand our range of possibilities. Your

vision is in safe hands with us. We will support you through every stage of your project from the initial idea to the handover of the keys. Need some inspiration? In the reference projects on our new website, you can find a wide variety of ideas that have become reality.



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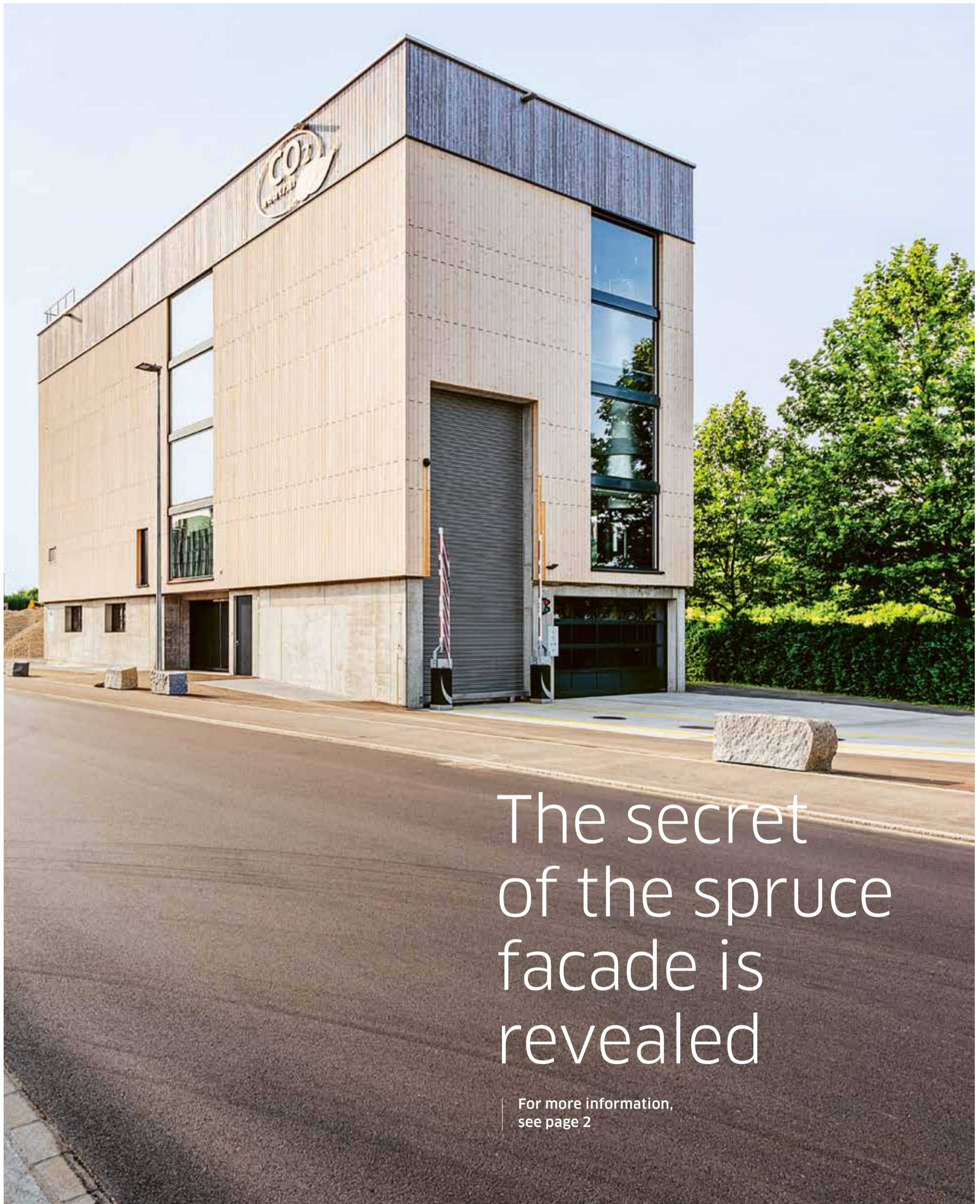
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WOOD PROCESSING ENERGY



Lehmann Holzwerk AG

NEWS
No.12 2019/20



The secret
of the spruce
facade is
revealed

For more information,
see page 2



- 1 The new-build energy plant in Gossau featured a vertical spruce facade treated with UWood®. After around 11 months of weathering with wind, rain and sun, the verdict is extremely positive.
- 2 Left: untreated facade in rough-cut spruce wood, 11 months after assembly. Right: facade treated with UWood® during the same period.
- 3 Facade treated with UWood® compared with a pre-aged facade in spruce, which somewhat resembles the natural greying.



