

NEWS



Partnership in action in uncertain times

Dear Readers,

We currently find ourselves in uncertain and extraordinary times. The coronavirus crisis calls for an extreme amount of flexibility from us, not just as individuals but as an organisation and employer.

We are thankful that we have not had to shut down our production sites since spring 2020, that our plants have always been supplied with round timber and materials, and that assembly work on the construction sites was able to continue almost without interruption. We are also thankful that we were able to count on the full commitment of our team throughout this crisis. We have learned a lot – but one thing in particular: as an industrial and manufacturing enterprise, much of what we do can't be relocated to a home office. The discipline, prudence and motivation of all our members of staff has meant that we have only had a handful of cases of illness and were consequently able to satisfy our performance promises. And, of course, we are thankful that the construction and timber industries continue to thrive, that we are experiencing brisk demand and that we can rely on longstanding and loyal customers and partnerships.

We can all see how the crisis is forcing the pace of different developments. Digitalisation is one example, but also the awareness of areas such as sustainability and local supply chains. Demand for Swiss wood is growing, as well as the desire to build sustainably using timber. Trends in living and working are also intensifying. Like living on a small scale, microliving, the desire to reduce one's ecological footprint or the demand for flexible solutions for adding storeys or extensions to buildings. What has been a noticeable

trend for some years is now reality. Linked to this are new requirements from our partners and customers, which we accommodate with our enhanced products and services. Read more about this in the fascinating articles and interviews in this edition of 'News'.

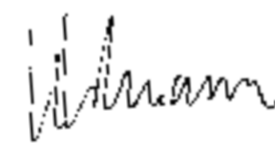
Over the last year, the crisis has forced the pace of many developments.

Fast-tracked digitalisation provided a steep learning curve for our sales, administrative, project management and IT teams over the last 12 months. Both internal and external communication over the last year was almost entirely digital. In terms of service provision, timber construction is luckily ahead of the curve in terms of digital planning and implementation processes. Because without these tools and methods, Free Form construction projects would simply not have been achievable. Digitalisation and serial pro-

duction are also a hot topic in the field of modular construction. As a Swiss producer, we still need to be able to keep pace with our competitors abroad in terms of price and to organise our service provision as close as possible to the customer – this also reduces transportation costs. These are some of the reasons that motivated us to open a modular construction finishing plant in Germany. We are convinced that having this additional Blumer Lehmann location in Grossenlüder means we will be in an even better position to satisfy the requirements of our customers in Germany and the Nordic countries. We are especially pleased that we were able to bring back longstanding and exceptional staff members to set up this plant and advise local customers.

space for new drying capacities, a high-bay warehouse and additional service-based and production posts.

You can see that it is and will remain exciting in and around the Lehmann Group and our material, timber. It now remains to wish you happy reading and to offer my sincere thanks once again for all the trust, support and highly cherished partnership in action.

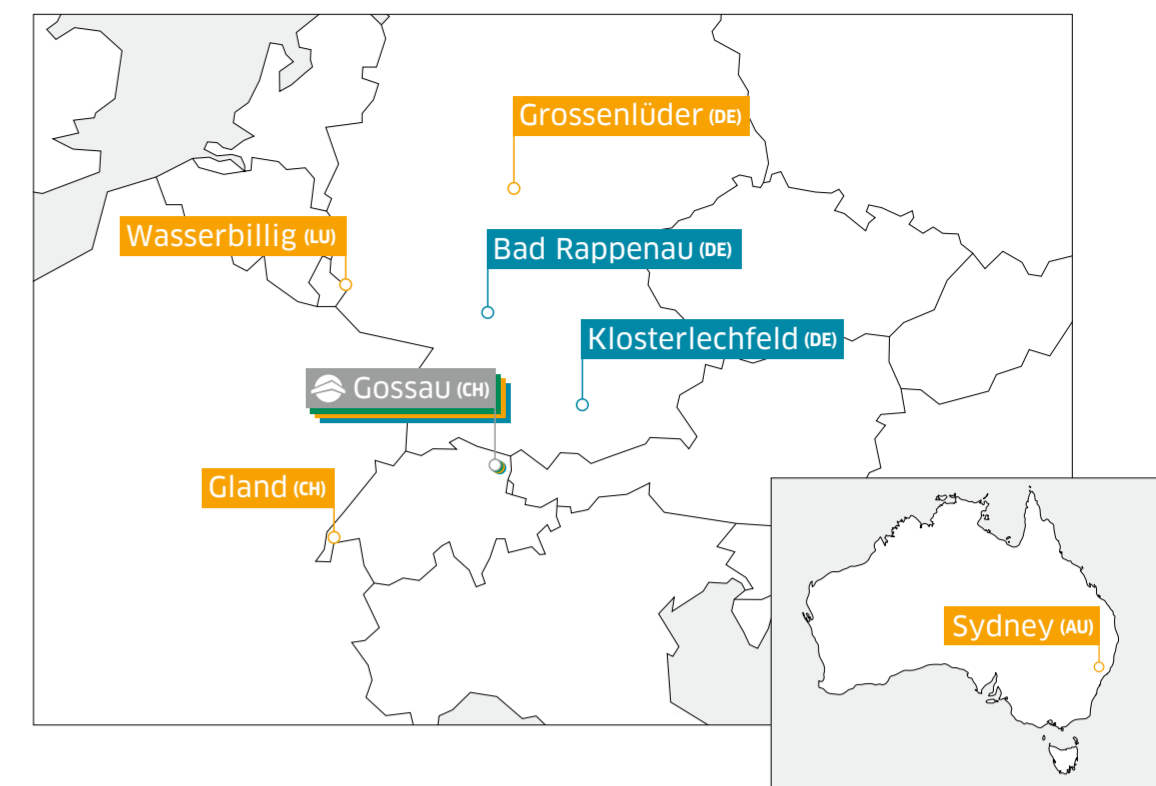


Katharina Lehmann
CEO Lehmann Group |
Delegate for the Board of Directors



Lehmann Group locations

New challenges motivate us and drive us forward. Our specialists in timber and silo construction now offer their expertise at a range of locations in Europe and Australia. It is important to us that we nurture relationships with our customers and invest in the sustainable growth of our Group.



Our values

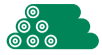
The world is changing and presenting us with many challenges: personally, as a company, in leadership matters and as an employer. This has prompted us to define our strategic approach to company development. At the same time, we are investing time in cultivating joint values. These guiding principles are here to help us understand the spirit of the Lehmann Group across all its areas and locations, to put this into action and also ultimately to offer our customers added value.

- 1 **Ambitious**
fascinated | purposeful | motivated | passionate
- 2 **Curious**
open minded | transparent | constructive | thoughtful
- 3 **Human**
appreciative | respectful | trusting | connected | warm | authentic
- 4 **Aware**
responsible | accountable | reliable | caring
- 5 **Entrepreneurial**
skilled | forward looking | innovative | use oriented

→ For more on this, visit: lehmann-gruppe.ch/werte

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Cover
Lecture room in the St.Gallen botanical gardens, Tom Munz Architekt
Photo © Ladina Bischof

 A total of 150,000 m³ of round timber was utilised in full at the Erlenhof in 2020. This is roughly equivalent to 27 truck-loads per day.

DIGITALLY INFORMED

If you would like to stay updated about the latest projects and developments across our different divisions throughout the year, please register online for our e-newsletter.

↳ lehmann-gruppe.ch/en



 In 2020, we produced 97,000 m² of timber elements. That's equivalent to 14 football pitches. Among other things, these were turned into 522 modules.

THE MOST ON SOCIAL MEDIA

From Korea and Thailand to Russia and the top of the Chäserrugg mountain, we create extraordinary timber and silo structures. It therefore comes as no surprise that our beehive post got the most likes and comments. Plus: we are delighted to be able to support the unique Bee Family bee protection project by sponsoring one of their bee colonies. So look out for the bees flying about in orange and green.



Left to right: Martin Looser, Markus Rutz, Lukas Osterwalder



Top: Alexander Holl, below: Dieter Zinkand

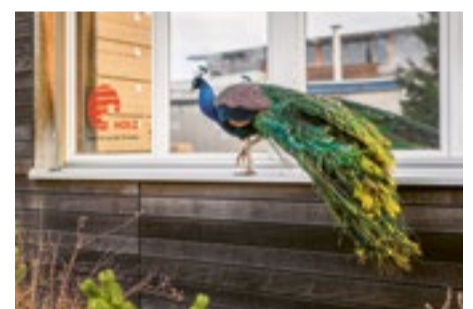
New division management and setting up our Blumer Lehmann site in Germany

In September 2020, former CEO Richard Jussel handed over the reins of Blumer-Lehmann AG to a team of three. The CEO's duties and responsibilities have since been overseen by Martin Looser in the Free Form division, Markus Rutz in the Timber Construction

Excellence division and Lukas Osterwalder in Modular Construction. Setup of the German branch for timber construction and engineering is being supported by Alexander Holl in project development and sales and Dieter Zinkand as Head of Production.

WHAT'S NEXT FOR THE ERLENHOF EXPANSION

The next stage of the Erlenhof expansion begins in May 2021. The Loobach stream will be diverted to the north and access via approach roads will be extended. This gives us more space for our operational activities while allowing us to improve flood protection and the stream's biodiversity at the same time.



Growth of our mini poultry zoo (+44%) in 2020 from 9 to 13 animals.

Fun fact: our peacock is not just vain, but also clearly very proud of Swiss wood.

 Salt silos are increasing in size; one silo held on average 165 m³ in 2018, but 185 m³ in 2020.

TIMBER CONSTRUCTION ENGINEERING



Blumer-Lehmann AG

NEWS
No.13 2021

Modular construction on the rise

More on the microliving trend
on page 4



How will we be living tomorrow?

How we live, think and act today shapes our future. Futurologists define urbanisation, individualisation, mobility, neo-ecology, 'new work' and other megatrends as drivers that influence our lifestyle and how we imagine the world to look in the future. What effects do these long-term global changes have on how we live, work and build?

According to scenarios outlined by trend researcher Oona Horx-Strathern at the ZukunftsInstitut, for example, many and varied models of work, family and types of housing are emerging to inform our future living spaces and environments.

Modular construction holds the answer to the requirements of future buildings.

Greater diversity in work models, family structures and types of housing

More possibilities and new freedoms allow personal visions to be turned into reality and let people arrange their lives around their own plans, preferences and goals. What's more: traditional boundaries are breaking down. Different areas of life are intertwining: job to work, job and free time, public and private, family and friends. Added to this is the desire for and expectation of flexibility, mobility, digital interconnectedness and modern technology. Like a kind of turbocharge, coronavirus sped up the fusion of living and working as well as the digitalisation of the world of work. One example of this is how home offices became so established in such record time.

Holistic town planning and multifunctional designs

Something that is becoming increasingly important in urban development, town planning and modern architecture is thinking in terms of holistic systems that connect all areas of life, that support a sense of local community and work towards climate objectives. Another factor that can be seen in the construction industry are heightened requirements for multi-use options for office and residential buildings.

The houses of the future are flexible, sustainable and high quality

When we look for types of housing that offer great flexibility for new concepts and changing circumstances while being environmentally friendly and sustainable at the same time, the search quickly leads to timber construction. Above all, modular construction, highly efficient and prefabricated in series, combined with timber as a construction material holds the answer to the requirements of modern and future buildings. Whether it's to provide more space in the shortest possible time frame, extend buildings, add extra storeys or create new high-quality buildings.



Infographic: Dominik Sieber, Studios Zürich, Basel
Source: Home Report 2021, ZukunftsInstitut, Oona Horx-Strathern, various

Trends

HOUSING PLUS

Housing plus fulfils a range of housing requirements. Whether this is co-living models for students, individuals or older adults, cooperative housing or living in social institutions. It makes sense that the building itself as well as its rooms and functions should be adaptable. Investors and building contractors need to respond to the growing demand for multifunctional and sustainable living spaces.

HOME SUITE HOME

With home suite home, you make up for cancelled holiday plans with a home that feels like a hotel. This living trend is a response to the desire for a feelgood, cosy atmosphere and high levels of comfort. Building on the new relationship to one's own home, people create their own personal retreat with a spa in the bathroom or minibar in the living room.

HOME OFFICE

Surely everyone is now familiar with the term 'home office'. With the sheer amount of time we spend at home, an interior design approach featuring furnishings, technology and layouts that encourage communication and concentration and support stress-free working is gaining traction.

ROMANCING THE BALCONY

Romancing the balcony is the term for creating a new living space on one's own balcony. As a space between home and city life, this newly created little outdoor paradise combines the intimacy and security of one's own apartment with 'life outside'. In more general terms, all green spaces in and around one's own four walls are gaining in importance. In towns, urban quarters and housing developments, these are more and more instrumental in providing space for leisure, exercise and growing your own food.

CIRCULAR ECONOMY

The aim of a circular economy is to use raw materials efficiently and for as long as possible, over and over again. The circular economy approach is growing increasingly important in the construction industry. An example is timber modules, which attain a service life of 40 to 50 years, can be recombined in new locations, repurposed and used for the production of energy at the end of their life.

VERTICAL VILLAGES

When space is limited, vertical villages use structure and architecture to place a conscious emphasis on interaction. The vision of quality-focused densification, then, begins to become a reality. Urban areas will experience yet more development: extensions, additional storeys, temporary uses or intelligent utilisation of open spaces and land resources. The strengthening of social contact, cohesion and local businesses, as well as reducing dependencies, should be achieved via smart town planning. The momentum for this trend can be felt in the public's demand for more green space, less traffic and more creative freedoms.

