

press release

Curved insulating glass 17m high for trade fair tower

Façade construction specialist seele has installed the world's largest bent insulating glass units for the revamp of the lobby façades to Frankfurt's Messeturm.

Frankfurt, 1 October 2019. The Messeturm in Frankfurt am Main was completed in 1991 and is the second-tallest building in Germany. The lobby at ground floor level has been revamped to a design by architect Helmut Jahn working with Matteo Thun & Partners. The work involved both aesthetic and energy efficiency upgrades. Engineers from the Werner Sobek practice cooperated in the design of the façade with its 17m high insulating glass units. Unique to this project are the panes of insulating glass bent to a radius of 24m. Flat panes arranged in polygonal form was ruled out, which meant that every pane had to be bent with a certain curvature.

seele's team of designers, engineers, logistics specialists and erection crews developed the steel-and-glass elements in just seven months prior to work commencing on site. "All our experience with oversize panes gained over the past 15 years was called upon for the Messeturm project. The result is a complete package involving the design, logistics and erection for these 17m high panes in the heart of the city – all from one supplier," says Doris Erdt, Senior Design Manager at seele GmbH.

Bent insulating glass units

The special feature of this design is that the façade essentially consists of only a few parts: just nine panes and ten posts on each side of the tower. There are no horizontal members interrupting the glass, which helps to create lightness and transparency despite the dimensions. Owing to the huge size, each pane requires special bearings and must be held in place with glazing bars. The cold-bent insulating glass units measure approx. 17 x 2.8m, are approx. 71mm thick overall and are supported by stainless steel posts weighing approx. 3.5t each. With its solar-control coating on level 4 to reduce solar heat gains, the insulating glass therefore combines aesthetic and functional criteria.

Slender stainless steel posts

Another feature of the design are the 17m high slender stainless steel posts that hold the insulating glass units (each weighing approx. 6t) in position. Each post is fabricated from three parts that are factory-welded seamlessly together to form a post that is not only trapezoidal in section, but also tapers towards the top and base. This shape ensures a particularly elegant appearance. But they also loadbearing.

press release

That is a real challenge during handling in production and on site. To transport the posts to the site without any problems, seele designed a special cradle for the HGVs and a lifting apparatus so that the slender posts could be positioned without deforming.

Challenging logistics and erection concept

The tight schedule, city-centre location and cramped site conditions called for a perfectly coordinated logistics and erection concept from seele. Specially adapted inloader frames were used to transport the 17m high panes safely. On site, the extra-long HGVs had to be manoeuvred with millimetre accuracy as the space available was very limited. Great care was also needed when operating the special glass lifting apparatus with its 90 or so suction cups for lifting the approx. 6t panes off the trucks and into position.

“Everything had to work well together in this erection concept – people, equipment and nature. We plan every detail very precisely in advance and take account of all aspects that affect erection; wind, temperature and humidity are all crucial aspects during construction work. With its many years of experience on sites all around the world, from San Francisco to Sydney, seele’s well-rehearsed team is aware of the challenges,” explains Dirk Herrmann, Head of Erection at seele GmbH.

press release

seele group

The seele group, with headquarters in Gersthofen in Bavaria, is one of the world's top companies specialising in the design and construction of façades and complex building envelopes made from glass, steel, aluminium, membranes and other high-tech materials. The technology leader in façade construction was founded in 1984 by master glazier Gerhard Seele and steelwork engineer Siegfried Gossner.

Based on a profound understanding of design and materials, seele provides everything necessary for ambitious one-off designs true to the original ideas of engineers and architects. The seele group offers its building sector and industrial customers a complete package of services ranging from R&D, individual advice and joint conceptual design right up to the planning, detailed design and construction of their projects. seele's own production plants for technologically challenging designs and the group's own erection crews on site provide a guarantee of the very highest quality "made by seele".

The 1,000 employees of the seele group worldwide together generate an annual turnover of about €250 million.

Press contact

Raphaela Schiessl

Communication Manager

Phone: +49 821 2494-824

E-mail: raphaela.schiessl@seele.com

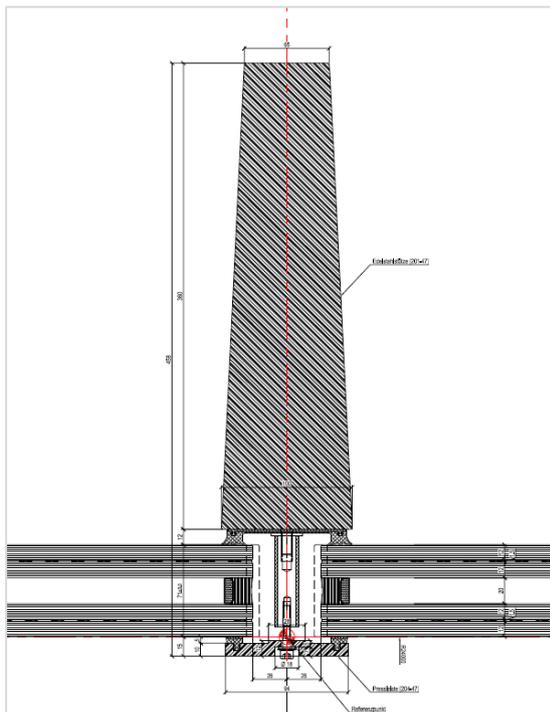
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visual material



Computer rendering of redesigned lobby façades for Frankfurt's Messeturm. © Jahn - Matteo Thun & Partners



Section through stainless steel post with glazing bar. © seele

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The first insulating glass units were set up in late July. © Jessica Schäfer



Each façade segment consists of nine cold-bent insulating glass units measuring 17 x 2.8m. © Jessica Schäfer

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Special glass lifting apparatus with about 90 suction cups. © Jessica Schäfer



The first façade segment with its nine cold-bent insulating glass units was completed at the end of August. © seele