UWood® – the sunscreen for wood

The innovative wood treatment protects wood from UV radiation without changing its feel, natural colouring or odour. The innovative treatment was developed in collaboration with the research institutes ETH Zurich and Empa.

In October 2019, we presented the revolutionary surface treatment to the public for the first time at 'Holz' in Basel. The research work to develop the innovative surface treatment commenced in 2015 in conjunction with Schilliger Holz AG and researchers from ETH Zurich and Swiss Federal Laboratories for Materials Testing and Research Empa. The project was initially supported by Innosuisse. The innovation was inspired by a desire to protect wood against natural yellowing and darkening without the treatment changing the characteristic colour, feel and odour of the wood.

Effective protection against UV radiation

Prof. Ingo Burgert from ETH Zurich headed up the research work. He primarily investigated how the properties of wood and wood-based composites could be optimised. In the case of UWood®, the method consists of treating the wood with substances that stick to the surface. These agents reduce the darkening of the wood, significantly slowing the greying process. Preliminary testing of UWood® with over two years of weathering yielded extremely positive results for the treated wood. In the same way that sunscreen works on the skin, UWood® protects wood against UV radiation effectively and comprehensively.

Gossau's energy plant is the first reference project

The first uses of UWood® on timber constructions are already proving the effectiveness of the 'sunscreen for wood'. In 2018, the energy plant in Gossau became one of the first buildings to receive a spruce wood facade pre-treated with UWood®. At the same time, we installed untreated facade wood on the same building. After around 11 months of weathering with wind, rain and sun, the difference was clearly visible: the facade treated with UWood® shows no greying and barely any visible change in colour.

More research projects

UWood® is not the only research project that Lehmann Holzwerk AG has been involved in during recent months. Our collaboration with the ICD and IKTE institutes at the University of Stuttgart and researchers from Empa and ETH resulted in the Urbach Tower. The construction comprises self-forming timber elements that were also pre-treated with UWood®.

HOW THE UWood® SURFACE TREATMENT WORKS

- > It protects treated wood against UV radiation and delays the ageing process without altering the original appearance of the wood.
- > It significantly reduces yellowing and darkening of the wood on the interior and exterior and slows natural greying. The natural colour is largely retained.
- > It does not change the odour or feel of the wood.
- > This means that the wood is generally subject to less stress than untreated wood.
- > UWood® is ideal for rough-cut or planed softwood on the interior or exterior.

→ For further information, visit: uwood.ch

→ Read more about the Urbach Tower in the 'Timber construction' document or at: lehmann-gruppe.ch/urbach-tower

Interview with Benny Reutimann



Benny Reutimann, Sales, Lehmann Holzwerk AG

contact and exchange with researchers from ETH Zurich. We wanted to learn more from him about this collaboration.

Benny Reutimann, how long did the joint development take from initial contact with the research institutes to patenting UWood®?

BENNY REUTIMANN From initial contact and introducing the project to the finished product took around 4 years. During this time, we conducted ongoing research in collaboration with ETH and Empa, performing tests and making adjustments to achieve the best result for the treatment. Over the last two years, the testing environment has shifted increasingly from the two institutes to Erlenhof. There, we conducted the last major application tests under real conditions and in accordance with the European test standard.

What does the collaboration with ETH Zurich mean for you?

The collaboration was highly interesting and enthralling. Prof. Ingo Burgert, Dr Huizhang Guo and her team have incredible knowledge of wood-based and fibrous materials. It was very educational for me to work, plan and conduct joint tests with this expert team. From the outset, we combined theory and practice and clarified many outstanding questions in advance. Thanks to the successful interaction between

all participants, we were able to work efficiently and bring the UWood® project to market readiness. I am proud that I could participate in the development and meet many new and interesting people.

What requirements do product ideas have to fulfil to enable collaboration with research institutes such as ETH or Empa?

For us as an industrial partner, the market potential of a product obviously has to be there in order to seek collaboration with research institutes such as ETH or Empa. ETH itself strives to ensure that its research results are applied for the benefit of society. In the case of UWood®, this was certainly fulfilled, creating a win-win situation for both sides.

Do you have further product innovations in mind or already in development?

We are currently working on a number of other issues, but there are no concrete research projects like UWood® at present. However, I would be delighted to develop other innovations in conjunction with research institutes. We are always open to new ideas at Erlenhof. Let's wait and see!

Collaboration for the future

UWood® treatment can be ordered from Lehmann Holzwerk AG. Benny Reutimann, our head of wood processing sales, is your contact. He is responsible for the UWood® project for us internally and is in constant

Erlenhof extension: a major project of our own

More efficient, precise, faster and tailor-made – we are upgrading. There have been a number of new additions to Lehmann Group’s Erlenhof production site this year in terms of installations and buildings. These have optimised the production cycle, increasing customer benefits.