MICROLIVING

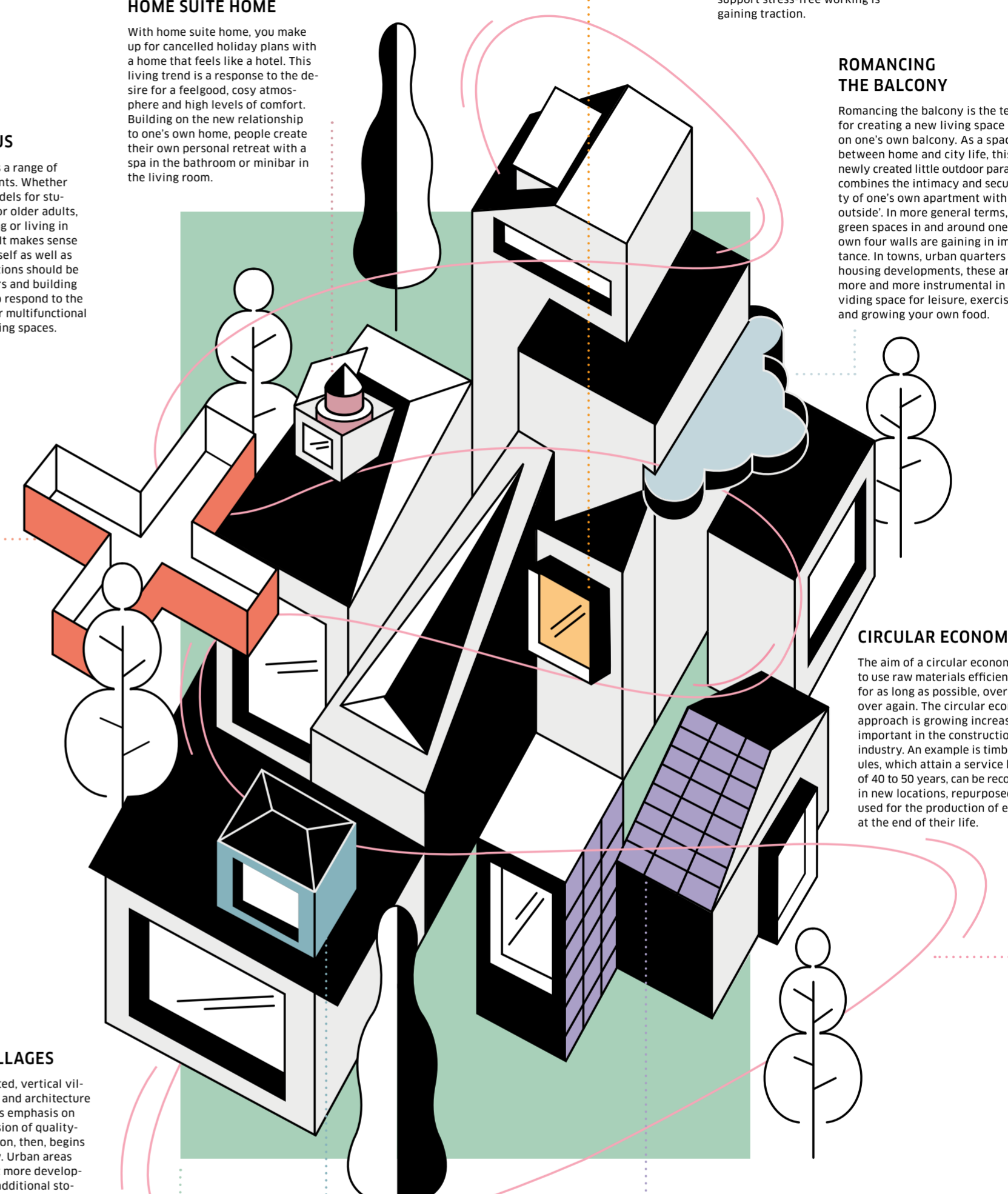
Microliving offers affordable small-scale living spaces in central urban locations, and is aimed particularly at young students, individuals or older adults living alone. Well-planned layouts in micro-apartments and communal areas meet the need for both privacy and community. Domestic and health-related services as well as fully accessible designs give this form of housing added appeal for older adults in particular. More on the microliving projects in St. Gallen and Herisau can be found on page 4.

HERO MATERIAL

A building material becomes a hero material when it not only fulfils its function but also expresses individuality and identity. By using a specific building material, the building contractor consciously communicates, creates or consolidates a message or image. The trend extends as far as the concept that the materials used can potentially go some way to making the world a better place. Timber is and shall remain far and away our favourite in this respect.

THIRD PLACES

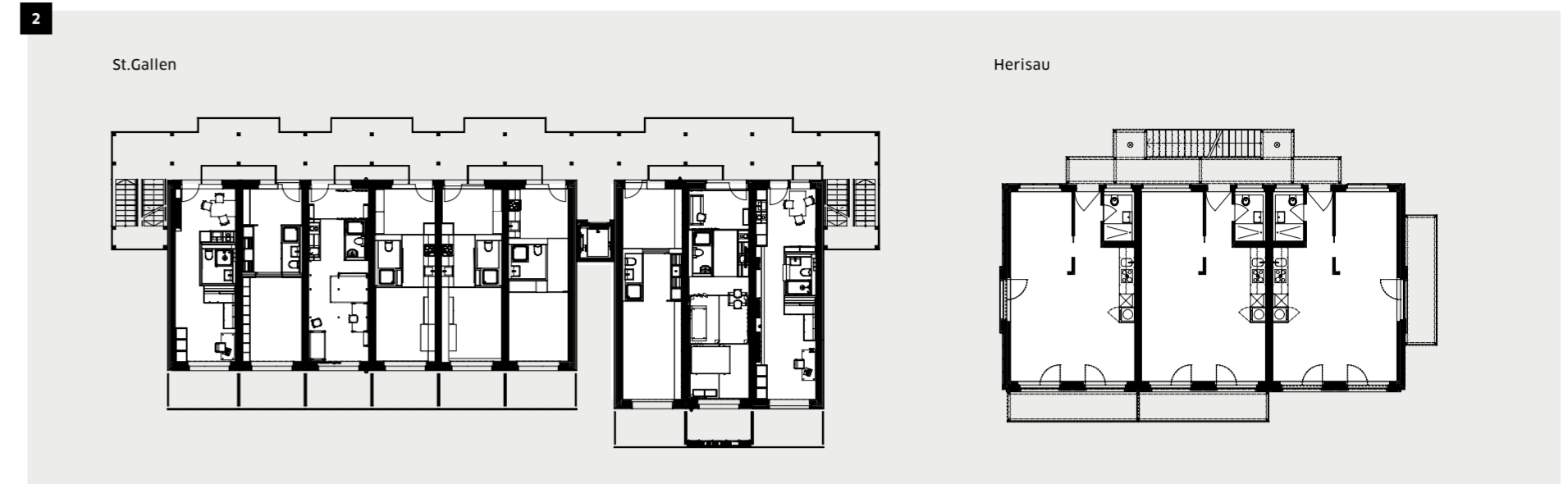
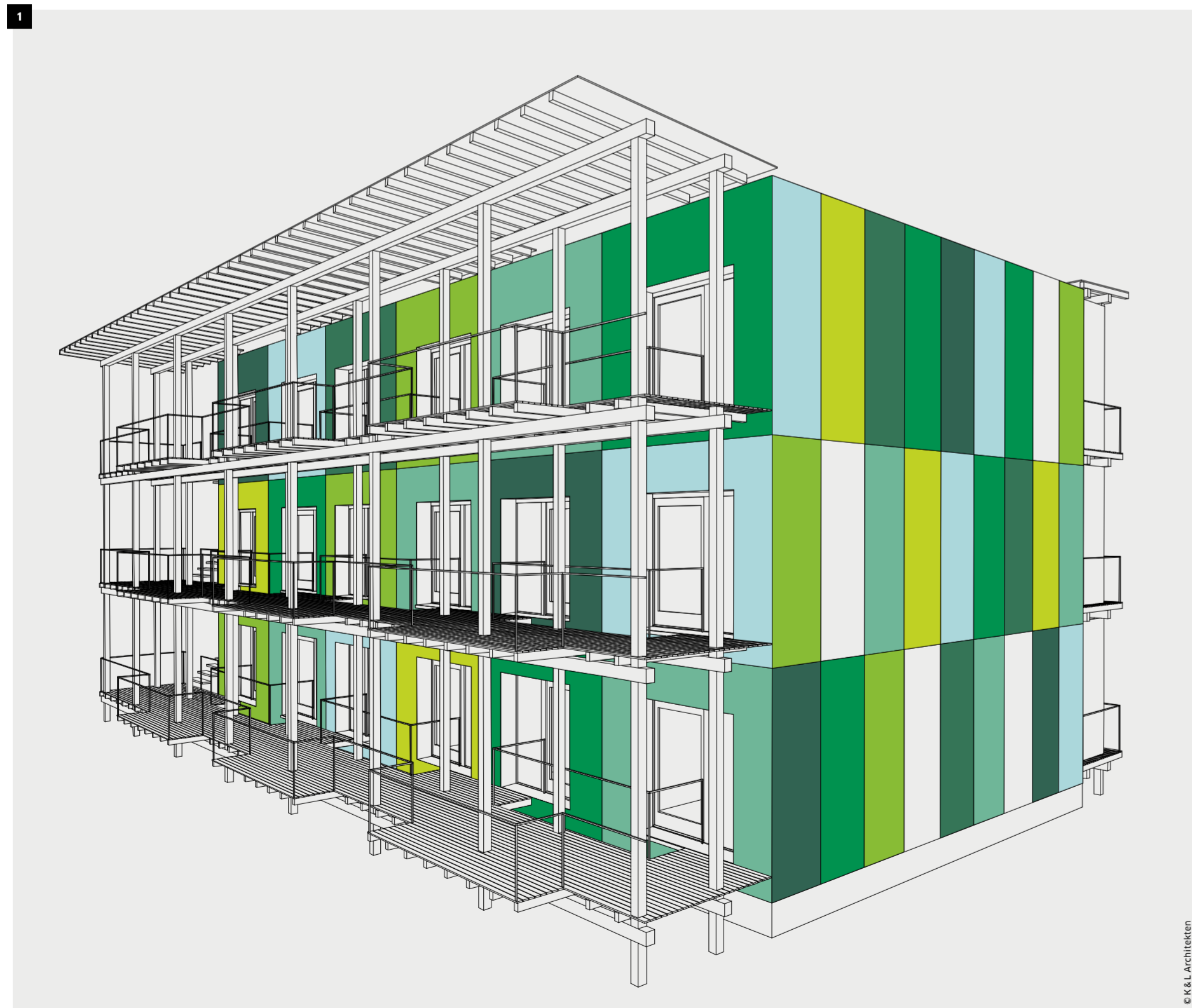
Third places is the term for spaces between home (first place) and work (second place). The fact that we now spend more and more time on trains, in cafés, in holiday accommodation or elsewhere is in part explained by our increased mobility and portable working practices. As a consequence, these former transitional spaces have taken on greater significance - and this also applies to how they are designed.



Microliving in timber modules

In Eastern Switzerland, a trend is emerging that has already taken root in cities in particular: microliving – living in well-planned, small-scale apartments. Microliving doesn't just mean cutting back on possessions and living space, but also reducing one's carbon footprint. It also means sharing and communal use.

- 1 Microapartment project in St.Gallen – the green facade catches the eye.
- 2 Living on a small scale. Layouts for the apartments in St.Gallen with 28 and 36 m² and in Herisau with 47 m².
- 3-4 Impressions of the microapartments in Herisau. Every apartment also features an 8 m² balcony.



From early this year, the microliving project 'Compact Living' in the centre of Herisau had nine small-scale apartments available to rent. All apartments were let after just eight weeks.

Herisau: 'Compact Living' on 47 m²

On the initiative of the architects at Waldburger + Partner, we carried out this on-trend project in a modular timber design in the role of general contractor. A pair of timber modules makes up each studio and delivers high levels of living comfort across 47m² of floor-space. A kitchen, bathroom, storage space, own washing machine/tumble dryer and an additional 8 m² balcony all form part of the basic fit-out. An important part of the 'Compact Living' concept is the roof terrace of 150 m². Jointly maintained and used by all tenants, it serves as a meeting point and extended living space for the community.

St.Gallen: studios with character on 28 m² and 36 m² of floorspace

Together with the architect teams at Gemperli Staufacher Architekten, Innoraum, K & L Architekten and Waldburger + Partner Architekten, our project development team initiated a microapartment project for the city of St.Gallen under the leadership of Richard Jussel. Originally planned for the freight depot, it remains to be seen what form the structure will ultimately be able to take. The 25 microapartments planned will cover 28 and 36 m² of living space and offer plenty of room for individuality. The idea is for the architects to design a separate living and space concept for every studio. Different floor plans, kitchen layouts, an option for urban gardening on the balcony, or individualised built-in furniture with special storage for saving space, all give the studios their own distinct character.

The apartments are accessed via a communal arcade, where occupants can meet and get to know each other. Each studio is made using one timber module that is kitted out in our factory with electrics, heating and sanitary facilities. Assembly on the construction site is completed within just a few days.

Communal spaces for socialising

Additional communal areas provide space for socialising. Ideally, a development will also feature other spaces for meeting outside, with a garden or small park area. The target groups for small-scale living are students, apprentices, individuals of any age, but also older adults who are interested in central, affordable and downsized living but have a strong sense of community.

Sustainable and pioneering

The projects in Herisau and St.Gallen are groundbreaking not just when it comes to matters of lifestyle. They are also showcases for eco-friendly, pioneering construction, with reusable timber modules, sustainable timber materials and resource-conserving energy production using a heat pump and photovoltaic system. Pascal Waldburger from architects Waldburger + Partner AG in Herisau says on this: 'We need to rethink how we live and how we use the resources we have. Private households are responsible for 25% of all energy consumed. We are noticing that our clients are thinking more about their own personal consumption through living space and their ecological footprint. Compact, well-planned and carbon-neutral buildings

make a significant impact on greenhouse gas emissions. Modular timber construction supports this development with its short production times and resource-conserving manufacture in the factory.'

MICROLIVING - LIFESTYLE ON A SMALL SCALE

The microliving trend comes from cities where living space is in short supply: affordable living space on just a few square metres in central, well-connected locations. An efficient use of space provides high levels of comfort. Downsizing is part of the approach to life. Many of the occupants are young and supplement these little havens with third places in the public sphere. Older adults are also an important target group for microapartments. They value accessibility and a range of services, such as laundry services and home help.



Modular timber loft concept

The ‘modular timber lofts’ building concept by Blumer Lehmann offers a potential approach to a pioneering area: extending, replacing and densifying existing residential and commercial spaces where public space is in short supply. The concept creates added value by being flexible, sustainable and high quality.

Flexible

As an office, commercial or living space, for temporary or long-term use – a modular timber loft adapts to existing requirements and structural conditions and creates valuable space in city centres. The concept also fills and densifies gaps between buildings as well as allowing temporary use of wasteland areas. An unused site can thus be transformed into an income-generating property in no time.

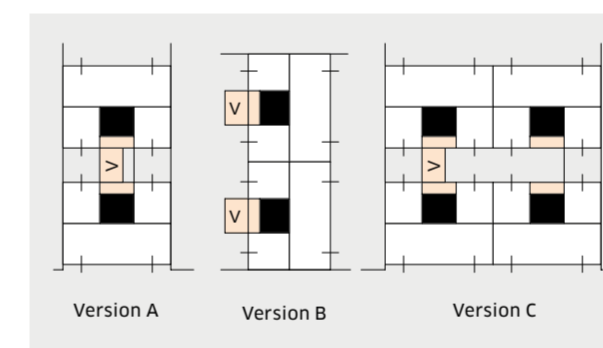
Sustainable

Modular construction possesses the advantages of classic timber construction and combines these with a high level of fit-out completed in the factory. In addition, our modular timber construction is grounded on the most natural of all building materials and also stores CO₂. The layouts offer flexible design possibilities, allowing a range of possible uses across the entire life cycle of a building and thus guaranteeing a long service life.

High quality

The modular timber loft concept creates valuable spaces for high-quality living. Its attractive architecture allows it to blend in seamlessly with existing rows of houses. Produced and fitted out in our factory, the timber modules deliver certainty both in terms of scheduling and quality. What’s more, time spent on the construction site is brief and creates less noise.

When they are no longer needed, the modular structures are easy to reassemble at a different location. This means that unused city-centre spaces can generate added value either on a temporary or long-term basis, and can be put to interim use. Temporary modular structures also mean that projects can be planned within a building lease model.

