

The future of widespan glass construction: Challenging projects of the seele group

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Abstract

seele develops innovative methods and design principles so that glass can be used in its purest form and in various contexts. All-glass structures are just as complex as minimalistic. Thereby, the different fields of structural engineering, design, manufacturing, logistics and installation are interconnected closely in order to redefine the boundaries of the feasible. Highlights are not only those projects, in which glass plays a structural role. It is also the steel-and-glass structures where design requirements become increasingly defying and complex. Based on the following project examples, the variety of glass structures is shown in this paper and the authors discuss the future of glass structures from a manufacturer's point of view.

Large size and wide span glass constructions - ICONSIAM

In 2018 the skyline of Bangkok received a 750,000 sqm landmark on the river Chao Phraya with the luxury department store ICONSIAM. The design by Urban Architects included a "giant shop window" extending over three floors, which impresses with its transparency, minimalist detail solutions and a special language of form. The shape of the 5,300 m² façade was geometrically demanding: for static reasons, the glass façade was suspended from the ceiling, with the glass panes inclined in two directions and arranged in a zigzag pattern. The total height of the all-glass façade is 24 m.

Minimalistic Detailing - Apple Retail Store Piazza Liberty

Not far from the Milan Cathedral, Apple's 17th retail store in Italy was built in 2018 in a prominent location. The entrance consists of 4 façade panes each and only one on the short side and the ceiling. The special aspect of this construction is the geometry of the side pane (door cut-out) and the load-bearing bonding. This ensures maximum transparency and makes the entrance area an architectural and constructive highlight.

Moving Structures and Sensor equipped Facades – Apple Park Restaurant Doors

Apple's new company headquarters is an exceptional facility that places maximum demands on design and construction. Transparency, design and minimalism are the key features. The design and construction of the façade elements was both challenging and remarkable, as each sliding element measures 16 x 28m and weighs 180t. These large movable facades could only be realized through intensive testing, extraordinary construction and manufacturing approaches as well as continuous monitoring during the construction and operation.



Fig. 1: Installation of ICONSIAM | Fig. 2: Minimalistic bonding joints | Fig. 3: Sliding Doors