

# The age of timber

*Wood is making a comeback.  
Once relegated to simple  
structures, now it takes on steel  
and concrete for pride of place in  
high-tech construction thanks to  
its sustainability. We meet the  
Swiss players making a case for  
hugging trees*

TEXT

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**From right**

Bruno Milesi; the Seebad's last renovation rehabilitated original timber from 1885

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othing defines idyllic summer days on the Lucerne Nationalquai like the treasured Seebad Luzern. Celebrating its 135th birthday this year, the famed aquatic outpost serves as a place for swimming, sunning, yoga, massage and refreshments for locals and visitors.

But when the idea for the Seebad was proposed in 1884, it was a controversial concept. Those who opposed the idea argued that a public bath would clutter up the area and disrupt tourist activity, while those in favour cited the health and hygiene benefits, as well as the need for a convenient place for women, who didn't have an outdoor swimming venue at the time, to gather and exercise.

The plan passed, and Lucerne-born architect Heinrich Viktor von Segesser devised a functional structure, with its bicubic layout and timber materials, which has remained a landmark on the lakeside since it was completed in 1885. "The seaside resort has been part of the cityscape of Lucerne for decades and is an indispensable part of life," says Bruno Milesi, co-manager of the Seebad.

The building itself has gone through numerous remodels and reworks to better suit the needs of the people at that time in history, including major renovations in 1963, 1984 and most recently in 2010, when Lucerne architects Bosshard & Luchsinger oversaw a complete rebuilding of the Seebad and its supporting structure. Luckily, much of the original interior wood from 1885 was in good enough condition to rehabilitate and incorporate back into the design, and today there is a detailed monitoring and maintenance plan for keeping the building in top shape. "Maintenance work often occurs where the wood is exposed to the elements, and this also includes regular inspection of the underwater construction," says Milesi.

Through it all, the Seebad has consistently served as an example of Swiss wooden architecture and the country's



love of wood. For more evidence of that love, look no further than the nearby Kapellbrücke, aka the Chapel Bridge, perhaps Lucerne's most famous landmark. Originally built in 1333, it is Europe's longest-standing wooden covered bridge, and the world's oldest surviving truss bridge.

"Wood has played a major role in Switzerland since people started building here," says Dieter Geissbühler, professor of technique and architecture at the Lucerne School of Engineering and Architecture. "You can't talk about Lucerne without mentioning the wooden engineering work – the bridges, covered bridges, the large roofs."

*“Wood has played a major role in Switzerland since people started building here”*









**From left**

Dieter Geissbühler; the Chapel Bridge features restored artworks that date back to the 17th century

What was originally used due to sheer availability and necessity developed into carpentry and craftsmanship, and then eventually into engineering and advanced construction. “That engineering knowledge came out of the work of carpenters, who were refining their processes all the time, and who set up a culture of craftsmanship,” says Geissbühler. “Wood is very much rooted in the culture here.”

In more recent history, namely over the course of the 20th century, wood mostly fell out of favour, or at least took a back seat to materials such as steel, concrete and glass, in large or more contemporary structures. But there are those in the architectural, engineering and construction worlds who are bringing about a timber resurgence, relying on new technologies involving engineered wood – essentially, taking smaller pieces of young wood and gluing them together to form larger, sturdier building materials that go toe-to-toe with steel and concrete in terms of strength and fire resistance. Cross-laminated timber, or CLT, and glued laminated timber, often abbreviated as glulam, are two common types of engineered wood.

Many are recognising engineered wood for its versatile quality, environmental sustainability and natural beauty. One such proponent is Swiss timber construction and engineering specialists Neue Holzbau AG. “Timber is renewable, recyclable and does not affect the ecological balance,” says Reto Schneider, an architect for Neue Holzbau. The company works with architects and builders who are interested in using engineered wood that uses a proprietary system called GSA Technology, which connects pieces of engineered wood and is nearly invisible, is resistant to fire and is easy to implement into most construction processes. This system, along with custom glulam, allows the company to build structures, large spans and archways that were previously never thought possible. “Over the last 10 or 15 years, wooden architecture has definitely gained popularity,” says Schneider. “Wooden architecture is finally sexy.”

Sexy, yes – and sustainable. Over a tree’s lifetime, it absorbs carbon dioxide (CO<sub>2</sub>) and turns it into oxygen. When a tree dies or is burnt in a fire, it releases its stored, unrefined CO<sub>2</sub> back into the air. But a tree that is turned into timber essentially “locks” that stored carbon within itself permanently, cutting CO<sub>2</sub> emissions.

As the question of energy, climate change and natural resources has risen to the foreground over the last few decades, so too have technological advances. “Innovation is not so much driven by the material, but by the available production methods: new tools, old techniques that can be digitised, new machines, even robots,” says Geissbühler. “I would say the wood industry is where the most advances in construction technology are being made today.”

