New construction Galilei Tower, Heureka, Zürich-Brunau

1991

The round 12-story wooden exhibition tower, diameter and height 50 m each, formed the antipole to the high-tech tents of the exhibition. A skeleton with circularly arranged masts and semicircular tongs was chosen as the main supporting structure. For the connection of the tongs, a new type of heavy-duty fastener had to be developed, which had to meet high demands with requirements such as load-bearing capacity, flexibility (round timber) and low-cost procurement. Wood can certainly be used for more than just archaic structures, yet here it was the welcome backdrop for a historical research exhibition.

The project

The requirements were high! For example, 400 kg/m² was required as a live load on all floors. The desired 50 m height could only be achieved with assembled tree trunks. In addition, there was a 5 m wide ramp that spiraled 330 m around the tower. The raw material: 2,000 m³ of round timber*. Despite a very short time, only 3 months, the tower was completed on time for the start of the exhibition. It was used for 6 months and then dismantled. *Did you know that the logs were donated to the exhibition by the communities and were used after the exhibition was over? Maybe there is also a board or a beam in your house that comes from the Galilei Tower! The main supporting structure chosen was a skeleton with circular poles and semicircular pincers.

The construction method

For the connection of these tongs, a new type of heavy-duty fastener had to be developed that had to meet high requirements in terms of load-bearing capacity, flexibility (round timber) and low-cost procurement. In Menig AG's own laboratory, a number of different connection sizes were tested and optimized - after prior mathematical verification - so that finally 3 types with 50, 100 and 150 kN payload were available for the design. The bracing consisted of 4 elements: Radial brace frames, Circumferential ramp, Tangential bracing, Floor formwork as bracing. In addition to the high stresses in the logs, the deformations and pendulum movements in the tower were decisive for the dimensioning of the components.

Development and testing of the connection part tong-post...

... and the application on the construction

Tower in shell

The interior of the tower

Construction Data
- Construction time: 3 months
- Logs: 2000 m^3
- Steel parts: 20 to
- floors: 12
- Tower diameter: 50 m
- Tower height: 52.5 m
- Ramp slope in the walking line: 14%.
- Length of ramp: 330 m
- Floor area incl. ramp: 7850 m^2

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