

**High-rise hotel and office building, Frankfurt am Main:
Light fire doors for Frankfurt's new "Number One"**

Fire protection in a high-rise building is a topic that is as sensitive as it is complex. The fire protection concept adopted for ONE combines full-surface sprinkler protection with fire replacement walls that divide the office floors into individual fire compartments. Escape and rescue routes follow two interior emergency stairwells. Large-format tubular frame doors calling on the Janisol 2 steel system ensure that these can be safely accessed in the event of a fire.

Like no other city in Germany, Frankfurt has made the skyscraper its trademark. As the latest addition to the skyline, the high-rise hotel and office building ONE, by CA Immo, makes a striking statement where the trade fair, banking and European quarters come together: the building rises 190 metres above a ground plan measuring 70 x 30 metres. This makes ONE the sixth tallest building in "Mainhattan". In 2014, the Frankfurt-based firm Meurer Architektur und Stadtplanung won the competition for the skyscraper to be built on the site of the former freight station. The shape of ONE reflects "unity in diversity": "This commitment to coincidentia oppositorum, or the "unity of opposites", is the very essence of ONE's design matrix – which, incidentally, the name itself suggests," says Prof. Dipl.-Ing. Thomas J. Meurer in an interview with the project developer CA Immo. "Of course, we were faced with the question of whether the diversity of uses should not also find expression in the building design. However, we took a different approach to this question: the building is comparable to a modern smartphone. From the outside, and especially when switched off, it has a sleek, subtly-designed shell reduced to just a few aspects. It reveals nothing about its content. Inside, however, and in particular when in use, it reveals the full complexity of its communication, memory and other features."

Four-star-plus hotel, 45,000 m² office space and a skybar

The ONE concept envisages a mixed use of office, hotel, restaurant, coworking and conference areas. All levels are accessed via the lobby, which is shared by the hotel and office areas: it is designed as an urban meeting and communication place. Hotel guests and office tenants will find an attractive space here with a café, a cocktail bar and a lounge. The lower floors of ONE house the hotel, while the offices – including coworking areas – are located from the 15th floor upwards. In terms of systems, all types of

layouts are possible, from the classic cubicle office through the communicative combi office and the business club to open space with flexible furnishing options: each rental unit is individually designed, whereby combinations within a rental unit are also feasible. Even the ceilings of each floor are designed to be reversible at predefined points, so that individual floors can be connected to each other via a multi-storey sky lobby.

Glazed T30 fire doors

At the time of opening, the Skybar on the 47th floor is Germany's highest bar open to the public. The surrounding roof terrace offers a breathtaking panoramic view of the Mainhattan skyline. Here it becomes clear beyond doubt: over the past 20 years, increasingly spectacular high-rise buildings have also been created in Frankfurt. As the buildings grow taller, the fire protection requirements increase accordingly. The fire protection concept of ONE combines full-surface sprinkler protection with fire replacement walls on the long sides, which divide the basic fit-out office floors into two fire compartments of 800 m² each. In the tenant fit-out, the office floors can be further divided into four fire compartments of 400 m² each. Escape and rescue routes follow two interior emergency stairwells. Here, large-format tubular frame doors made of the Janisol 2 steel system ensure that they can be safely accessed in the event of a fire. Thanks to their large-scale glazing, they combine high levels of safety with excellent user-friendliness, because glazed fire doors always offer a clear view. Added to this are their appealing aesthetics, which continue the light impression of the white metal cladding of the façade on the inside.

The glazed tubular frame doors used from the 15th floor upwards were produced by Rimmel + Peters GmbH of Dresden, both for the basic fit-out and the tenant fit-out. In the basic fit-out, 10 fire doors are positioned on each standard floor facing the stairwells, in addition to two doors in the fire replacement walls. Depending on the tenant's finishing requirements, four to five additional fire doors can be added per floor. All fire doors comply with T 30 fire resistance class, irrespective of their varying formats and their design as single and double-leaf constructions (some with glazed side parts and/or glazed fanlights). The largest fire door measures 330 x 300 centimetres (w x h); the single-leaf doors are between 126 and 145 centimetres wide and can also be up to 300 centimetres high (standard height 226 centimetres). These have been glazed with SchücoFlam® fire-resistant glass. To date, Rimmel + Peters has manufactured a total of 474 doors for ONE – and many more will be added before the project is complete. The sheer scale of the job was one of the key challenges for the metalworking company on this project: "It's not every day that we fit out a high-rise building with 47 floors," says Managing

Director Jörg Peschke. Another challenge he mentioned was the coordination required to transport the large elements within the building.

Certifications: Three times platinum

In the meantime, the tenant fit-out continues to progress: the city centre location and the exceptional architecture are attracting well-known corporations as well as freelancers and self-employed people who can set up in coworking spaces. CA Immo has concluded so-called “green leases” with all tenants: in this agreement, the contracting parties commit to far-reaching measures designed to ensure the most sustainable, resource-efficient and environmentally-friendly operation possible of both the building and the office space. ONE was developed as an ESG-compliant best-in-class building: platinum pre-certification for sustainability, platinum certification as a fully digitalised smart building and platinum certification for the best fail-safe connectivity ensure that the high-rise hotel and office building will also enjoy high occupancy rates in the long term.

Project details:

Client: CA Immobilien Anlagen AG, Vienna

Architect: Meurer Generalplaner GmbH, Frankfurt am Main

Fire protection planner: icr ingenieur consulting rücker, Darmstadt

Fire doors: Rimmel + Peters GmbH & Co. KG, Dresden

Steel profile system used: Jansiol 2

System manufacturer: Jansen AG, Oberriet, Switzerland

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pic 02: Airlock between the rental area (two single-leaf doors)- and the lift vestibule (double-leaf, "permanently open" door there)



pic 03: The T30 fire doors in the rental areas are generally 226 centimetres high.



pic 04: A white "metal mesh" (RAL 9016) covers the façade of ONE.



pic 05: White powder-coated tubular steel frame doors



pic 06: ... continue the light impression of the façade inside.