



SWITZERLAND'S FIRST TIMBER HIGH RISE

In cooperation with Burkhard Meyer Architects, Switzerland's very first timber high-rise building was erected for Zug Estates AG in the former Suurstoffi industrial park in Risch-Rotkreuz. The starting gun for this hybrid timber-concrete structure went off in August 2017, and the work was completed right on schedule just eight months later.

"Suurstoffi 22" is a ten-storey office building that towers 36 metres high and has become an international totem of modern timber construction.

Innovation with Wood

There is a global trend towards implementing multi-storey buildings with timber. The architects who designed Suurstoffi 22 are enthusiastically riding it, and this project – Switzerland's first timber high rise – has raised the bar for modern timber construction everywhere.

This path to this achievement was cleared by rethinking how wood is used in general, applying recent insights and holistically integrating fire protection.

Facts

Building type:

10-storey wood-and-concrete hybrid office building

Developer:

Zug Estates AG, Zug,
www.zugestates.ch

When built:

August 2016 - July 2018

Planned by / architects

ERNE AG Holzbau,
Laufenburg, www.erne.net

Burkard Meyer Architekten
BSA AG, Baden,
www.burkardmeyer.ch

Prefabrication

ERNE AG Holzbau,
Laufenburg, www.erne.net

The Building

Two intersecting bodies of different heights are arranged around a central structure to define the shape of the Suurstoffi 22 office complex. The tower is adjacent to the railway tracks and has an open core, while the lower rear section encloses a courtyard. This configuration ensures sufficient daylight and spatial connections within the expansive layout. Moving upwards, the courtyard widens and links to a roof terrace.



Start of construction of the 10-storey, 36m-high hybrid tower in August 2016. (© ERNE AG Holzbau | Photograph: Markus Bertschi)

Wood as the Key Component for Hybrid Construction

The strict schedule, with each step following in quick succession, called for maximum precision. Highly detailed planning of everything – from the preparatory work all the way to completion – was crucial.

The composite timber-and-concrete system, which has been patented by ERNE, intelligently merges the advantages of both materials: a 12cm-thick concrete slab absorbs compressive forces while ensuring good fire protection and acoustic insulation. On its underside, 16x30cm spruce struts spaced 100cm apart are rigidly attached to the concrete ceiling by perforated metal plates to distribute tensile forces.

This approach has the added benefit of reducing the time to completion by four to six months.

Facts

On-site building management:

ERNE AG Holzbau,
Laufenburg, www.erne.net

Construction engineer:

MWV Ingenieure, Baden,
www.mwv.ch



The perfectly fitting prefabricated loadbearing elements with timber-and-metal windows are assembled on site. (© ERNE AG Holzbau | Photograph: Markus Bertschi)

Facts

Planning of HVAC and plumbing:

Kalt + Halbeisen AG,
Kleingöttingen,
www.kalthalbeisen.ch

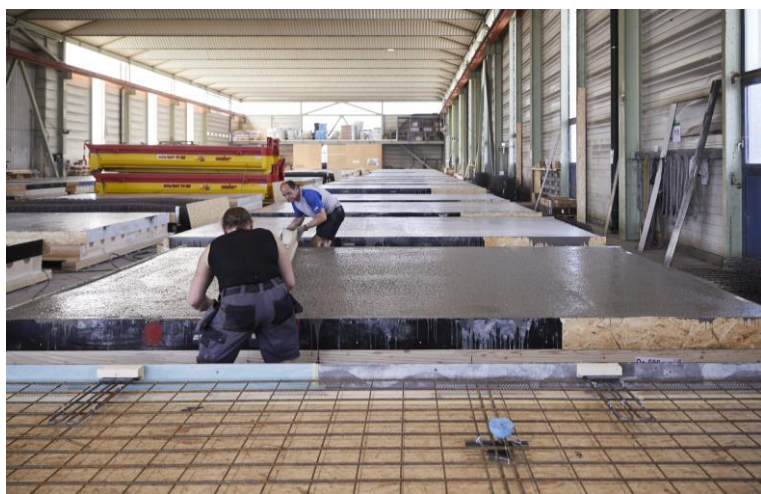
Planning of electrical systems:

Enerpeak Ag, Hägendorf,
www.enerpeak.ch

A Novel Composite Flooring System

In keeping with its motto of “We build forward”, ERNE AG Holzbau teamed up with other firms to develop an innovative composite ceiling system as a single prefabricated module with a long list of advantages.

