

ETFE windshield

German Pavilion EXPO2020 – Dubai

In August 2021, the ETFE facade for the German pavilion at EXPO 2020 in Dubai was finally successfully completed after a pandemic-related delay of one year. AR-Ingenieure was responsible for the planning of the steel components for the edge connection of the membrane to the building, as well as the workshop planning of the company ITF for the steel cables and the ETFE foil of the façade. The 100 approx. 70 cm wide panels with a maximum length of 10 m fold around the building in a zigzag pattern along the plane of the facade in three cardinal directions. In the process, the facade flows half its height and partly completely through the suspended vector grid - a ceiling frame suspended from steel tubes that runs through the pavilion like waves. This was made more difficult by the fact that it was installed between the already assembled elements. The varying geometry of the façade could be effectively mapped using a fully parameterised 3D model and integrated into the BIM model of the overall planning. The model also served as the basis for deriving the manufacturing documents. With a special proposal for a uniform base point detail, the freely varying rope departure angles from the vertical up to 29° degrees could be solved in a technically simple way. Due to the temporary nature of the pavilion, the use of composite materials was dispensed with and commercially available components and fasteners were deliberately used, which can be used again after the pavilion has been dismantled as planned.

Project details:

Year: 2021

Location: Dubai, United Arab Emirates

Building owner: Federal Ministry for Economic Affairs and Energy of Germany

Client: ITF Technical Fabrics GmbH

Services: Workshop planning Steel construction Edge profiles and aluminium Keder profiles, ETFE foil and ropes

Other parties involved:

LAVA laboratory for visionary architecture;
Schlaich Bergermann Partner; Nüssli