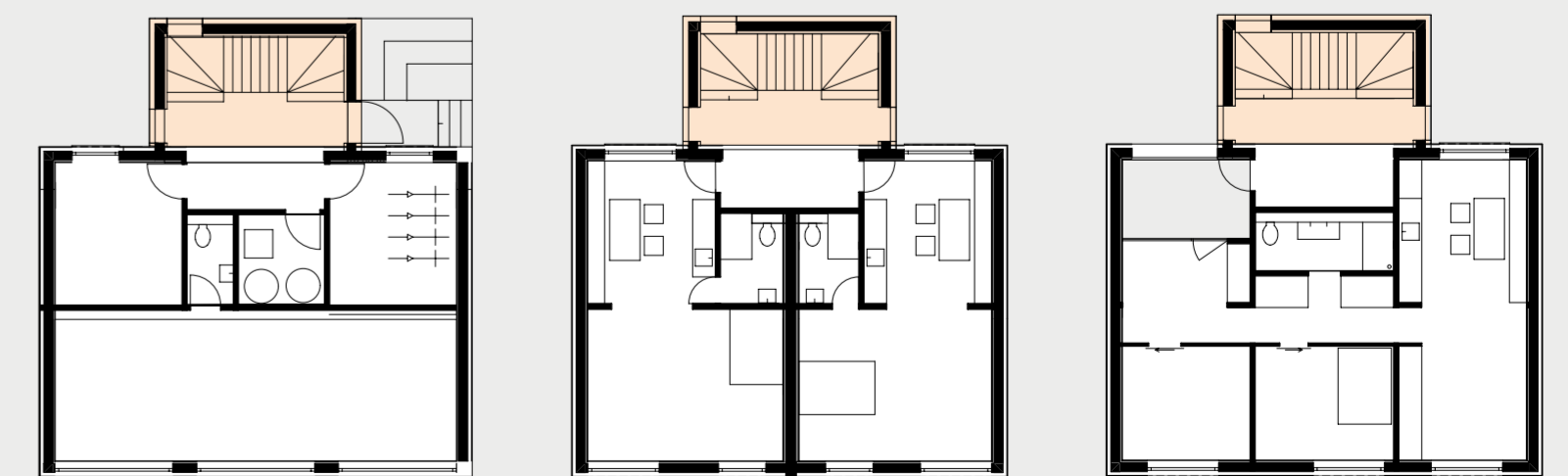


The lack of support structure inside the modules ensures maximum flexibility in terms of layout. The floor plan can be arranged in many different ways to accommodate a range of uses and various apartment sizes.



© Xaxis Collective

Example of multistorey densification in an urban setting



The ground-floor layout includes space for commercial units or communal areas.

On the first floor, there are two studios, each with 38 m² of space.

The whole storey offers one apartment with 3½ rooms.



Modular construction – designs for the future

Timber construction, and modular construction in particular, provides solutions to the requirements of modern and future buildings. We are constantly adding to our skillset to deliver buildings for specific uses within the shortest possible time frame, extend structures and add extra storeys or construct new and cost-efficient buildings.

Modular designs fulfil a range of requirements, and the planning process for modular structures gives designers greater freedom than is commonly accepted to be the case. Even more in fact, given they can focus wholly on the design and leave structural and construction considerations to specialist planners.

Timber construction contributes to a circular economy and reduces the ecological footprint

Apart from the outstanding structural properties that timber delivers, particularly for extensions and additional storeys, timber is also the only renewable raw material. Timber also brings with it clear advantages in terms of the circular economy and ecological footprint.

Every cubic metre of conventional building material such as concrete (on the left) releases more than a tonne of CO₂ when used, while every cubic metre of timber (on the right) avoids 900 kg of CO₂ and even sequesters an additional 700 kg of CO₂.

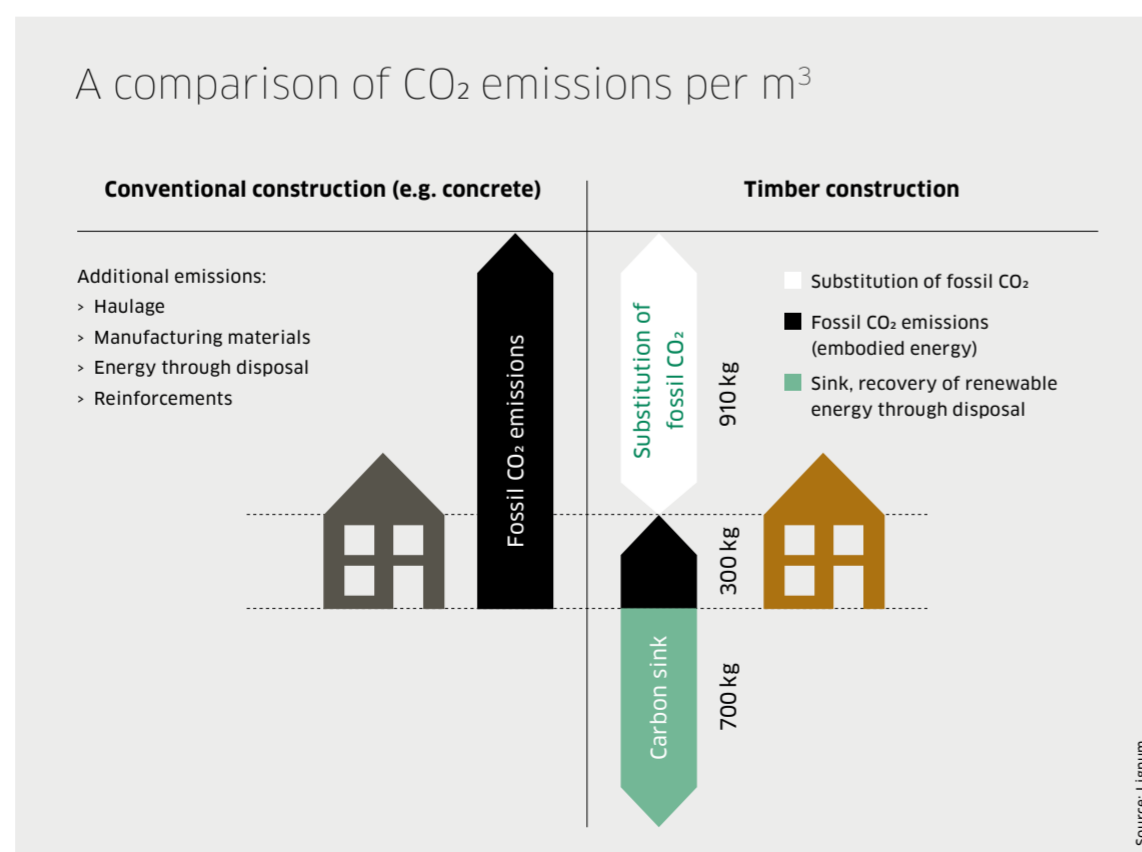
BENEFITS OF EXTENSIONS AND DENSIFICATIONS WITH MODULAR DESIGNS

For architects and planners

- > Flexible arrangement of layouts based on modular design grids
- > Various possible applications for extensions, densification or new-builds
- > Free choice of design and materials
- > Fit-out options from low-tech to high-tech
- > Swift implementation with short planning and construction times
- > Simplified planning permission process for temporary structures
- > Precise scheduling and cost planning

For clients and investors

- > Short construction times
- > Low noise emissions on the construction site
- > Precise scheduling and cost planning
- > Smaller ecological footprint (carbon offsetting)
- > Use of existing offices/facilities can potentially continue during alteration works, with less rental income lost
- > Potential repurposing or relocation of modules at a later date
- > Purchasing/repurchasing and other attractive finance options
- > Temporary or long-term use possible
- > Project planning within building lease model possible (limited period of use)



SUSTAINABLE TEMPORARY SCHOOL SPACE, CITY OF LUCERNE

112 timber modules make up the temporary Grenzhof school building in the city of Lucerne. The client, Lucerne city authorities, set high standards for the construction ecology and energy efficiency of the building. In addition to an air-to-water heat pump, the photovoltaic system on the roof also contributes to energy production. Care was taken to also use sustainable building materials inside the building.

blumer-lehmann.ch/
schulhausprovisorium-grenzhof



CHANGING ROOMS STADES DE TROIS-CHÊNES

Eight changing rooms, eight showers, toilets and a building services room are contained within the single-storey modular structure in Geneva's Chêne-Bourg district. We completed the extension building in just three months and were responsible for planning, project and site management, production and assembly. The structural plans already factored in a potential increase in the height of the stands at a later date.

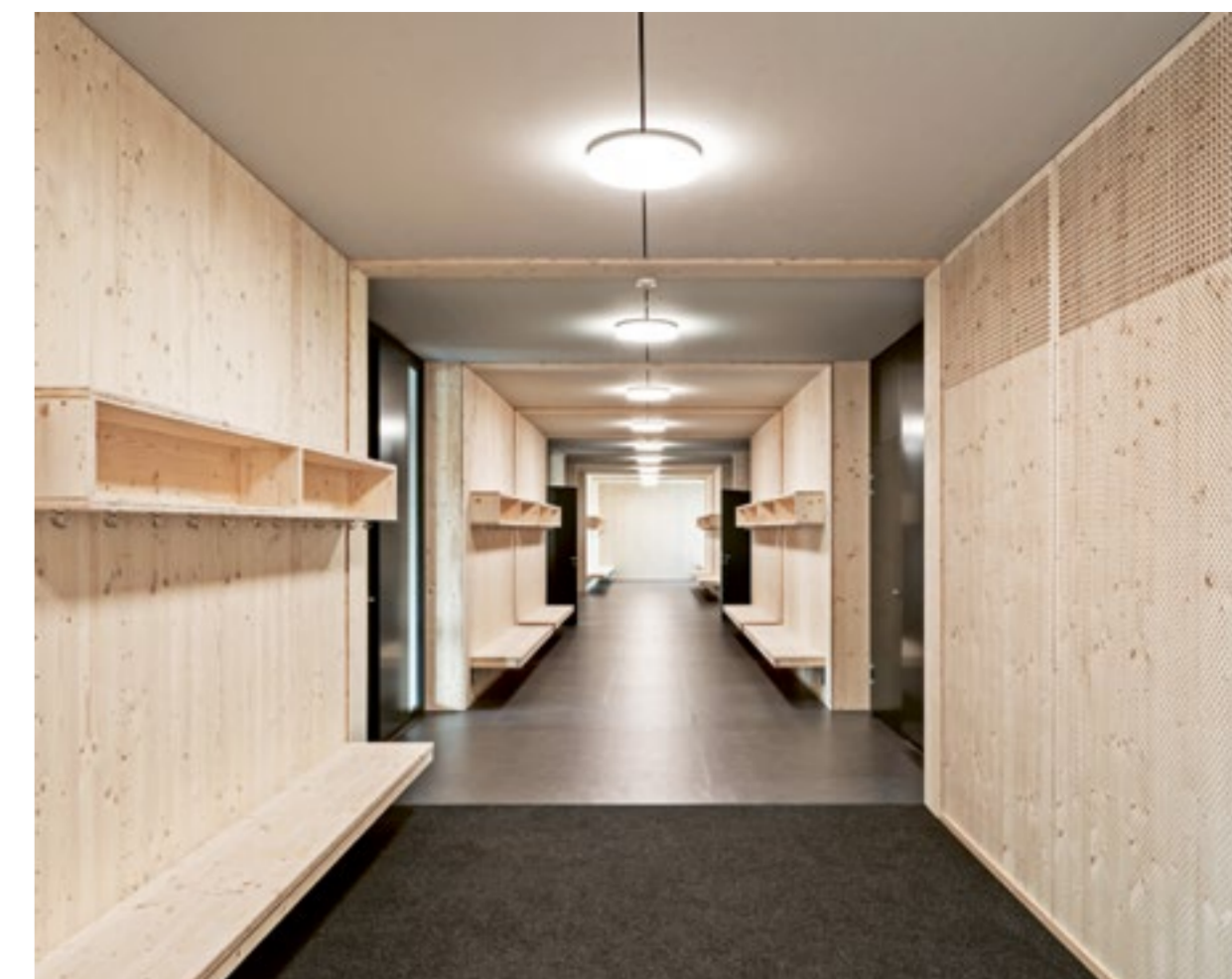
blumer-lehmann.ch/stade-de-trois-chenes



TEMPORARY STRUCTURE, STRICKHOF WÄDENSWIL CENTRE OF EXCELLENCE

The new training centre for students of food technology and horticulture is due to open its doors in summer 2021. We are supervising its construction as full-service contractor, from planning to implementation. The architecture was the work of B.E.R.G. Architekten GmbH in Zurich. Just this once, the timber structure will not be visible from the outside. Cement-bound chipboard with a colour treatment will be used for the facade cladding. Climbing plants will provide greenery for the facade supports.

blumer-lehmann.ch/news/strickhof



BRÜNNEN PAVILIONS, BERN – MODULAR TIMBER STRUCTURES FOR 14 CLASSES

14 school classes are being temporarily housed in the Brünnen pavilions in the city of Bern. The two-storey structures, designed by Bauart Architekten und Planer AG, provide additional school space while several school buildings are being renovated. The pavilions meet the Minergie Eco standard and are clad in a pre-greyed spruce/fir facade. Once they are no longer needed, the pavilions will be redeployed as a new school building at a different location.

For more information on this construction project, visit: blumer-lehmann.ch/schulpavilions-brunnen



New east wing at Hotel Bad Horn

The modular extension building for Hotel Bad Horn on Lake Constance opened its doors in the spring of 2020. On-site implementation could be completed on schedule thanks to high levels of prefabrication. The new east wing of this venerable establishment on Lake Constance provides space for 42 hotel rooms and suites. The ground floor features a lobby with a bar as well as a new restaurant, all inviting guests to sit back and relax.

To find out more about the new east wing, visit: blumer-lehmann.ch/hotel-bad-horn

A challenging transformation

A complex conversion has breathed new life into the old brick walls of the Kornhaus on the harbourside in Romanshorn. Transforming this former warehouse for foodstuffs, with its solid-brick walls into a modern residential and commercial development brought with it a set of complex and very varied challenges.

An unconventional idea was needed for the conversion at the very start of the project: the enormous warehouse, which dates back to 1870, had a central courtyard cut out of it. This was the only way to create apartments with enough light and window space. On behalf of full-service contractor Implenia, Blumer Lehmann was responsible for the timber structure and had a number of tricky issues to resolve as part of this.

The more complex the project, the more important the planning

A conversion of this size and complexity needs to be planned with extra care and foresight. The fundamental basis for the success of the project is seen by project manager Christian Giger as the close collaboration



The Kornhaus was completely gutted during conversion. Around 80 tree trunks carried the weight of the building in the first phase of renovation.

between specialist planners, the client and developers from an early stage, given that: 'Planning must be geared towards all specialists involved. To do this, all relevant professionals need to get around the table and agree dates, planning and costs.' Experience, in-depth expertise and joined-up thinking are also crucial for planning, says Giger: 'Knowing what the other specialists are doing and what processes follow which is hugely helpful.'

Planning using a 3D model

For the detail planning of this complex project, the building was first measured inside and out using laser scanners. Based on the scan data obtained, the building could then be designed digitally using building information modelling (BIM). The 3D model serves as a basis for planning and supplies the production data for timber construction. 'The project was planned in part using BIM, especially when it came to the timber and steel structures. This also involved communicating and exchanging data using uniform data formats and joint models. This meant we didn't have to put together any 2D working drawings,' explains project manager Giger. 'We also used the BIM platform for working with the architects and for measurements with a tachymeter, a device that measures distances electronically in horizontal, vertical and diagonal directions.'