Among other things, it integrates the trademarked SupraFloor system, which the timber construction firm developed itself. The special hybrid timber-and-concrete elements meet three requirements at once: the right ceiling thickness, the right price and use of the building’s own mass to achieve outstanding thermal efficiency. For this project, the relatively thin modules were completely prefabricated, which included attaching timber supports and integrating an innovative heating and cooling system. This minimised assembly times at the construction site.



SWISS KRONO **LONGBOARD** OSB was used as stay-in-place formwork for the innovative timber-and-concrete composite ceilings. (Photograph: © ERNE AG Holzbau)

SWISS KRONO LONGBOARD OSB as Stay-in-Place Formwork for Timber-Concrete Composite Ceilings

For this innovative timber-and-concrete composite ceiling system, [SWISS KRONO LONGBOARDS OSB](#) were used as stay-in-place formwork. These extra-long OSB boards are dimensionally stable and extremely robust, and their water-repellent (hydrophobic) surfaces make them excellently suited for use as formwork.

Using only about 22m³ of SWISS KRONO OSB prevents emissions of 22 tonnes of CO₂ – so this striking hybrid building has lastingly sequestered a whopping 1,500 tonnes of carbon dioxide.

Facts

Building physics:
BAKUS AG, Zürich,
www.bakus.ch

Quality control engineer for fire protection:
Makiol Wiederkehr AG,
Beinwil, www.holzbauing.ch

RDA-Planer:
Gruner Roschi AG, König,
www.gruner.ch



Visible birch wood columns and struts provide an enhanced aesthetic effect. (© ERNE AG Holzbau | Photograph: Markus Bertschi)

“This project has definitely hoisted modular building into the champions’ league of timber construction! Suurstoffi has excelled with efficient planning, outstanding architecture and the courage to blaze new trails. A total of 371 modules were professionally prefabricated and assembled in record time. It gives us a glimpse of the remarkable future of state-of-the-art timber construction.”

Patrick Suter,
construction engineer,
ERNE AG Holzbau

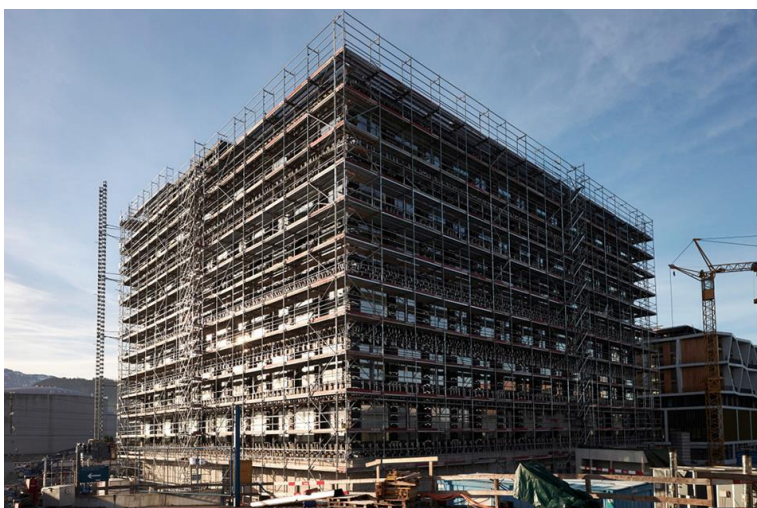
Suurstoffi 22: Leading the Way for the Future

Two further projects at the same address, costing a total of 155 million euros, have meanwhile been planned and approved. Once completed, they will outshine the recently completed building. By the summer of 2019 at the latest, the timber towers will point skyward just a couple of hundred metres away, one 30 metres tall and the other double that.

Overall, an exemplary new quarter is taking shape on 10 hectares of land formerly occupied by an industrial park. Suurstoffi is fully integrated and completely free of vehicular traffic, combining living, working and leisure activities. This generates synergies and opens up long-term prospects for a multitude of business ideas.