The Erlenhof site has seen far greater activity throughout the year than usual. Lorries rolled up and excavators cleared building plots. Parking spaces have been reallocated, roads and paths relocated and much more to realise our own major project. We have expanded and converted our industrial site and operations. Lehmann Group’s operations need space.

Planning for the Erlenhof extension commenced in 2018 under the leadership of project managers Urban Jung and Valentin Niedermann. The planning and production involved not only the decision-making committees of the Board of Directors and Executive

Board but also heads of department and personnel. The major construction works should be largely completed by the end of 2019. To ensure that the Erlenhof operation has sufficient space now and in future, we also hope to relocate the stream that flows beneath part of the company site in 2020. Additionally a new access road is being planned. Further stages of development, such as a new office building, are also under discussion.

Coordinating twelve construction projects

All aspects of the Erlenhof extension have been coordinated by Valentin Niedermann, head of technology and processes for Lehmann Group. He organised, coordinated and was responsible for the twelve individual projects. At the same time, he had to ensure that the day-to-day production operations continued at full capacity without disruption. You could almost imagine him sitting in his office with a magic wand. His responsibilities over the last year have included the planning and implementation of demolition and relocation works on entire halls and storage yards, road relocations and the redesign of spaces and paths. How-

ever, the core of his work comprised the new silo, power plant and warehouse constructions as well as planning the new production facilities. The extensive renovation of the Erlenhof site has allowed us to achieve our stated objectives. We are increasing our waste timber recycling capacity, i.e. in terms of pellet and electricity production. We are simplifying our production processes and logistics. And we are creating the conditions for new products such as slats, cladding and external cladding, e.g. with the planned finger-jointing.

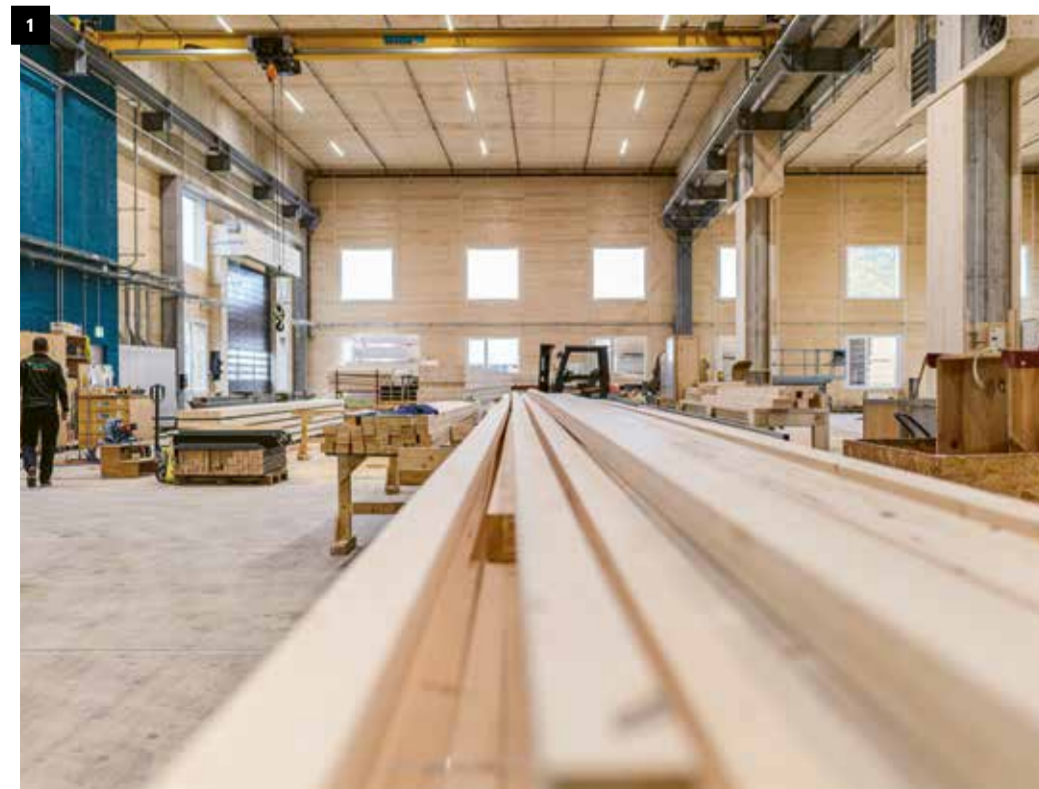
However, it was essential that all the construction and extension works at Erlenhof did not disrupt the processing of customer projects. Day-to-day operations had to continue without restriction at all times. The mutual dependencies of the different construction phases and the twelve construction sites required careful planning and adherence to the specified deadlines. This called upon all the experience and expertise of our in-house technology, site management and timber construction experts.