Solutions and responsibilities

How were the prefabricated timber elements for the building shell supposed to get into the apartments in the top two floors? How could our own project team, with up to 30 carpenters and roofers, as well as the subcontractor teams be properly utilised, sensibly managed and sufficiently protected? A wide range of tasks called for reliable solutions in a construction phase planned to the minute. According to Christian

Giger, our construction site managers Christian Rutz, Alex Nef, René Bürge and Renato Hinrichs took on a pivotal role with great responsibility. 'Different specialists were working across all three floors at the same time. Coordinating this required an enormous amount of planning and lots of experience. Any areas that needed to be dealt with, such as occupational safety or the frequent challenges posed by the weather, combined with a location right next to the lake, were discussed by those involved in the project in regular

Different specialists were at work across all three floors at the same time. Coordinating this required an enormous amount of planning and lots of experience.

weekly meetings. And communications with the client showed how important a continuous flow of information and full transparency about changes to the project are to cost security and progress in construction.' Looking back, Giger is certain: 'It's clear that we were only able to complete the conversion in as little as 2¼ years because we planned and prepared all works thoroughly and judiciously and carried them out in stages.'

→ For more on the Kornhaus, visit: kornhaus-romanshorn.ch

THE KORNGHAUS CONVERSION AT A GLANCE	
Year of construction	1870/1871
Formerly	Solid brickwork warehouse for foodstuffs
Now	Residential and commercial building with two museums, an event space, restaurant, 38 serviced apartments, 12 loft apartments, underground parking and cellar space
Floor space	10,000 m ²
Special features	<ul style="list-style-type: none"> > Inner courtyard cut out of the building > Pillings with 200 concrete supports > Specially developed sliding roof windows in the loft apartments
Challenges	<ul style="list-style-type: none"> > Short construction time with no buffer periods > Structural engineering during the construction phase > Shell construction in the apartments and lofts > Weather and waterside location



- 1 The Kornhaus in Romanshorn now looks better than ever. The golden south facade is a particularly eye-catching feature. This is clad in Nordic Brass, an alloy of copper and zinc.
- 2 The original roof joists and sandstone walls are once again on display in the covered entrance area.
- 3 In the lobby, the names of those involved as well as some key facts attest to the major conversion.

Adding storeys means creating space and added value

When space gets tight in an office block or apartment building, thoughts turn to extensions. This might involve extending upwards. Markus Rutz, Division Manager for Timber Construction Excellence, tells us about the arguments for additional storeys and highlights some trends and possibilities.

Building with timber is on the increase, in all its permutations. Markus Rutz has been aware of an increase in demand for years. And the trend continues. His expectation is that growth in timber construction over the coming decade will be even faster and more pronounced. Architects and planners are among those responsible for this, by building more with timber and by wanting to extend their experience. But mostly it is the investors, companies and the public sector that put

Additional storeys are the speciality par excellence of timber construction.

the focus squarely on sustainability in construction and take every aspect of a building's life cycle into account. Will a result of these developments be that construction projects are soon required to produce evidence of embodied energy and overall carbon footprint? And will people look even more to densification and upward expansion to create the space that is needed?

Timber is indeed the perfect material and timber construction is the ideal approach to create more living space in apartment buildings or for adding an office storey on to a warehouse, for example. Why is that the case, Markus Rutz?

MARKUS RUTZ By using timber as a building material, we are harnessing a very lightweight yet

very load-bearing material. Which is why existing buildings tend to be able to support an additional timber storey pretty easily. In fact, additional storeys are the speciality par excellence of timber construction. Given the prefabrication process that is characteristic of timber construction, we are in a position to build additional storeys in a very short construction period – depending on the situation, even with office buildings remaining open or with all tenants in situ. Short construction times are a beneficial cost factor, for instance for property companies who expand their buildings on an ongoing basis.

The additional storeys themselves can be planned down to the last detail. But how are you able to reliably calculate and guarantee costs and timings in the context of an existing building?

We underpin this by carrying out a detailed statics analysis and structural evaluation of the building and its foundations. This model is used to clearly define the points where new and old intersect and to plan every aspect of outlay – in terms of both cost and time. Where necessary, we also put together an energy concept for the existing building related to the additional storey. A reason for this is that energy production will need to be adapted to the new floor area.

What roles do you and your team take on in these upward expansion projects?

We are in a position to offer the full range of services, from consultation to handover of keys, so we are usually involved in a project from a very early stage. This means advising the client and completing feasibility analyses. To do this, we measure the existing building in three dimensions and, with this 3D model,

we then have a planning basis to allow us to deliver other services such as planning permissions and site management. Depending on the project, we can continue supporting the client as the project progresses. As a timber construction specialist, we have to resolve many points of intersection and connection specific to the existing building. That's why it usually makes sense for us to put together a package of services from the outset and take care of all aspects of implementation as the general contractor, right up to handover of the keys.

Do you sometimes come across those who are biased against adding storeys in timber? If so, how do you win them over?

We don't hear the preconceptions that people used to have so much nowadays, namely that building with timber is more expensive, worse in terms of sound insulation and tricky for ensuring fire protection. The opposite in fact; with additional storeys, clients immediately think about the roof and consider timber to be the most suitable material for this. They know that timber is the right material and appreciate the benefits it brings – short construction times and high quality through prefabrication, as well as energy efficiency and flexibility in terms of style.

Additional storeys are often hard to spot at first glance from the outside. What limitations are there in terms of design?

I always say: with wood everything is possible. With additional storeys, this is especially true for the facade designs, which can emulate any kind of building style and appearance. The core of the expansion always consists of prefabricated timber elements. But a curtain-wall facade can fulfil any design specification in terms of material, style or colour.

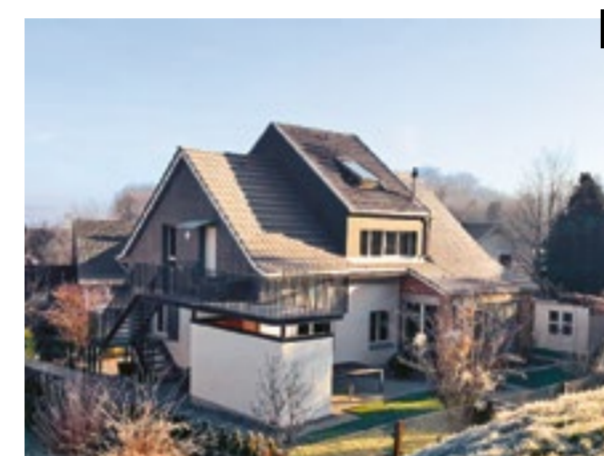
What are the new ideas being developed at Blumer Lehmann for adding extra storeys?

Adding extra storeys means redensifying. This is a politically relevant subject area and also epitomises our philosophy. New spatial planning regulations in Switzerland require existing building zones to be more heavily utilised and densified. Naturally, this is very much in the interests of sustainability. It is very important to us to protect our cultural landscape. This is why, for example, we developed the concept of the modular timber loft to fill gaps between houses in the city. The idea here is to insert ready-made spatial units into the gaps. In terms of technical implementation, we are still working on a few sticking points related to access. —> See page 6

Do you have a favourite when it comes to additional storey projects?

Around twenty years ago, we had the privilege of building the REHAB clinic in Basel according to designs by Herzog & de Meuron, a harmonising structure and a fantastic project. In 2019, we were commissioned to add an extra storey on to the clinic's roof terrace to house the day clinic. Being able to add a storey on to one of our own projects, after such a long time, was quite a special experience.

Prime examples of additional storeys and extended living space



1 An example of urban densification is shown in the extra storey added to this detached family home in the city of St. Gallen. The new storey contains two bedrooms, a dressing room and a bathroom. The extension of the living space was built as a prefabricated timber structure. We completed the planning and construction of the conversion as GC.

↳ blumer-lehmann.ch/aufstockung-efh-stgallen

2 Extending the living space can be very worthwhile even for smaller properties. We acted as GC for this detached family home and were responsible for planning and implementing the loft conversion. This created an additional apartment with a floorspace of 122 m². It is accessed via a separate entrance and newly constructed platform, which can also be used as a balcony.

↳ blumer-lehmann.ch/aufstockung-oberuzwil

3 An additional storey in timber provided more office space and a canteen in the Fust logistics centre. An internal courtyard with a terrace and greenery were also created on the roof. The logistics of this extension presented a particular challenge, given that the conversion was completed alongside ongoing operations.

↳ blumer-lehmann.ch/fust-aufstockung

4 Designed and built by the architects at Herzog & de Meuron in 2002, REHAB Basel is a clinic where people with brain damage or paraplegia are helped back to a meaningful quality of life. The clinic now needed more space. An entire storey was created to house the new day clinic on what had previously been a roof terrace.

↳ blumer-lehmann.ch/rehab-basel

5 The Givaudan office building in Kempthal is proof that a timber structure does not need to be visible from the outside at first glance. The erstwhile Maggi factory was painstakingly renovated and given two additional storeys thanks to a prefabricated timber structure. The facade was designed to match the original brick facade. There was thus ultimately nothing to indicate that a timber structure lay behind it.

↳ blumer-lehmann.ch/givaudan



The right partnership for construction projects

A construction project is a complex undertaking. Regardless of whether a client is constructing a detached house or a new company building. Or even a theatre. Anyone who doesn't have the necessary construction expertise and capacity to coordinate contractors on-site and manage processes happily relies on a general or full-service contractor to deliver the building ready for use. Skills, networks and trust are fundamental to this.

Long before the actual construction work starts, all sorts of tasks need to be dealt with that call for construction expertise and experience. This applies even in the early stages of defining and discussing the client's ideas and requirements and setting timings for the project. This is then followed by development and planning processes as well as implementation and finally buildings management. In short: construction services that all need to be planned, coordinated, implemented and checked.

Timber construction specialist with overall responsibility

As a specialist, we take on an increasing number of contracts for timber construction projects as general contractor, joint general contractor or full-service contractor. That's because we also offer expertise, timber construction experience and networks alongside the general advantages of timber construction with lots of prefabrication. Migga Hug, Head of GC Services, says: 'We make decisions swiftly and have expertise in the various disciplines as well as reliable building contractors in-house and networks we trust.' The size of construction or the complexity of the project, or

What does this mean for the client? And what is the difference between the different mandates FSC, GC and joint GC?

General contractor or joint general contractor – contract to construct

As general contractor (GC), we relieve the client not only of the responsibility to carry out their building project in full according to the architect's designs, but also the risk involved in this. Joint GC contracts, covering specific subsections of the construction process, are also an option. In this role, Blumer Lehmann brings together the relationships to all building contractors and guarantees the costs, timings and quality of the building services.

As a specialist, we carry out all timber construction services ourselves. We contract out any other building services that fall outside our areas of exper-

tise to subcontractors from our network. We also support and advise the client as implementation contractor. This means that we are their go-to people throughout the construction process, keeping track of everything while planning, coordinating, implementing and checking.

A full-service contract includes planning

When carrying out a construction project as a full-service contractor (FSC), our remit extends further. As the client's sole point of contact and contractual partner, a full-service contractor is also responsible for architectural and planning services and organises these with the planning agency involved. In practice, this means that we manage and coordinate all stages of development and specialist work for all aspects of the timber construction project – from preliminary design to smooth implementation.

A theatre with all the trimmings

In the role of full-service contractor, the experts at Blumer Lehmann developed, planned and implemented a timber construction project in the city of St.Gallen: a temporary 500-seat theatre that is a project you're not likely to see every day. 'In the public tender with functional project description by Gähler Fühler Architekten, we came out top with the most cost-efficient bid,' explains Migga Hug. 'As a full-service contractor responsible for implementation planning, tendering, site management, construction

cost control and quality assurance, we executed the project in a close working partnership with the client, the St.Gallen cantonal building department and the designing architects.'

With a floorspace of almost 3,000 m², it contains everything a theatre needs: the lobby area with box office and cloakroom, the foyer with bar and the auditorium with stage, orchestra pit and stands are all on the ground floor. One floor down are the infrastructure areas with artists' dressing rooms, make-up and props department. A covered passageway links the temporary theatre with the Tonhalle concert hall to allow theatre workers to use their infrastructure and spaces.

ing this time, the UM!BAU structure will primarily stage music and dance performances as this is what the sound and lighting engineering is designed for. Despite being temporary, the prefabricated timber structure needs to fulfil the same safety and fire regulations as a new building. Building works lasted six months, and the opening premiere already took place on 24 October 2020. Then, on 12 December 2020, the doors to all stages in Switzerland were firmly closed. We are now hoping that performances in the temporary building will soon restart and that the St.Gallen audiences will be able to enjoy the welcoming atmosphere in this timber structure.

Interim theatre makes two-year guest appearance

Use of the temporary theatre, which is made from prefabricated spruce and fir modules, is planned for 29 months while the city theatre is being renovated. Dur-

For more impressions of the temporary theatre, visit: blumer-lehmann.ch/theaterprovisorium

GENERAL CONTRACTOR OR FULL-SERVICE CONTRACTOR?

GC A general contractor is a contracting party who assumes responsibility for full implementation of a construction project. Another contractor is in charge of planning.

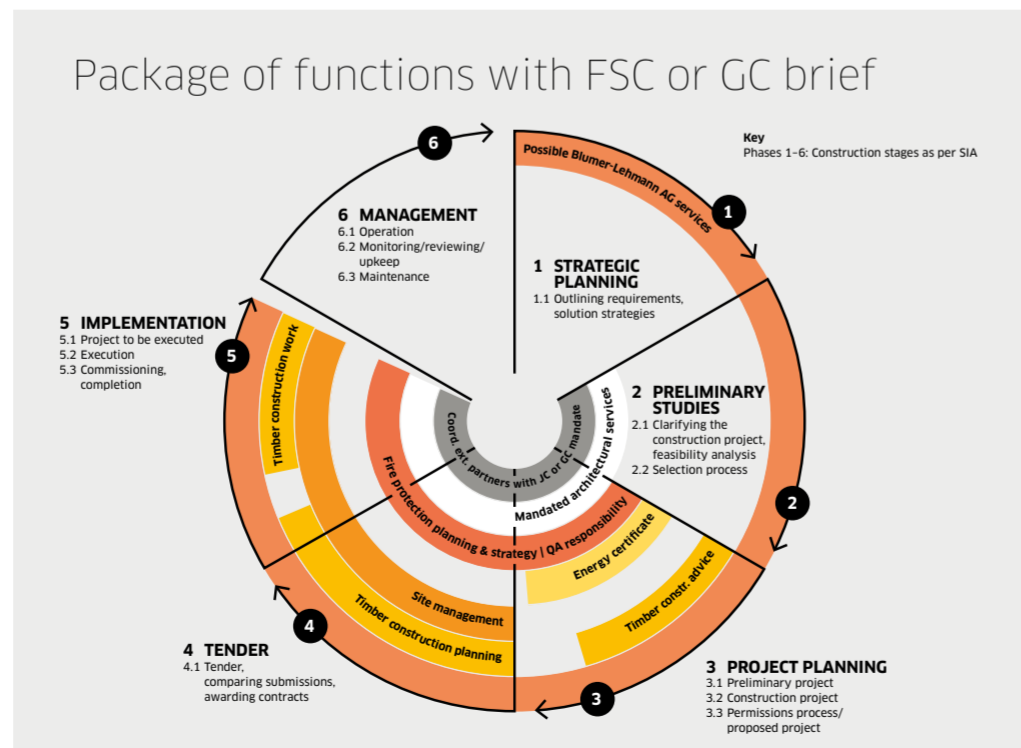
FSC A full-service contractor takes sole responsibility for planning and implementing a construction project.

