Outdoor test bench at the Bern University of Applied Sciences, Biel

2018

Supports, panels, done: In the courtyard of the Bern University of Applied Sciences in Biel stands a permanent test rig featuring the new TS3 technology and the world's first balcony bonded at the front. This clearly demonstrates the new possibilities for timber construction.

The innovative Timber Structures 3.0 (TS3) technology bonds solid wood, laminated timber, or cross-laminated timber components end-to-end. This allows for the creation of point-supported, multi-axial load-bearing panels or truss structures in any shape and size. This opens up new possibilities in construction and design that were previously inaccessible to timber construction.
As part of a CTI project in collaboration with the Bern University of Applied Sciences (BFH) and the Swiss Federal Institute of Technology (ETH), the endurance test rig featuring TS3 technology was constructed. The endurance test rig is a crucial step in the certification process for the European and American markets.

The Construction Method

The 7.5 x 7.5 m point-supported, bi-axially loaded floor slab consists of eight 2.5 m wide and 3.8 m or 1.8 m long, 24 cm thick cross-laminated timber panels, which were joined using adhesive grouting. Supporting the structure in a 6.0 x 6.0 m grid, four screw-in foundations—5.0 m and 6.5 m long—are installed at specific points. Together with the two 24 cm thick pendulum supports, this demonstrates the TS3 system: supports, panels, done.

The Challenges

The greatest challenge was the precise bonding of the load-bearing floor slab, the cantilevered balcony, and the folded roof structure in pouring rain. With twelve-ton stone blocks or a continuous surface load of 3.3 kN/m², the structure is now being put through its paces.

Persons involved

Construction data

- Round timber posts: 24 cm diameter, 2 pieces
- Screw piles: 4 pieces
- Stone blocks: 36 pieces or 12 tons

Timber construction
Stuberholz 3054 Schüpfen

Construction management
Bern University of Applied Sciences AHB 2500 Biel

CLT: Schilliger Holz AG, 6403 Küssnacht
Crane work: Flück Holzbau AG, 8602 Wangen near Dübendorf
Adhesive: Henkel & Cie AG, 4133 Pratteln
Screw foundations: Krinner GmbH, 3272 Walperswil
Roof waterproofing: Contec AG, 3661 Uetendorf
Waterproofing: Böhme AG, 3097 Liebefeld
Natural stone blocks: Guber Natursteine AG, 6056 Kägiswil