Objective: process more Swiss wood

‘We have increased our pellet production capacity via additional and extended facilities. We introduced double-shift operation in the sawmill. Our facilities are now in operation from 6 in the morning to 11 in the evening,’ says Urban Jung. ‘Because we are now cutting more wood, we are creating more sawdust and waste material. And, in order to use more of this waste material, we have doubled our pellet production and storage capacities. Higher pellet production means higher energy requirements. Hence, we also had to replace and upgrade the heating system in the power plant. This means that we can now achieve 10 instead of 8.5 megawatts in terms of process heat production to ensure that we have the necessary energy available.’

More automation in our operations enables more economic production but also means that machines are taking over the work of people. ‘My objective is that, ultimately, only one man will be required to monitor the fully automated finger-jointing lines,’ says Urban Jung, speaking from an economic perspective. ‘However, the extension of our operation did not cause any job losses. On the contrary, we are delighted that we have been able to welcome new colleagues to Erlenhof in some newly created roles.’

The extensive renovation of the Erlenhof site has allowed us to achieve our stated objectives.



1 The partly automated trimming line in the new Hall 16 increases capacity and productivity.
2 In the metalworking shop, we produce steel components for timber construction projects.
3 Hall 10: the new finger-jointing line and sorting plant with scanner technology are allowing us to extend our product range.



More automation in our operations enables more economic production but also means that machines are taking over the work of people. The extension did not cause any job losses. On the contrary, we are delighted that we have been able to welcome new colleagues to Erlenhof in some newly created roles.

Extension of Lehmann Group production facilities – overview of the projects



12 CRANE SYSTEM

Fully automated crane system feeds the heating systems with chips and bark.

- > Saves manual sorting via wheel loader
- > Weekend operations are fully automated



1 HALL 16

Partly automated trimming lines

The additional trimming line extends our capacity and enables more efficient cutting to size of timber components.



2 SUCTION TECHNOLOGY

Extension of the suction technology across the entire company site

- > Provision to all relevant company buildings and removal of shavings and sawdust



3 INFRASTRUCTURE EXTENSIONS

Further infrastructure extensions required by the upgrade of our production standard

- > Pumping station and sprinkler system
- > Firewater basin and sprinkler system
- > Transformer station
- > Server room



5 FINGER-JOINTING LINE - HALL 10

Repurposed production hall for new products – the fully automated finger-jointing line over an area of 1,500 m²

- > Flawless, high-quality wood as a raw material for further processing into interior and exterior cladding
- > Lehmann Holzwerk AG is another Swiss provider of finger-jointed slats in standard lengths and made-to-measure production in Swiss wood
- > Production of cladding, raw material, profiled boards for other planned products
- > Calibrated sawn timber from our sorting plant eliminates dimensional tolerances
- > Advantageous for further processing: precise, reliable dimensions, particularly on automated systems



4 SORTING PLANT - HALL 10

Fully automated dry wood/sawn timber sorting plant with state-of-the-art scanner technology

- > Sorting of dried sawn timber in the fully automated sorting plant rationalises production
- > Increased value creation and flexibility in production
- > Reliability in the quality assessment of wood and thus greater process stability



WHAT EXACTLY IS FINGER JOINTING?

In brief, the wood quality is 'improved' by cutting the defects out of the wood and joining the wood back together with a finger joint. While this changes the appearance or surface of the wood, it increases the wood quality achieved. Another benefit is that finger jointing also allows the production of customised lengths.