Joint GC The general contractor takes care of partial services, such as individual specialisms like the construction or engineering of a building.

A precondition for Blumer-Lehmann AG taking on the role of GC or FSC is that the new building or conversion is built using timber.



In the role of full-service contractor, we have built a temporary 500-seat theatre right alongside the St.Gallen city theatre. This serves as an interim performance space delivering all the functions necessary for staging productions while the St.Gallen theatre is renovated.



We take care of all construction works or just a selection, as standalone services or complete package.

'We are flexible in everything timber related. Everything revolves around the client and their project.'

Migga Hug

whether it's a new building or conversion, is immaterial. Or as Hug puts it: 'We are flexible in everything that is timber related. Everything revolves around the client and their project. As a timber construction specialist, we advise the client and decide together on the best way to work in partnership and share responsibility for the construction project.'



Premium holiday apartments at the foot of the Uri Alps

The two timber structures of the ‘TurmfalkeSuites’ apartment buildings are an impressive presence at the foot of the Uri Alps. Their self-assured and expansive architecture allows them to fit in with the design of the newly established Andermatt Reuss holiday village and yet still function as a special feature in themselves.

The ‘Andermatt Swiss Alps’ lighthouse project for tourism is rapidly taking shape. Half the apartment buildings planned have already been built in the newly established quarter, right on the banks of the river Reuss. Through a tendering process, we were awarded the contract for timber construction planning, implementation and assembly of the two-, six- and four-storey buildings with the memorable name ‘TurmfalkeSuites’. Swiss Property acted as general contractor and was responsible for executing construction works.

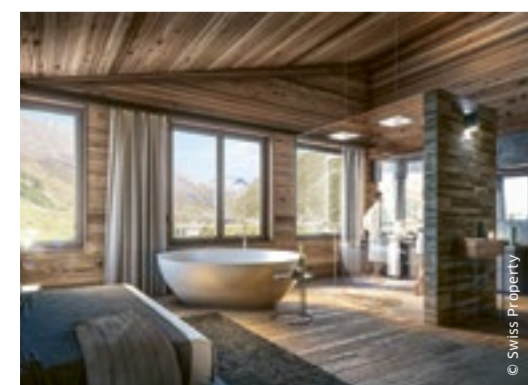
Large-scale chalet feel

Featuring plenty of timber, both buildings are an impressive size yet exude the charm of a traditional wooden chalet. They will house 49 residential units ranging from studios to 3,5-room apartments. There will also be an in-house spa area for future tenants and occupants to enjoy. The buildings, which are designed as prefabricated timber structures from the second floor upwards, were clad in a pressure-treated spruce facade. Visually, they are defined by an interplay of vertical and horizontal facade boards that have been finished with different vertical profiles.

Statics to suit the location

Our timber construction expertise was already required in the planning phase. In contrast to buildings in lowland areas, those constructed in the mountains need custom-designed rear-ventilated facades. For structural reasons, all load-bearing walls inside the buildings were made using cross-laminated timber. The weight of snow expected on the roofs also called for a customised solution. The rafters, each 40 cm high, are therefore very solid.

The climate in the Urserental valley can at times be pretty harsh, and our assembly team also felt the effects of this. The team of up to 12 members, headed by Simon Huber, were on-site from September 2020 to



A recycled apartment building

An extraordinary project saw the upcycling of a three-family dwelling from the turn of the century into a modern residential building. An eye-catching feature is the remarkable external steel staircase with timber arcades, which both extends the living space and acts as a connecting element between the different storeys. The firm Baubüro in situ acted as archi-

itects for the conversion and are known for their sustainable approach to construction. As joint GC, we were in charge of various planning and implementation tasks, from installing new walls to building a new dormer.

→ To find out more about this recycling project, visit: blumer-lehmann.ch/umbau-mfh-rorschach



WAREHOUSE FOR PLANT SPECIALIST HORTIMA

Even a warehouse can be an architectural head-turner. This is shown by the building for plant specialist Hortima, designed by Fischer Architekten AG in Zurich. Its shape and design are defined by the client’s specifications. Their aim was to create as much warehousing space as possible, something that was achieved with an approach to construction that avoided using columns. A sloped gable roof and vertical timber facade panels provide additional features that define the appearance of the warehouse.

→ blumer-lehmann.ch/lagerhalle-hortima



TRIPLE SPORTS HALL FOR CAMPUS SCHWARZSEE

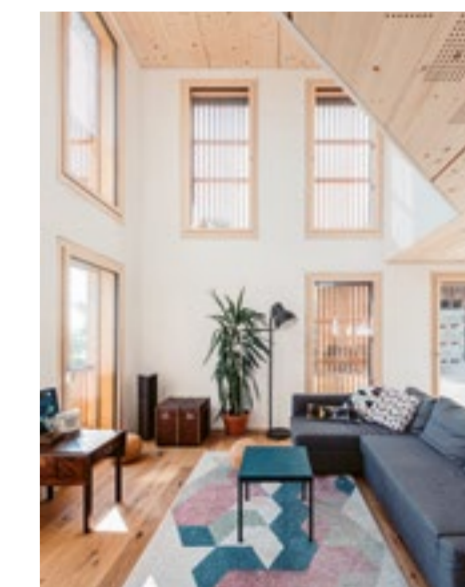
In mid-2020, the tender took place for building a new triple sports hall for Campus Schwarzsee in Fribourg, in which we were awarded the contract as full-service contractor. Ten projects were submitted, but our ‘pick & roll’ bid came out top. We are grateful to our planning partners Gamsch Architekten GmbH, Runge AG Ingenieure + Planer, Johannes von Pechmann Stadtlandschaft GmbH and Raumanzug GmbH for such great teamwork and we look forward to working together on the build, which will hopefully start soon.



A GEM IN THE APPENZELL STYLE

A remarkable gem of a building has recently sprung up in Rehetobel in Appenzell. Dorfhus Gupf is a hotel, restaurant, conference centre and village shop in one. The architectural highlight is the large oriel built in timber and clad in powder-coated aluminium sheeting. The concrete structure was given a red-painted spruce facade, which was finished with painted scenes characteristic of the Appenzell area.

→ blumer-lehmann.ch/hotel-dorfhus-gupf



SEAMLESS FUSION OF OLD AND NEW

When seeing this residential building for the first time, it is not immediately evident that it is actually a totally new replacement building. Which is why creating a structural connection to the existing barn was no mean feat. As GC, we took care of the entire process from engineering and production to erecting the residential building. The result is an outstanding structure, with large contemporary spaces and a high-comfort living environment.

→ blumer-lehmann.ch/umbau-lenggenwil

Therapeutic architecture for body and mind

For a long time, the design of healthcare buildings was dominated by practical considerations. We now know that a comforting environment can facilitate patient recovery. Timber also has an important role to play in healing architecture.

Most of us have some experience of hospitals, usually as austere buildings with long corridors and rooms full of technical equipment. A place where we feel comfortable and would choose to spend our time? Unlikely. It comes as no surprise then that studies have shown patients recover quicker and need less pain medication when they can see parks and trees from their hospital rooms rather than just staring at a concrete wall. Other factors that have a positive impact on the healing process include colours, lighting, acoustics, materials, sensory surfaces, smell, temperature and indoor air quality. This is where timber as a natural material can fulfil some core functions within modern therapeutic healthcare buildings. It ensures comfortable indoor conditions and has an appealing sensory quality, while also creating a connection to nature.



We were interested to hear from Mat Cash, Partner and Group Leader at Heatherwick Studio, how the idea of the three green pavilions came about:

Timber elements create therapeutic architectural forms at Maggie's Leeds

A perfect example of healing architecture in practice is Maggie's Cancer Centre in Leeds. This demonstrates how an outstanding architectural fusion of nature and timber as a sensory building material can look.

As a centre that brings people together, it's a place where people with cancer and their families can find support and a space to meet. Based on designs by the architects at Heatherwick Studio in London, we completed the Cancer Centre as three pavilions. They all differ in height and contain an airy interior that is home to spaces for both meeting and retreating. Lush planting on the rooftops also offers accessible garden spaces and creates a restorative outdoor area. The appealing interior design and comforting atmosphere arise in large part from the extraordinary timber structure.

A philosophy of the Maggie's buildings is to use 'healthy' materials and energy-saving technology.

Mr Cash, was it clear from the start that Maggie's Centre in Leeds would be a timber structure?

MAT CASH Maggie's Centre in Leeds was built on the last bit of green space on the hospital site. Added to this were complex requirements due to the site's lack of space as well as contamination from previous construction activity on a neighbouring site, which would have required us to install expensive and laborious pilings in the bedrock. This led to a decision early on to use a raft foundation, installed as a floating structure over the contaminated ground, to ensure the load was distributed across the entire building space. The low weight of timber was an important factor in constructing this foundation. The excellent insulating properties of wood also meant that no complicated measures had to be taken to avoid thermal bridges or to plan a continuous supporting framework extending outwards.

Is there anything important you have learned from planning this timber construction? And how about later when it was being built?

We learned a lot about LVL, laminated veneer lumber. We came across this material when we were thinking about replacing the original plan for hollow steel columns with timber, to allow a simpler connection to the cross-laminated timber ceiling. We needed hardwood here to achieve the same high performance as steel. First we looked at using solid ash, but we wanted to leave ourselves the option of feeding the supply lines through cavities in the wood. This wasn't possible with columns that were three to five metres in length. Then we came up with the idea of sticking five layers of laminated veneer lumber together to leave a cavity in the middle. The layers of wood were then

worked into cylindrical columns that feature this brilliant patterning where the section runs through the layers. We chose BauBuche as the material for this, given that is the hardest of all laminated veneer lumber products. It was also used for the fins and roof joists, where we had also originally planned to use steel. We were curious as to what else we could do with this material, and also ended up using it for the stairs, floors, kitchen units, windowsills and even our custom-made tables.

To what extent does the planning process for a timber structure differ from that of a conventional structure?

With the timber structure, we were able to create the geometric design of the building through a series of regularly recurring fins. They were intentionally left exposed because timber creates a feeling of naturalness and comfort, something our studio wanted to express through every component in Maggie's Leeds. The Maggie's Centre building harnesses the benefits of different timber-based materials: LVL, CLT and glulam laminated timber. Hardwood and softwood were also expertly combined. This meant we could avoid extensive steel connectors and find a more cost-effective and aesthetic solution.

What relationship do you personally have to timber, both as a building material and in and of itself?

Our studio always strives to create interesting places full of atmosphere that are shaped by people's experience. Given its natural appearance, wood radiates great warmth. We are familiar with its texture, and this always appeals. We use a lot of cross-laminated timber, not just with Maggie's Leeds but also in the Google building at King's Cross, which features the UK's largest timber facade.

How do you see the role of timber as a building material developing in the future?

I can only speak for our studio's vision, but we are definitely in favour of timber being used in many projects. With timber, you can prefabricate the bulk of a structure, creating less waste material in the process and shortening construction times. Both of these help in the fight against climate change and boost the sustainability of projects, which will be hugely important in the future.

→ For more impressions of this special structure, visit: blumer-lehmann.ch/maggies-centre-leeds



INSIGHTS INTO OTHER BUILDINGS WE HAVE COMPLETED WITH HEALING ARCHITECTURE

Plenty of exposed timber defines the appearance of this clinic, designed by the architects at Herzog & de Meuron in Basel. In 2019, we expanded the clinic by adding another storey. This used a prefabricated timber structure to fit in seamlessly with the style of the earlier building.

→ blumer-lehmann.ch/rehab-basel

The design of these school and residential buildings for people with hearing and visual impairments is focused entirely on the needs of the residents. People who see very little or nothing at all rely heavily on their sense of touch and smell as well as their perception of vibrations.

→ blumer-lehmann.ch/stiftung-tanne

Timber is also well suited as a construction material for buildings dedicated to senior living. This complex, featuring two three-storey buildings, is fully wheelchair accessible and accommodates 20 rental apartments alongside a care unit and communal spaces.

→ blumer-lehmann.ch/alterswohnen-bottighofen





'Knies Zauberhut': a sensational performance

230 m³ of timber, 470 Free Form timber elements, a 20-tonne hat, 8 months for production and construction as well as plenty of hair-raising moments for our experts in charge of planning, production and assembly. And then you stand in front of this sweeping structure. And it's sensational.

It was architect Carlos Martinez who, in the process of designing the extraordinary shape of this venue, came up with the idea of a levitating magic cloth. The building reminded circus director Franco Knie Senior of a magician's top hat. It's not just the appearance of this new landmark for the children's zoo in Rapperswil that has a touch of magic, but the project as a whole, from construction to planning and assembly. The already well-practised team, consisting of the client Knie, general planner Ghisleni, the engineers at Pirmin Jung and our Free Form experts, delivered a fantastic structure through unparalleled teamwork.

'We thought about how we could create a symbol to represent the identity of Knies Kinderzoo. We came up with the idea of a magic cloth where the shape is solidified in the air.'

Carlos Martinez, architect

Free Form planning with mock-up and 3D model

The special roof shape gives the magician's hat its unique appearance and even allows trapeze performances to be staged inside. The complex shell structure was developed by the structural engineers at Pirmin Jung. Twelve identical and twelve mirrored timber elements create the Free Form roof structure, which is topped off by the hat as a special feature in itself. Our Free Form specialists assisted the work of the planners from an early stage by creating a mock-up for implementing the geometric specifications from a technical standpoint. Those involved could then use this to clarify subsequent processes for executing the details and for production. The details of the structural elements were planned and preprogrammed using a three-dimensional parametric model.

Prefabrication in our factory halls

The sweeping components for the building were fully prefabricated in our factory halls from native spruce. Even the characteristic roofing shingles made using zinc sheets were crafted by our metalworker back in

the factory. The importance of sound insulation and acoustics meant that the inside of the shell structure, built from 24 elements, was clad in full. The 470 acoustic panels required were made by our production team using three-ply boards, bent into the right shape and perforated.

Challenging assembly

Joining up the roofing elements, which weighed in at four tonnes, and the almost 20-tonne hat was certainly no mean feat in terms of handling, accuracy and safety. Using a special crane and enormous finesse, the assembly team hauled, aligned and fastened the hat into place on-site.

Events venue with atmosphere

The events venue with its 26 m high tower is the new attraction at the children's zoo. 'Knies Zauberhut' has recently opened its doors and can be booked for events with up to 500 guests. The multifunctional building is equipped with modern lighting, audio and events engineering as well as a hydraulic stage – and most importantly with a very special atmosphere. Walking into the magician's hat and looking up into the canopy of Free Form timber elements, you feel like you are entering the circus. 'It's even more than that,' client Franco Knie feels, 'it gives you a good feeling. Everyone who enters the building says: wow!'