The quarter will eventually accommodate up to 1,500 residents and 2000 students and provide work for more than 2,500 people.

The Zug Estates group, based in Zug, is responsible for all three projects. With these three innovative multi-storey buildings, it is demonstrating that timber construction matches conventional approaches in respect of costs, while being faster into the bargain – the first was completed eight months faster than would otherwise have been the case.



The building at Suurstoffi 22 comprises a total of 371 individually prefabricated and assembled modules, providing space for 1500 residents, 2,000 students and over 2,500 workplaces.

(© ERNE AG Holzbau | Photograph: Markus Bertschi)

Facts

Timber-concrete composite ceiling / formwork

SWISS KRONO **LONGBOARD**
OSB/4 BAZ, sanded

25 x 2810 x 9000 mm
10 Stück = 253 m²

25 x 2810 x 12000 mm
18 Stück = 640 m²

CO₂ emission prevented by using SWISS KRONO OSB

Approx. 22,3 m³ – equivalent to approx. 22 tonnes of sequestered carbon dioxide

CO₂ emission prevented by entire structure

Approx. 1.500 m³ – equivalent to approx. 1,500 tonnes of sequestered carbon dioxide

Wood at its best



Contact



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SWISS KRONO OSB comprises eco-friendly engineered wood products which combine a host of positive attributes. Their high strength, low water vapour permeability and airtightness, and low tendency to shrink or swell optimally suit them for a vast range of applications.



Harald Sauter

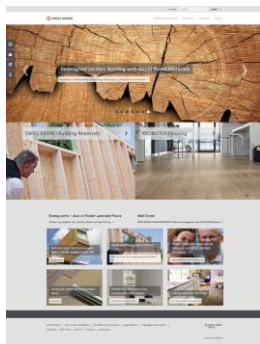
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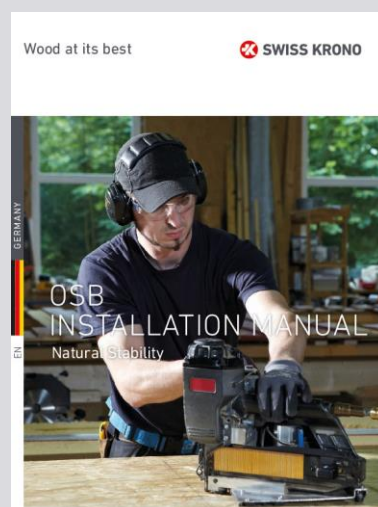
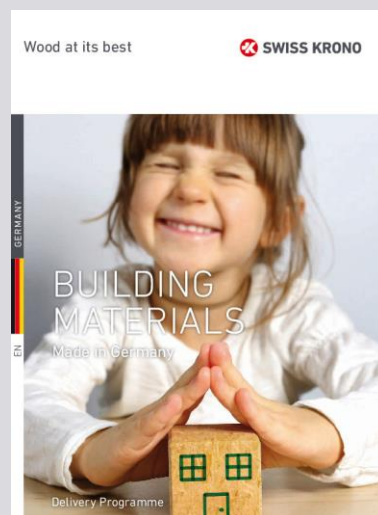
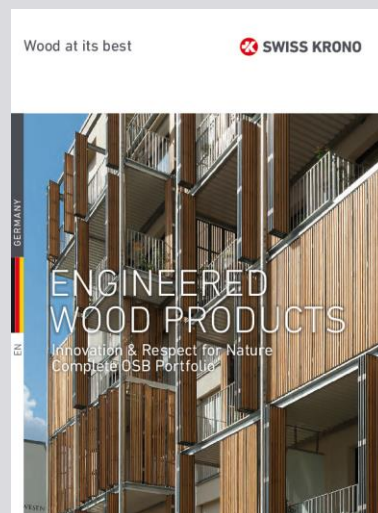
Building with prefabricated panels and modules gives owner-builders and architects enormous freedom for turning their creative ideas into reality. Building with wood is also eco-friendly, lets people lead healthier, happier lives and, when using prefabricated modules, is also very fast – what more could you ask for?



SWISS KRONO Website

The “Building Materials” section contains our entire OSB programme, reference projects, useful tools and lots of information on building with engineered wood.

www.swisskrono.de



All brochures as PDF you can download [here](#)