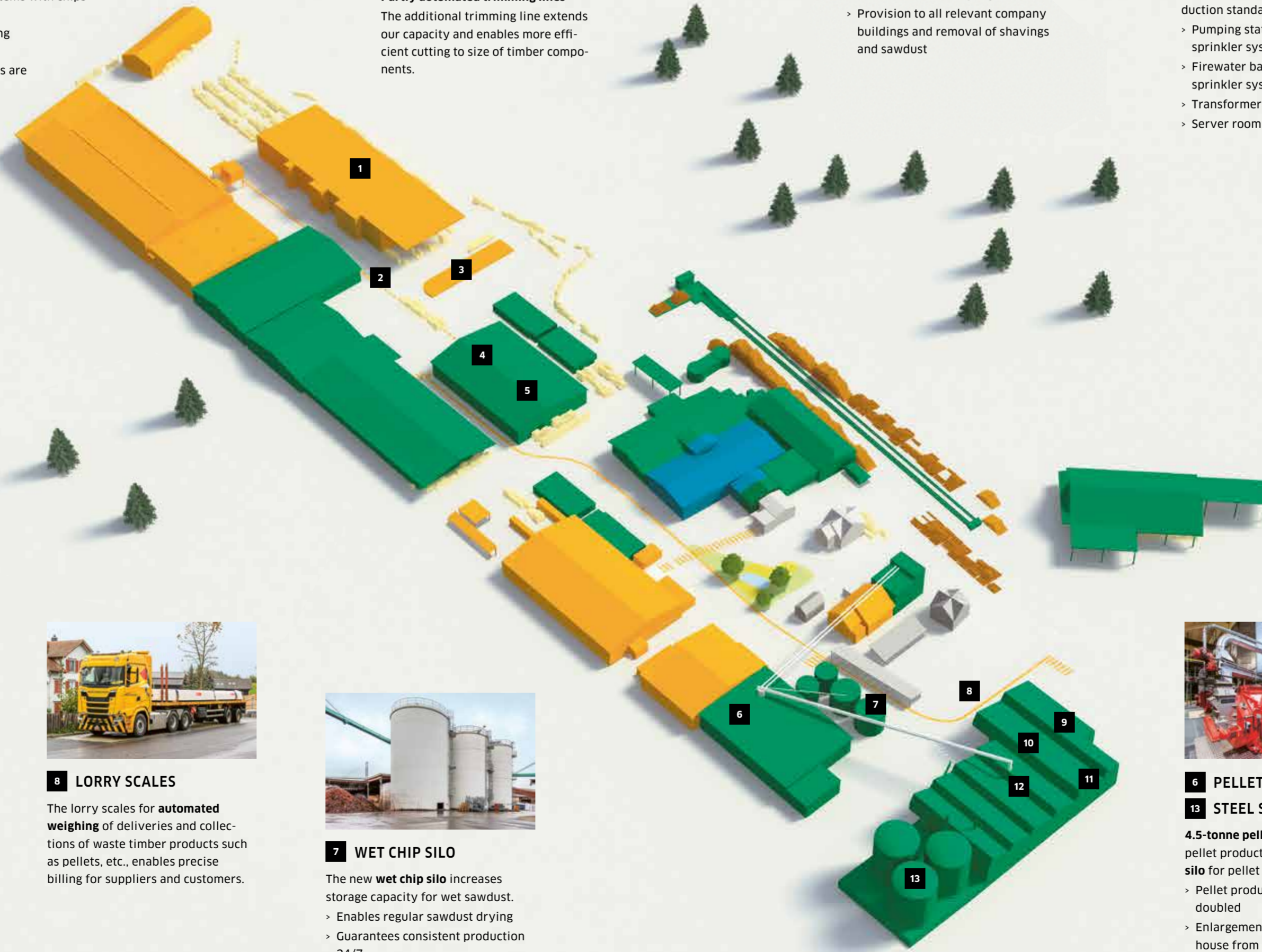


6 PELLET PRESS AND

13 STEEL SILO

4.5-tonne pellet press for increased pellet production and an additional silo for pellet storage

- > Pellet production will be almost doubled
- > Enlargement of the pellet warehouse from 4,000 t to 6,000 t guarantees regular customer deliveries, even in winter months



11 POWER PLANT EXTENSION

Replacement heating system and extension of the process heat production

- > Energy production is being increased from 8.5 to 10 MWh
- > This is a prerequisite to achieve increased capacity in waste timber production



10 METALWORKING SHOP

Metalworking shop for the production of steel components for timber construction



8 LORRY SCALES

The lorry scales for automated weighing of deliveries and collections of waste timber products such as pellets, etc., enables precise billing for suppliers and customers.



7 WET CHIP SILO

The new wet chip silo increases storage capacity for wet sawdust.

- > Enables regular sawdust drying
- > Guarantees consistent production 24/7



9 MAINTENANCE

Maintenance of facilities and machines

Your contact for sawn timber products, pellets and energy

We in the timber processing team work with in-depth expertise and dedication to process our local raw material, wood, into high-quality products: sawn timber, slats, construction timber, terrace grating, facades, planed products, structured wood and pellets, briquettes and litter for small animals. We are fascinated with finding the right balance in wood processing, both within the sustainable wood cycle and between

craftsmanship and industry. We always consciously look at the bigger picture and go the extra mile in developing new products and fulfilling individual customer requirements. You can learn more about our products and services on our website.



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