→ For the background to this project, visit: blumer-lehmann.ch/knies-zauberhut

Prefabrication saves time and reduces construction noise

'We often like to work with timber and wanted to create something using prefabrication for scheduling and environmental reasons,' explains architect Carlos Martinez in describing his idea to use timber construction for the project. He also makes reference to the principal advantage of timber construction: using a highly efficient prefabricated design meant the timber structure could already be made back at the factory while concrete foundations and wall structures were being cast on the construction site. Prefabrication and short assembly time on the construction site allowed two challenges to be overcome or at least reduced to a minimum: strict time constraints and noise disturbance for the people living in the area and the animals in Knies children's zoo.



From architectural ideas to buildable solutions

Painstaking project development is half the battle. Before starting on the building work, many questions need to be answered and solutions identified together with the clients and architects. The time and money spent on the preliminary project are recouped many times over in implementation. As with the new casino building in Venlo in the Netherlands.

Our team was in charge of full project coordination of the timber construction for this extraordinary casino building with its flowery architecture. This involved planning the timber structure using parametric design, engineering and preparing the structural documentation necessary for constructing the support structure and the outer walls on the top floor. We then produced the timber components in our factory in Gossau and assembled them with our team on-site in the Netherlands.

As early as the project development stage – the so-called preliminary project – we were able to support the client and designing architects with our

expertise and experience. In this way, our team took on the task of minimising risk, ensuring safety and delivering reliable technical solutions for the project.

Translating a flower design into viable geometric specifications

For the new casino building in Venlo, it was necessary to resolve some sticking points relating to the unusual geometry and the design of the support structure. During project development, the question then arose as to how the architectural designs could be put into practice. The aim of the interactive process that followed entailed working together with the client and

our counterparts at MVSA Architects in Amsterdam to find solutions that fulfilled the different interests of those involved in the project. Efforts were directed at converting the visual ideas into viable geometric specifications. The focus of the process was on the extraordinary design of the new casino building, which uses floral elements to allude to the importance of flowers in the Netherlands. Inside the casino, a Free Form column creates the centrepiece to the atrium. A stylised stem, its column grows upwards and finally branches out into a curved supporting structure in the form of a flower-shaped roof. The casino rooms extend over two floors around the supporting structure.

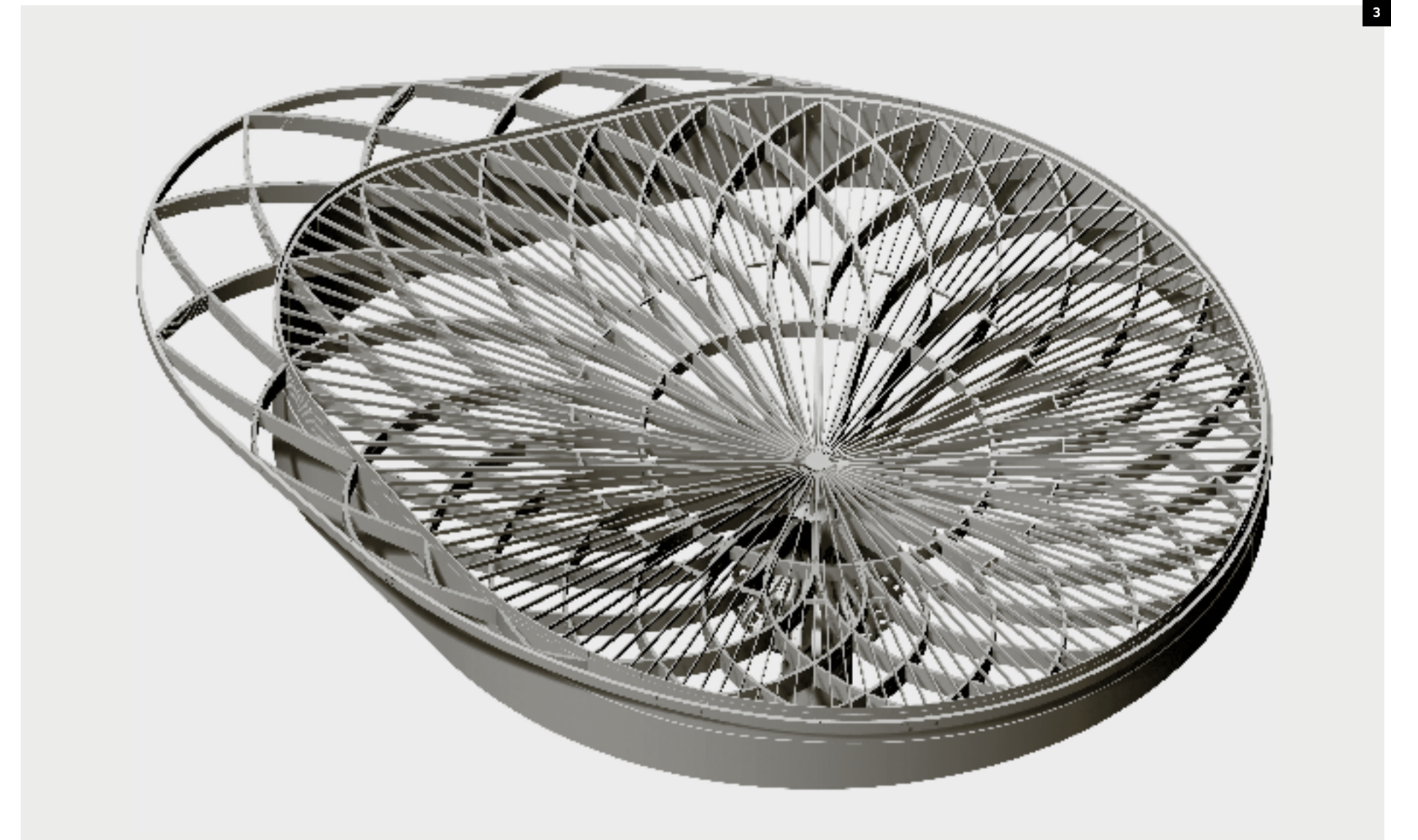
Assessing feasibility and finding structural solutions

‘Fundamentally, it’s about translating the architects’ ideas into buildable solutions,’ explains project developer Jephtha Schaffner. ‘We determine feasibility, check structural characteristics, decide on materials and work out how geometric specifications can be executed. A three-dimensional model of the planned building is created in order to pin down these aspects. The 3D model also allows us to provide the client with initial rough cost estimates for executing the building. In this stage, we also highlight which of the possible solutions are more cost effective or more complicated to carry out. We were supported in the new casino building project by our partner firms SJB Kempter Fitze in matters of engineering and Design-to-Production for the parametric design.’

Pre-project reduces cost of implementation

Whether it’s a preliminary project or mock-up – the term for a 1:1 model of a specific building section – Jephtha Schaffner often finds that the cost of project development is recouped many times over in implementation. The idea is that insights from the preliminary project and a solution worked out in scrupulous detail will save time and money in the execution phase, he explains, before elaborating: ‘The foundations this builds are valuable and reliable. They give the client a solid basis for the tender and ultimately a price advantage when contracts are awarded for the timber construction work. This is because the markup due to the risk of unexpected developments during implementation no longer applies.’

→ For images of current progress in construction and more information on the building, visit: blumer-lehmann.ch/holland-casino-venlo



- 1 Shell construction of the flower stem made from laminated timber with an impressive height of 24 m.
- 2 Side section of the new Holland Casino in Venlo. The timber supporting structure rises up through the middle of what will be the atrium. The casino rooms are over two floors around the stylised flower stem. Parking is on the ground floor.
- 3 24 straight and 230 single-curved beams make up the roof structure of the new Holland Casino in Venlo. 700 m³ of laminated timber was used for this. All timber components are PEFC certified.
- 4 The flower stem presented a challenge for the development team in the planning phase. The laminated timber beams had small radii and creative solutions were needed to manufacture them.



A 5,300m² Free Form roof for South Korea

Golf is popular in South Korea, in part due to the success of professional South Korean golfers. Golf players can choose from more than 500 courses, with more constantly being added. One of these is the new Hillmaru Country Club to the north of Seoul, in Pocheon. We were commissioned to carry out planning, production and assembly of the Free Form roof for the 160 m long clubhouse as well as the projecting roof in the entrance area. Here, visitors are welcomed by two tree-shaped Free Form structures made from spruce wood. The architecture is the work of Seoul-based YKH Architects. Structural considerations were taken care of by our Swiss partner firm SJB Kempter Fitze. At around 20.5 m in length, the longest component will not fit in the usual transport containers that get

shipped to Korea. Instead it will make its way to Asia as package freight, so-called break bulk. Eight of our carpenters will spend three months working on-site from August 2021 to make sure the clubhouse can open as planned in spring 2022.

Additional structures for the Haesley Nine Bridges Golf Club

The additional structures for the Haesley Nine Bridges Golf Club in Yeosu, South Korea, were not the first projects we had the privilege of completing for this client. After the first Free Form project 10 years ago, the spectacular clubhouse, we executed six further extraordinary buildings between 2018 and 2019: a learning centre, recreation centre, the Grand Hall underground foyer and restaurant, and three apartment buildings. All additional buildings were once again designed by star Japanese architect Shigeru Ban. The Swiss company Création Holz acted as building consultant. Together with our planning partners at Design-to-Production and SJB Kempter Fitze, we were responsible for all conceptual and timber construction planning, production, transport and assembly.

Our team spent around six months on-site, learning to appreciate the Korean way of life and culture so that they are now already looking forward to their next assignment in South Korea.



→ For an insight into the whole project, visit: blumer-lehmann.ch/haesley-nine-bridges

Timber construction expertise for 'The Red Sea Project'

We are currently in the midst of planning two Red Sea hotel resorts for the tourism scheme 'The Red Sea Project'. This includes Hotel 11 with its over-water and beachside villas designed by Japanese star architect Kengo Kuma, as well as Hotel 12 with a further 76 villas according to designs by Foster + Partners. 'The Red Sea Project' involves the construction of 50 hotel complexes on 22 islands by the year 2030. This vast tourism project is being created on the west coast of Saudi Arabia on a spectacular archipelago made up of more than 90 islands.

Despite the project's enormous scale, harmony with nature and sustainability are specified core aims of its investors.



ArchDaily Building of the Year 2021

We are overjoyed that ArchDaily has honoured two of our completed timber construction projects with Building of the Year awards. The Apple Store in Bangkok, designed by Foster + Partners, received the 'Best Applied Products' award. The Maggie's Leeds project (see page 18), created by Heatherwick Studio, was honoured with a 'Healthcare Award'. We would like to congratulate our partners and thank them for the faith they place in our work.





Team spirit is at the heart of the work carried out by apprenticeship supervisors Christian Rutz and Rafael Gemperle.

Excellent training on a technical and social level

VARIED VOCATIONAL TRAINING AT ERLLENHOF

The Lehmann Group offers young people a wide array of options to kick-start their career. Knowledgeable instructors are there to support young adults in the following vocational training programmes:

- > Carpenter EFZ
- > Sawyer EFZ, from 2022 Timber industry specialist EFZ (for further information see the publication on 'Wood processing')
- > Woodworker EBA
- > Draughtsman / Draughtswoman specialised in architecture EFZ
- > Commercial assistant EFZ



To support and to challenge - one of the management principles at Blumer-Lehmann - is also core to the day-to-day work with apprentices.

Blumer Lehmann is currently training around 16 carpenters completing a four-year workplace-based apprenticeship. Despite the widespread shortage in skilled labour, the apprenticeships we offer continue to be in great demand. There are several reasons for this.

For one thing, the appreciation of timber as a building material continues unabated - the apprenticeship is very varied and offers fascinating opportunities for further training. Secondly, apprentices are also well supported during their period of training in our company and are deployed in all manner of areas, from work in the factory to on-site activity. Not to mention that a career in carpentry is also meaningful in terms

One of the two apprenticeship supervisors at Blumer-Lehmann AG is Rafael Gemperle. Having himself been an apprentice at Blumer Lehmann more than a decade ago, a strong focus of his further training as a timber construction engineer was on our in-house training concept, and he wrote his thesis on the subject.

His thesis highlighted specific weak spots and proposed measures and strategies for improving the quality of our training. During their four years of training, all apprentices now rotate every three months across different departments appropriate to their year of training. During this time, one of more than 40 practical instructors are there to ensure apprentices are taught the practical application of objectives set out in the syllabus. When asked which aspect of training apprentices he enjoys the most, Gemperle responds: 'I find working with young people really fascinating. During my own apprenticeship, I was also constantly faced with new tasks. I want to support and challenge our apprentice carpenters, both on a technical and social level.'

'The last 13 years have allowed me to get lots of experience on the ground that I now want to incorporate into my thesis and use to optimise our apprenticeships.'

Rafael Gemperle

→ For more information on our vocational training, visit: lehmann-gruppe.ch/karriere/berufsbildung

of content. It involves working with the most sustainable building materials and generally creating something new and positive. At the end of the day, there is a tangible result.

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 key handover. Need some inspiration? In the reference projects on our new website, you can find a wide variety of ideas that have become a reality.

→ **Visit our website!**
blumer-lehmann.ch/en



Markus Rutz
Division Manager Timber Construction Excellence | Sales | Member of the Group Management Board
T +41 71 388 58 40
markus.rutz@blumer-lehmann.ch



Martin Looser
Division Manager Free Form | Sales International | Member of the Group Management Board
T +41 71 388 58 28
martin.looser@blumer-lehmann.ch



Lukas Osterwalder
Division Manager Modular Construction | Sales | Member of the Group Management Board
T +41 71 388 58 20
lukas.osterwalder@blumer-lehmann.ch



Migga Hug
Head of GC Services | Sales Modular Construction | Member of the Executive Board
T +41 71 388 58 23
migga.hug@blumer-lehmann.ch



Richard Jussel
Project Development | Sales Industrial Buildings
T +41 71 388 58 61
richard.jussel@blumer-lehmann.ch



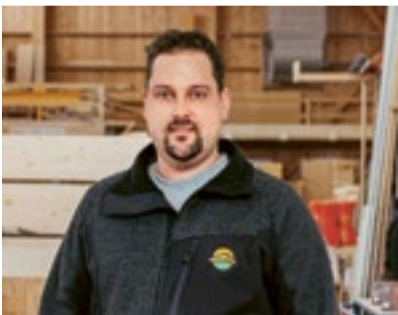
Yannick Neumann
Sales Modular Construction, Western Switzerland
T +41 71 388 52 75
yannick.neumann@blumer-lehmann.ch



Marco Gemperle
Sales Residential Construction
T +41 71 388 58 55
marco.gemperle@blumer-lehmann.ch



Peter Holenstein
Sales Conversion | Renovation | Staircases
T +41 71 388 58 46
peter.holenstein@blumer-lehmann.ch



Hansueli Frei
Sales Agricultural Buildings
T +41 71 388 51 68
hansueli.frei@blumer-lehmann.ch



Roland Meier
Head of Purchasing | External Timber Frame Components
T +41 71 388 58 62
roland.meier@blumer-lehmann.ch



Andreas Thölkes
Commercial Manager Luxemburg
T +352 691 664 711
andreas.thoelkes@blumer-lehmann.lu



Alexander Holl
Sales | Project Development Germany
T +49 2225 8896-20
alexander.holl@blumer-lehmann.de

WOOD PROCESSING ENERGY



Lehmann Holzwerk AG

NEWS
No.13 2021



It makes
sense to use
Swiss wood

Why? The next few pages
will tell you.