This wooden revolution doesn’t come without its challenges. For one, many governing bodies around the world







## “Wooden architecture is finally sexy”

limit the height of wood buildings to around four storeys. Generally, these codes were put into practice before today’s mass timber technology was developed or widely popularised. As technology improves, building codes are changing. But it is a slow process, and these are early days.

Another challenge is the public perception that wood burns very quickly, and in the past that was true. Who doesn’t remember watching Paris’s Notre Dame Cathedral wither in flames just last year? And even parts of Lucerne’s centuries-old Chapel Bridge burned as recently as 1993, when two-thirds of the structure was lost to a fire of unknown origin, leaving only the pillars, the bridgeheads and the neighbouring Water Tower intact. (In addition to its age, the bridge was famous for artworks that were painted under the roofs, some dating back as far as the early 1600s, and, unfortunately, 86 of the 111 works were lost to the blaze.) The bridge was quickly restored and rebuilt in 1994, when updated fire technology, including an advanced alarm system, heat sensors and surveillance cameras, was installed.

So while it’s true that old structures may be more likely to burn, engineered wood like CLT and glulam is actually as safe as concrete or steel. “Wood burns predictably,” says Schneider. “It burns on the same level worldwide, whether it’s in Switzerland or Spain or Argentina.” As such, it’s a matter of engineering the wood to the standards of the local building codes or client safety protocols. An engineer can use the latest fire science measurements and calculate the necessary diameter of the engineered wood, then have wood



## INTO THE WOOD

*Trees are turned into state-of-the-art structures at these recent and upcoming buildings around the world*



### ASPEN ART MUSEUM

**Aspen, Colorado,  
United States**

**Completed 2014**

Designed by Pritzker Prize-winning architect Shigeru Ban, the Aspen Art Museum is a work of art in itself. The exterior’s woven wood screen, made from a natural-wood composite material called Prodema, casts unique shadows throughout the day, adding intrigue to the installations.

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**From far left**  
Reto Schneider; the tennis court at Bürgenstock Resort; Ana Simunovic

of that diameter produced. “When we have these conversations with architects or engineers, everyone understands this concept,” says Schneider. “When it comes to private investors or the public, however, it sounds like jargon.” But efforts are being made, and minds are being changed.

Meanwhile, from a design and aesthetics perspective, wood is universally regarded for its natural beauty. “We see a lot of opportunity for wood in the future because it is a natural, renewable product – it’s a living material,” says Ana Simunovic of Lucerne architecture firm Russli Architects, which recently completed twin tennis facilities at the Bürgenstock Resort in Obbürgen, Switzerland, that feature an interlocking wooden ceiling, taking on a stunning prism-like effect. “Wood gives the people who are living in or interacting with the structure a warm, cosy, feeling; it smells nice; it has a nice texture to touch it, unlike glass or plastic, which have a really sterile feel.”

Around the globe, architects are using engineered wood to beautifully climb higher and higher. An 18-storey multi-use building in Brumunddal, Norway, designed by Voll Arkitekter and called Mjøstårnet, took the title of world’s tallest timber building when it completed in March 2019. Last May, architecture firm Perkins&Will proposed a hybrid laminated wood and concrete structure called Canada’s Earth Tower in British Columbia that will stretch between 35 and 40 storeys high. And in Stockholm, Sweden, Anders Berensson Architects unveiled a conceptual housing development of 31 towers constructed from CLT.

The new mass timber industry is very much in its infancy, but at its core, wood evokes man’s millennia-long connection to nature. “Have you ever seen anyone embrace a concrete column?” asks Schneider. “No. But I’ve seen people hugging trees. We love this material. Maybe it sounds a little bit kitschy, but it’s the truth.”

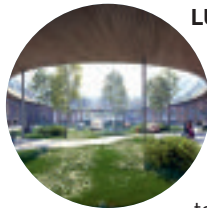


**DALSTON WORKS**

*London, England*

**Completed 2017**

Built entirely from CLT, Waugh Thistleton Architects’ housing development weighs in at one-fifth of a concrete building of this size, reducing deliveries during construction by 80 per cent. The 10-storey structure features 121 flats, proving that a functional apartment complex can be made from engineered wood.



**LUND SCIENCE CENTER**

*Lund, Sweden*

**Estimated 2024**

This sustainable science museum, designed by Danish architects COBE to be fully CO<sub>2</sub>-neutral, uses CLT as its main material. Other green features include solar cells for power, a plant-filled atrium for CO<sub>2</sub> absorption and a system that gathers excess heat from connecting buildings to warm the structure.



**ODYSSÉE PLEYEL**

*Paris, France*

**Estimated 2024**

French architecture firm Jakob + MacFarlane designed this modular, retractable CLT wood and glass extension to showcase new concepts in sustainable building. A zero-carbon structure, the building powers itself with a greenhouse, solar panels and rechargeable zinc batteries.