

TS3 Long-term field trial at ETH Zurich, Zürich

2018



In recent years, the innovative Timber Structures 3.0 (TS3) technology has been developed. This technology makes it possible to bond the ends of wood components made of solid wood, laminated timber, or cross-laminated timber. This allows for the creation of point-supported, multi-axial load-bearing panels or truss structures in any shape and size.

As part of a CTI project in collaboration with the Bern University of Applied Sciences (BFH) and the Swiss Federal Institute of Technology (ETH), test benches were set up at both universities to study the long-term performance of the technology.

The endurance test benches represent an important step in the certification process for the European and American markets. They also impressively demonstrate the new possibilities for timber construction.

The test rig at ETH Zurich consists of four cross-laminated timber panels glued together. After construction, the roof was loaded with 12 big bags. The total weight of the big bags, 9.6 tons, was applied to the ceiling for one year. This simulated the quasi-permanent loads on a ceiling that allows for a live load of up to 500 kg/m².

The test provided insights into the installation and grouting process. Furthermore, the deformation behavior under varying wood moisture content was analyzed, and thirdly, the vibration behavior of the biaxially load-bearing panel was tested. The test has since been successfully completed.



Construction data

Butt-joint bonding of CLT

TS3 Timber Structures 3.0 AG
3600 Thun

Glue

Henkel & Cie. AG

Statics and Testing Setup

ETH Zürich, Marcel Muster