Re-use and regenerate with Swiss wood

Everyone is talking about the circular economy approach. This works at its best when we are actually able to close material and product cycles completely and use raw materials in a cascading effect, over and over. The fact that timber has the edge on other raw materials in this respect needs no explaining.

At the Lehmann Group, the circular economy is no abstract model; instead, it has already formed part of our company's integration strategy for many years. 150,000 m³ of native round timber made its way from the forest to our Erlenhof premises last year. With every last piece processed in the sawmill, planing mill, pellet facility or power plant, the raw material is turned into sawn timber, residual timber products, heat and energy.

OUR FOREST - GROWTH OF AN AMAZING NATURAL RESOURCE

One third of Switzerland is now covered in forest and this area is constantly growing. Every year, 10 million m³ of wood regrows in Swiss forests, yet only 5 million m³ of this is harvested. Meaning that we have a plentiful supply of timber. For 146 years, we have processed only spruce and silver fir in our sawmill. Our round timber is sourced from forest owners no more than 100 km away. We have been awarded the Swiss wood label and so pledge to process at least 80% Swiss wood. Any timber that is sourced outside Switzerland comes from countries close to our border. We place great importance on short distances and resource-conserving transportation as another way of reducing carbon emissions.

What many people do not know is that where timber and products carry the FSC label, it does not take into account the embodied energy of transportation.



ENERGY SELF-SUFFICIENT, ECO FRIENDLY AND RESOURCE CONSERVING

A significant contribution to our sustainable timber life cycle is made by our in-house ORC biomass power plant, which burns any residual timber left over. We use the heat that this produces to dry both the sawn timber and the sawdust used in pellet production, and also to heat our company buildings. Any sustainably produced electricity that remains is fed into the local grid. The CO₂ released is reabsorbed by the regrowing forests.



SWISS WOOD PELLETS AND BARK BRIQUETTES

Nothing goes to waste. We even make use of residual timber from the sawmill and further processing. Every year, the sawdust and wood shavings are turned into around 35,000 tonnes of carbon neutral pellets, a balm to heating systems with their density and top-rated ENplus A1 quality. It is important to note that no trees are felled just to make these pellets. We make our bark briquettes and litter for small animals from pure, dried bark. Our pellets can also be ordered online for domestic use.

ROUND-TIMBER SUPPLIERS - LONG PARTNERSHIPS

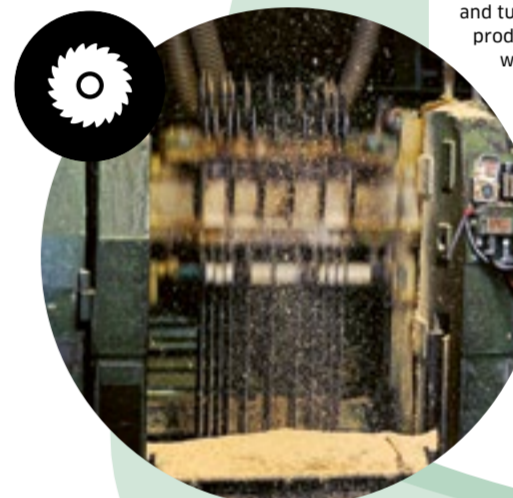
The cultivation and upkeep of forests is the responsibility of forestry. This includes municipal and cantonal forestry offices as well as private forestry companies. Roger Wegmüller is in charge of procuring round timber at Lehmann Holzwerk. Crucial for this is not only an array of organisational and logistical factors, but also maintaining the partnerships that form a network of suppliers cultivated over many years. To do this, he is in constant contact with these suppliers and our partner firms visit us at Erlenhof once a year for a traditional 'round timber event'.

For more on Roger Wegmüller's work, read the interview online at: lehmann-gruppe.ch/einkauf-rundholz



SAWING AND PROCESSING - FROM ROUND TO ANGULAR

Our sawmill is an important part of the value chain in the timber life cycle. It's where we cut the round timber and from this produce sawn timber. We process the round timber on both our saw lines and turn it into sawn timber and planed products. The residual timber incurred, which can be more than 40%, results in our residual timber products including wood chips, bark and sawdust. In our planing mill, we produce 150 m³ to 250 m³ of planed products every day and process around 45,000 m³ of sawn timber each year.



FLAWLESS TIMBER IN ANY LENGTH

It goes without saying that the natural growth of wood can't avoid knots and other visual anomalies. One way of dealing with the artful caprices of nature such as these is to process the sawn timber into finger-jointed products. To improve the quality of the wood, we cut any defects out of the wood and put it back together again using finger joints. Cutting-edge scanning and planing technology ensure high precision on our finger-jointing line. We use a fully automated process here to create high quality finger-jointed products such as slats, profiled boards and cladding. This is also where we produce finger-jointed raw material that goes on to be processed further and is used to create other products in a variety of quality grades and product ranges.



PRICE DEVELOPMENT OF SWISS WOOD

Prices on the European sawn and round timber market are currently moving at a fast pace and are reaching Swiss levels. This is caused by the combined effect of many factors, such as reduced quantities of storm-damaged timber on the market, an increase in demand in the US and EU as well as a short-term reduction in supply by individual producers.

quality grades of the raw timber available. The large amount of storm-damaged timber in quality grade D, which flooded the market for many years, is diminishing and being replaced by green wood in quality grades B/C. We are of course intent on ensuring that our round timber suppliers benefit from these price increases where the trend is sustained.

This development has, however, little to do with the situation in Switzerland. In the home market, prices for sawn timber have to date seen moderate growth. This is not due to the increasing purchase price for round timber, but is instead a result of a shift in the



Building with wood from one's own forest

The construction industry has long been occupied with a local supply chain model, and not just in the abstract. Urban Jung, General Manager of Lehmann Holzwerk, has also noticed clear evidence of this trend. Increasingly, he is being asked by customers to process round timber from their own forests. This includes municipalities, for instance, for the construction of public buildings.



Urban, paint the picture for us – I have an area of woodland and want to use the raw material to build a local school or another construction project?

URBAN JUNG That's it precisely. In the context of reducing carbon emissions, we are finding that wood is increasingly being used in building work, but that there is also a desire to use the available timber resources belonging to a municipality or company for a specific construction project.

So how does this request then reach Lehmann Holzwerk?

It's often a public sector building contractor or a timber construction specialist who asks us to process their round timber. This means that we are asked to do the sawing as well as the relevant processing, whether that's planing or finger jointing.

So you also quote for processing work. Who is then subsequently responsible for delivery and assembly, for example for a facade?

That would be the timber construction company carrying out the work. This could be our associate company Blumer Lehmann or of course any other timber construction company.

Are there any completed projects

where we were able to carry out this kind of work?

Yes, there are plenty. For example, we're currently in the process of supplying the timber for a new indoor swimming pool in Appenzell, for the Rietwis sports complex in Wattwil and for extensions to the AgroVet-Strickhof centre for education and research in Lindau, Zurich.



Appenzell indoor swimming pool, visualisation of the exterior (Equilibre © nightnurse images, Zurich)

What's the benefit of having timber supplied this way? Is it not a much more laborious and expensive process for the client?

No, not at all. The advantage for the customer is that they can put their wood straight to good use and they hold clear documentation on where the wood comes from. Resale margins are also cut out of the process. When there are large amounts of storm-damaged timber around, this is a convenient way to use valuable raw materials.

You touch upon timber quality grades. Can customers simply order timber in the required quality grade and that's what you deliver? Or what does the process ideally look like?

It doesn't tend to be as simple as that. Wood is and shall remain a natural product. An ideal process for us is when the customer or timber construction specialist doing the processing approaches us as early as possible. We can then work together to determine the ideal 'yield' from the round timber available, as this depends on the quality required. As experts in sawing, we are without doubt the go-to people in this respect, with the greatest wealth of experience and good judgement. Depending on how the timber will be used and the quality required, such as with no knots or discolour-

ation, further processing in our finger-jointing mill may be an option, or else the resulting qualities are put to a range of appropriate uses.

Very interesting. Let's look again at finger jointing. As you know, we have been able to supply finger-jointed products since last year. What advantages does this hold for the customer? And what products do we offer them?

Adding finger jointing as a stage in the process allows us to influence the quality of the wood according to how it will be used. This means that we can take the wood that has grown and cut out defects, to a greater or lesser extent, before reassembling the parts remaining. This also allows lengths to be selected as required, from 3 metres to 6 metres. As a result, we can fulfil almost any requirements with our sawn timber.

Our standard products include finger-jointed slats, rough-planed timber, facade solutions, weatherboarding, cladding with a visible groove, rhomboid cladding as well as interior panelling – virtually anything is possible. Facade cladding is available in the different quality grades N1 and A, free of knots or rift sawn or quarter sawn on request, and is laminated using a formaldehyde-free PU adhesive. Different standard profiles as well as a range of bespoke profiles, various types of wood and surface treatments are available to choose from.



Urban, thank you for sharing this with us, it sounds like a fascinating area to work in. What do you personally think the future holds for wood as a raw material and for building?

Timber will be the building material of the future, for many different reasons. It is a very attractive raw material for architects as it can be used to create virtually any shape you like (see Free Form by Blumer Lehmann). Its tactile surface is also very inspiring and radiates a sense of warmth. Wood is the only raw material that regrows locally, sequesters carbon and requires very little energy for processing.

Wood from sustainably managed forests therefore offers all the benefits a future building material would need.

Timber will be the building material of the future.

A new vocation unites forests and the construction industry

Our future timber industry specialists carry out a wide range of activities in the value chain linking forests and the construction industry. Here at Erlenhof, we are getting ready for the first apprentice timber industry specialists.

The new timber industry specialist apprenticeship will replace the current sawyer apprenticeship in August 2022, thus taking the altered requirements of the timber industry into account. The new apprenticeship will place greater emphasis on the inclusion of sawn timber processing through gluing and planing, on learning about systems engineering and IT subject areas, and on direct contact with customers.

An eye for timber qualities and technical understanding

Timber industry specialists don't just have one place of work, but several at once: outside in the open air or in the relevant workshops or warehouses. And the size of its equipment, such as cranes and forklifts, is also an area where few other professions are able to compete. GO BIG! is, fittingly, the promotional slogan for this new occupation. The ability to assess the round timber delivered calls for comprehensive and expert knowledge of wood as a raw material, its properties and possible uses. In line with customer requirements and company guidelines, these specialists use a range of processes and the right equipment to cut the raw timber. Achieving the best possible yield is a cast-iron objective here. In subsequent processing stages, they produce a huge range of sawn timber, laminated timber and planed products. The new occupation combines a whole spectrum of tasks and offers variety. In other words, it's a job for young professionals who love nature as well as being technologically and digitally minded.

An occupation with prospects

Timber industry specialists contribute directly to a sustainable future. Timber as a sustainable raw material is what they do best. Their knowledge makes them prized experts in sawmills, timber processing plants, laminating facilities or timber wholesale. And as raw timber specialists, they are able to advise customers across the board.

In August 2022, the first apprentice timber industry specialists will begin a training programme with huge prospects. 'Timber as a material has huge potential. I am positive that young people completing an apprenticeship in the timber industry will enjoy a wealth of professional opportunities. That's because they know how to process timber and how to build with it,' says Josua Preisig, production manager and instructor in the sawmill. After their apprenticeship, they can continue their professional development with courses, professional qualifications, colleges of professional education and training or degrees from universities of applied sciences.

Four Questions for Michael Gautschi

Director of the Swiss timber industry association, HIS



Many commercial and industrial firms struggle to find the right apprentices. What does this mean for the timber industry?

MICHAEL GAUTSCHI The sector depends on enough young professionals finding their way into the timber industry. Otherwise, there is a danger that the various different jobs in what tend to be increasingly complex enterprises are no longer carried out efficiently enough or to the required quality standards. That is why the timber industry as a whole always tries to get enough enthusiastic school-leavers interested in its range of exciting occupations. The number of apprenticeships has remained at a consistent low over recent years and we have far too few apprentices in French-speaking Switzerland.

What measures is the association planning on taking to counteract this trend?

Together with the association of Swiss planing mills (VSH), HIS has modernised and expanded the occupational profile for sawyers in the timber industry EFZ. From summer 2022, apprentices will be trained not just in sawmills but also in planing mills and firms working with laminated timber. This increases the number of potential training companies. We also want to use the GO BIG! campaign promoting the occupation to engage our main target group, young people themselves, and get them excited about this career path. It's important to speak their language and use their communication channels such as Instagram and YouTube. Alongside this, we also want to familiarise parents, teachers and careers services with this occupation. Our work together with the marketing

department at Lehmann Holzwerk AG in promoting this occupation is of great value to HIS.

What new prospects are offered to young professionals by an apprenticeship as a timber industry specialist?

Young professionals get to experience the entire timber value chain, from the raw tree trunk to the finished building product. They get to process all kinds of orders, programme timber processing machinery, carry out simple repairs on machines and equipment themselves and are trained in how to work with customers. This wide-ranging apprenticeship reflects developments in the industry: sawmills are noticeably investing in the further processing of sawn timber products or are working together with other firms. Laminated timber materials are becoming a feature on construction sites around the world. Modern enterprises offer their customers not only products but also services. We are confident that we are offering an incredibly attractive and future-proof training programme with the timber industry specialist EFZ apprenticeship.

How would you now explain to parents why their son or daughter should do an apprenticeship as a timber industry specialist?

Timber is a traditional material with an excellent future ahead of it. The Swiss timber industry provides secure jobs in a dynamic environment. Our training firms are owner-operated, small to medium-sized SMEs that can offer their apprentices varied work in a familial environment. Most apprenticeship firms have many years' experience in training young people and are constantly developing their own skills. Following an apprenticeship, trainees motivated to further their own development can take advantage of further training as a production manager or timber commercial assistant with a federal diploma. A technician qualification from a college of higher education or a BA/MSc in wood technology from a university of applied sciences are also potential career trajectories.



GO BIG!

GO BIG! is the Swiss-wide campaign to attract young people to a career in the timber industry. The campaign was initiated by the Swiss timber industry association (HIS) and the association of Swiss planing mills (VSH). On behalf of HIS, we developed the basic campaign together with external partner organisations and are commissioned with carrying out marketing and communications.

For more on the new education and to hear fascinating perspectives from timber industry specialists, visit go-big.ch

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 railing, 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 find out more about our products and services on our website.



Visit our website!
lehmann-holz.ch/en

Urban Jung
 General Manager Lehmann Holzwerk AG | Sales | Member of the Group Management Board
 T +41 71 388 58 19
urban.jung@lehmann-holz.ch

Pius Jung
 Head of Sales
 T +41 71 388 58 16
pius.jung@lehmann-holz.ch

Florian Berger
 Sales & Logistics
 T +41 71 388 58 14
florian.berger@lehmann-holz.ch



Armin Lambacher
 Sales
 T +41 71 388 58 48
armin.lambacher@lehmann-holz.ch

Bernhard Reutimann
 Sales
 T +41 71 388 58 15
bernhard.reutimann@lehmann-holz.ch

Kaspar Keller
 Sales
 T +41 71 388 51 77
kaspar.keller@lehmann-holz.ch



Roger Wegmüller
 Round Timber Purchasing
 T +41 71 388 58 17
roger.wegmueller@lehmann-holz.ch

Andreas Forster
 Head of Pellet Mill Production | Sales Pellets
 T +41 71 385 36 70
andreas.forster@lehmann-holz.ch



SILO FACILITIES ENGINEERING

BL Silobau AG

NEWS
No.13 2021



Winter services
using salt and brine

For more on this major Vienna-based project, go to page 2

Major project in Austria

The three brine storage tanks gleam in eye-catching orange, and the brine generator achieves a nigh-on record-breaking performance. The new complete winter services facility in Vienna is an exceptional project. In part because, more often than we would have liked, team-work had to be take place on the phone or by email as a result of the extraordinary international circumstances in the autumn of 2020. However, working across borders in Europe is anything but unusual for our silo construction team.

