

V-Zug Semiramis, Zug

2022



«Semiramis» is a 22.5 meter high, planted architectural sculpture that stands in the new innovation quarter - the Tech Cluster of Zug.

The project

«Semiramis» is a highly complex affair, and not just in terms of assembly and production. The five plant bowls are all shaped differently and have a diameter of up to 10 meters. The slender and tall structure is lushly planted with large bushes and trees and thus has a considerable weight of its own. The supporting structure of the shell is made of cross laminated timber (CLT). It is bonded using a two-component PU system from TS3. Timbatec developed this process in several research projects with ETH Zurich and Bern University of Applied Sciences. Today, it is mainly used for the construction of floor slabs, but also enables structures such as «Semiramis»

The construction method

The individual cross laminated timber panels are joined using a TS3 joint. The end faces are treated with primer beforehand. After the panels have been brought into the correct position by robots, the TS3 casting resin is applied. The cross laminated timber panels can then be joined together at the end faces by grouting the joints without applying pressure.

The challenge

Bracing the construction with the eight slender columns was a challenge. The wind pressures on the shells were calculated using a fluid mechanical RWIND simulation from Dlubal Software, which simulates the flow around the structure in a wind tunnel. In addition, resonance effects along and across the wind direction had to be taken into account in the calculations due to the slender construction.



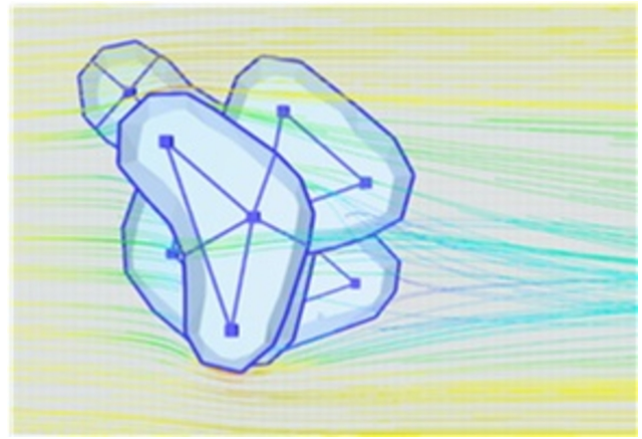
Semiramis in the heart of the Tech Cluster

Construction Data

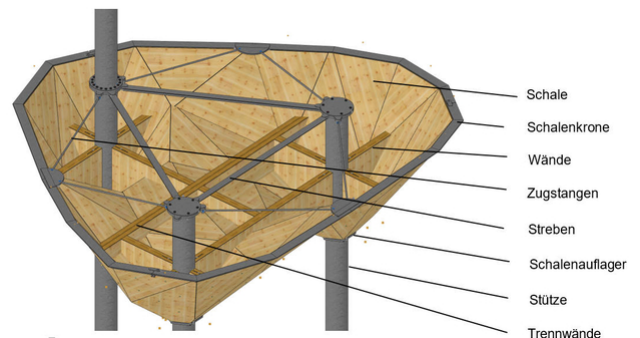
- Height 22.5 m
- Cross laminated timber approx. 35 m³
- Steel 18 t

Services of Timbatec

- SIA Phase 31 Preliminary project
- SIA Phase 51 Implementation project
- SIA Phase 52 Execution
- SIA Phase 21 Structural review
- SIA Phase 32 Construction project



Flow around the shells in the Dlubal RWind



Internal structure of a shell

Builder

Urban Assets Zug AG
6302 Zug

Architect

Gramazio Kohler Research
8093 Zurich

Timber construction engineer

Timbatec Holzbauingenieure (Schweiz) AG Zurich
8005 Zurich

Timber construction

ERNE AG Holzbau
5080 Laufenburg

GU/TU

ERNE AG Holzbau
5080 Laufenburg

Client

ERNE AG Holzbau
5080 Laufenburg