With coronavirus protection measures already in place, project manager Martin Bischof travelled to Vienna for the initial on-site consultation to discuss implementation of this substantial complete silo and brine facility with those involved in the project. He then had to direct and coordinate all other planning and project management from a distance of 650 km, in his office at our location in Gossau. 'We mostly resolved technical issues on the phone or by email,' he recalls. 'In the construction phase, six installers spent two and a half weeks building the silo facility. Four installers needed another three weeks to install and program the brine facility.'

Brine generator with top-class performance

Implementation went smoothly despite the aggravated circumstances. And the all-new maintenance depot with its two salt silos, each with a capacity of 500 m³, a weighing system with electronic display and three brine storage tanks in orange, each with a 45 m³ capacity, is an impressive sight. The brine generator has a top performance of 15,000 litres of solution per hour,

with up to 22,000 litres at peak times. In other words, around four times higher than the average brine generator. Not just that: for operations throughout this large city, no fewer than four extraction points are available for vehicles to fill up and for excess brine to be fed back into the tanks.

Success factors: technology, quality, maintenance and design

How did the city of Vienna come to entrust this major contract to BL Silobau AG in Gossau? General Manager Jakob Frischknecht came across the project on an online tendering platform. BL Silobau AG were ultimately awarded the contract for the full package of services, including consultation, planning, the silo facility, brine generator, electronics and weighing. It is precisely in this diversity of services and in particular the range of technologies that Frischknecht sees our huge potential. 'We employ our very own mechanical engineers and offer the whole range of products with engineering for conveying, brine, weighing and silos; all this at high-quality standards and with unique

designs. This is what wins our clients over.' Frischknecht identifies another success factor: our maintenance service. 'From our perspective, a project isn't done when we hand a silo facility over to the client, but rather when we dismantle the facility at the end of its service life. Alongside sales and project management, maintenance is a mainstay of our company. In our maintenance team, we have 12 highly qualified members of staff at work maintaining and, where necessary, repairing the silo and brine facilities, either as part of a maintenance contract or when the customer requests it. By offering this, we are guaranteeing the reliability and safety of our winter services facilities and extending their service life.'

We employ our very own mechanical engineers and offer the whole range of products with engineering for conveying, brine, weighing and silos; all this at high-quality standards and with unique designs.

Active throughout Europe

Prior to the complete facility in Vienna, the BL Silobau team had already built facilities in the Netherlands, Slovenia, the Czech Republic, Germany, Austria and even in St.Petersburg and the Krasnodar region. Would General Manager Jakob Frischknecht and his team also be prepared to carry out projects beyond Europe? 'The construction site in Krasnodar was 3,000 km away, and haulage across such huge distances needs to be well organised. But at the end of the day, you never know what the future holds.'

→ For more on this major Vienna-based project, visit: blumer-lehmann.ch/silo/wien



NEW MAINTENANCE DEPOT IN BÜLACH

A new maintenance depot for Zurich's cantonal office for industrial engineering was constructed in Bülach in early 2021 according to designs by Felgendreher Olfs Köchling Architekten GmbH and under the leadership of Jaeger Baumanagement. It includes office and workshop buildings as well as a garage and two round timber silos, each with an enormous capacity of 400 m³. These create a compelling contrast to the straight lines and minimalism of the wood-concrete structure. A Quanto brine generator and brine storage tank also form part of the winter services equipment.

→ blumer-lehmann.ch/silo/buelach



SALT AND GRIT SILOS FOR ZERNEZ

We supplied three round silos each with a capacity of 200 m³ to support construction of a new winter services depot in Zernez in the canton of Grisons. These are equipped to store salt and grit and are of a size to allow the storage tanks to already be filled in the summer. Overall planning for the maintenance depot, which will be completed in 2021, is being carried out by the canton of Grisons building department. We were in charge of planning and implementing the silos as well as the systems engineering.

→ blumer-lehmann.ch/silo/zernez



NEW ROUND SILOS IN TICINO

We were delighted to carry out one of our largest complete facilities, including a salt silo and brine facility, for the Federal Roads Office (FEDRO) in Ticino in August 2020. The new replacement building for what was previously flat salt storage on a site in Airolo includes two round salt silos at 500 m³ capacity each, an automatic weighing system, Quanto brine generator and brine storage tank. Vehicles are filled within just 20 minutes and can be organised efficiently thanks to two extraction points. Implementation of this project was very swift. Following a very short planning phase of just 12 weeks, execution took place from June to August 2020.

→ For more insights into the project, visit: blumer-lehmann.ch/silo/airolo

Silo for Matzingen maintenance depot

Inspired by the style of Thurgau farmhouses, the new building for the Matzingen maintenance depot created more than just infrastructure facilities. Lilin Architekten designed a modern timber structure with a gable roof and anthracite facade in spruce wood. This facade also spans the square silo, 11.5 m high and elegantly incorporated into the facility as a whole. We were in charge of planning, production and assembly of the salt silo.

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





A textbook project right on our doorstep

The silo facility in Gossau wasn't actually supposed to be replaced until 2021. But then the Gossau authorities decided to bring the construction project forward. We owe the fact that we were able to implement the project a year earlier than planned to the uncomplicated approach of the town council, which supported local businesses during the coronavirus crisis. This provided them with a new and modern facility in time for a winter that brought us the highest snowfall in years.

Two primary reasons were pivotal in replacing the Gossau silo facility: at around 25 years old, the existing facility had reached the end of its service life; renovating it would have involved a complete overhaul. What's more, the previous capacity of both silos, at 100 m³ each, was too small. For the Gossau authorities, a new replacement structure in 2021 was therefore beyond dispute. Admittedly, this put our project managers and assembly team under a fair amount of pressure to do their very best on their own doorstep.

Planning application – removal – engineering – construction

The project began in August 2020 with preparation of documents for the planning application. A second stage involved the engineering, including structural analyses and ultimately the removal of the existing silo facility. At the same time, we were already prefabricating the structural elements for the silo facility

back in our factory. Due to the doubled capacity and greater weight, the new facility needed a stronger footing. This was achieved by using piles to strengthen the sides of the remaining footings and casting them in concrete.

From the moment construction on the new facility began, everything literally ran like clockwork. Project manager Sascha Aerne describes how it was implemented: 'The construction phase was already underway in August. The substructure with steel supports was delivered to the construction site and installed. Next, the team assembled the prefabricated elements for the hopper, drum and roof and installed these on the steel structure. Once the roofing work and electrics for lighting and heating were finished, the final act was to furnish the very top of the roof with a weather station – a component we inherited from the old silo facility.'

Textbook project progression

Like interlocking cogs, everyone involved in the project worked together flexibly and as one. There was no slack between the work of the various specialisms involved. No working day went to waste. The construction phase was planned to the minute and was carried out accordingly. And those in charge of the project at the town council prioritised it to ensure the project team was given time, space and swift decisions.

The new silo facility was complete as early as October 2020: a functioning facility with two salt silos at 200 m³ capacity each and featuring the latest technology. For reasons of practicability, the Gossau authorities deliberately decided against highly engineered components and focused instead on tried-and-tested mechanics. Pre-greyned larch cladding gives the facility a timeless elegance.

Investment in the future

We anticipate a service life for the silo facility of around 30 years. With regular maintenance, the new facility will operate without technical issues and will remain in impeccable condition in structural terms. Every additional year of operation that our maintenance team can secure past this date increases its economic viability and is consistent with our intrinsically respectful approach to resources, both with timber as a raw material just as with public means.

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



PROJECT TEAM

Engineering	Niederegger AG, St.Gallen
Industrial engineering	HASTAG St.Gallen Bau AG, St.Gallen
General construction	Holenstein AG, Gossau
Electrics	Naef + Partner Elektro AG, Ebnat-Kappel
Architectural metalwork	Eigenmann Spenglerei, Andwil

The silo construction project as seen by the head of the maintenance service



Hanspeter Meile, Head of Gossau maintenance service

Mr Meile, what were your requirements for the new silo facility?

HANSPETER MEILE Our specifications were to double the storage capacity and to install a steel support structure.

What was your experience of this new silo construction project and the work together with BL Silobau AG?

It was quite something to see how fast demolition and new construction took place – despite a short lead time. Working together with BL Silobau was excellent. They provided us with expert advice and we felt we were in good hands throughout the construction phase. BL Silobau organised all aspects of the demolition and construction, even relocating the remaining road salt. We still feel we are getting the support we need even now that everything is complete.

How satisfied are you with the new silo facility overall? What do you like about it in particular?

The silo facility operates flawlessly and we are very happy with it. The choice of colour has already met with approval. I also think it's great.

To what extent has your working day changed since the new silo facility was built?

Our daily work routine hasn't changed. But we now feel more reassured as next winter approaches because we have enough road salt stored in our silos for what the average winter brings.

What do you expect from the next winter season?

We don't have any specific expectations of the coming winter. We'll just have to wait and see.

Winter services facilities – larger, more complex and more efficient

Persistent snowfall and bone-chilling temperatures – last winter is likely to be remembered above all by maintenance depot managers whose job it is to ensure safe road conditions. Salt or brine? With highly efficient complete winter services facilities, they are able to customise their management strategies in line with winter conditions.

Many of the complete winter services facilities we have constructed over recent years are evidence of a trend towards combined winter services using both salt and brine, the pre-wetted salt made by combining salt and water. Not only that: milder temperatures as a result of climate change mean that brine can also be used at higher altitudes.

Flexible response to winter conditions

From the perspective of Hans-Georg Hirt, who manages brine technology sales at Blumer Lehmann Silobau in Klosterlechfeld in Germany, the choice of brine or salt in winter services depends on the geographical location. For snow-covered streets, traditional road salt still offers the best solution. It mixes with the snow and reduces the freezing point by

around 15°C. The mixture of snow and salt immediately provides more grip for car tyres and starts to thaw even at low temperatures. 'Brine, on the other hand, can already be used preventively on dry carriageways when the forecast has, for example, predicted black ice or sleet,' explains Hirt and adds: 'This is why people are increasingly opting for brine on flat terrain, while salt is more often used in the mountains. Yet as a result of the general rise in temperatures, more and more municipalities are switching to a combination of brine and salt to allow them to respond flexibly to varying winter conditions. They use brine as a preventative measure to ensure safe road conditions. And for snow-fall like we saw last winter, they fall back on tried-and-tested road salt.'

WHAT IS BRINE?

Brine, or pre-wetted salt, is the term used for a salt solution that is made by combining water and salt. Highly concentrated brine straight from the brine generator has a concentration of around 26%. Brine that is ready to use is applied in winter services at concentrations of around 20-22%.



Silo and brine facilities, works and construction yard, AWB in Cologne



DIFFERENT TYPES OF SALT

Rock salt

Rock salt is quarried in large chunks from underground mines and then ground up by machines. It is the cheapest form of salt but contains impurities. To be used for brine, rock salt first needs to be cleaned via sedimentation or filtration.

Vacuum salt

This salt is extracted at depths of up to 400m using water. Pipelines take the resulting concentrated salt solution to salt-works. Here it is softened and crystallised in a vaporiser. This complex process makes vacuum salt the most expensive kind of salt.

Sea salt

Sea salt is extracted either by hand or mechanically by evaporating sea water in natural lagoons or artificial pools – so-called salt evaporation ponds or sea salterns.



Highly efficient complete facilities

Overall, Hans-Georg Hirt is observing a trend towards larger and centralised salt storage, more stringent requirements for the efficiency of brine facilities and an increase in the combined use of salt and brine. Particularly in demand are complete facilities for comprehensive, weather-specific winter services; these include salt silos and conveying technology, brine technology, tanks and pumping facilities. The fact that this often goes hand in hand with requests for extensive automation of facilities is something that Hirt welcomes, because: 'We are specialists in process engineering. For our projects throughout Europe, we also develop the necessary control systems, measurement technology, data transfer as well as technology for pumping and filling.' The teams in Klosterlechfeld and Gossau work together closely although they are around 200 km apart. They complement each other in their respective fields of brine and brine mixing technology as well as silo engineering and facility construction, and work together to develop sophisticated concepts for complete facilities of every size.

Trends in winter services

Most notably increasing in Germany and Switzerland is road management using 'FS 100' pre-wetted salt, in other words 100% brine. The brine tanks of winter service vehicles have also increasingly grown in size over the last 10 years – with capacities of up to 25,000 litres. 'In line with these trends, we have developed more efficient brine generators and larger storage tanks to ensure useful winter services processes across the board. For example, we are now installing facilities with a solution speed of 12,000 litres of brine per hour and storage systems with a capacity of 150,000 litres of brine,' explains Hirt. It's not just the efficiency and capacity that are changing, but also how the salt is used. This is why Hirt and his team are developing complex process engineering, such as with additional sedimentation and filtration to allow different types of rock salt and vacuum salt to be processed. Because what is required is brine that is as pure as possible without dirt particles, so that sensitive computer-operated spraying devices do not clog up when distributing the brine.

Our team is on the spot throughout Europe for new installations of complete and partial facilities and for the renovation and modernisation of existing facilities. Careful maintenance of silos and brine facilities extends their service life and preserves their value for longer. Modern possibilities with electronic remote servicing or a maintenance portal with online cockpit provide our customers with additional options for the efficient management of their silo and brine facilities.

Your contact for silos and winter services facilities

For us, individual requirements mean fascinating challenges. 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 services facilities at home and abroad. Regardless of the size of the facility, whether your vision includes round or square timber silos or whether you are planning a complete concept

or an architecturally extraordinary grit 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.



Jakob Frischknecht
General Manager BL Silobau AG |
Sales | Member of the Group
Management Board
T +41 71 388 58 10
jakob.frischknecht@blumer-lehmann.ch



Roger Brander
Deputy General Manager |
Head of Sales
T +41 71 388 58 73
roger.brander@blumer-lehmann.ch



Hans-Georg Hirt
Sales, Germany | Brine Technology
T +49 8232 9597 871
hans-georg.hirt@blumer-lehmann.de

Visit our website!
→ blumer-lehmann.ch/en/silo



Yannick Neumann
Sales, Western Switzerland & France
T +41 71 388 52 75
yannick.neumann@blumer-lehmann.ch



Michèle Campana
Sales, Ticino & Italy
T +41 91 943 55 64
m.c@blumer-lehmann.ch



Erich Eisenlohr
Head of Service & Maintenance
T +41 71 388 58 45
erich.eisenlohr@blumer-lehmann.ch



Fabian Schittkowski
Service & Maintenance, Germany
T +49 175 2283 382
fabian.schittkowski@blumer-lehmann.de