



## **THE SQAIRE, Frankfurt a. M. / Germany**



## Hovering giant with its own postal code

**Object**  
THE SQUAIRE, Frankfurt a. M. / Germany

**Principal**  
IVG Immobilien AG, Bonn / Germany  
and Fraport AG, Frankfurt a. M. / Germany

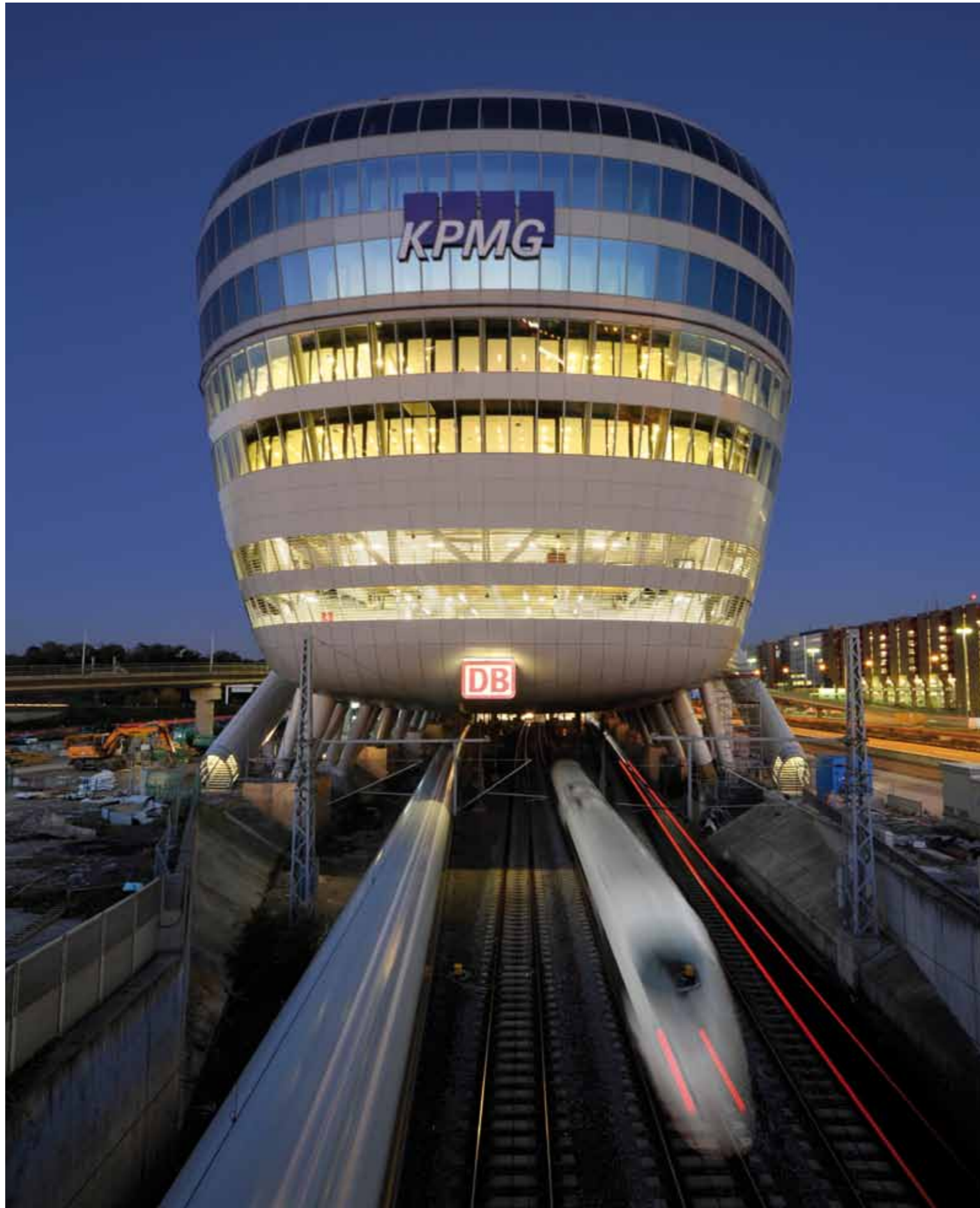
**Architects**  
JSK International Architekten und  
Ingenieure GmbH, Frankfurt a. M. /  
Germany

**Facade planning**  
JSK International Architekten und  
Ingenieure GmbH, Frankfurt a. M. /  
Germany  
In cooperation with the  
IFFT Institut für Fassadentechnik,  
Frankfurt a. M. / Germany

**Facade project control**  
MBS Projekt GmbH, Wietze / Germany

**Gross floor area**  
200,000 sqm

**Completion**  
2011, in sections



State-of-the-art standards, a diverse infrastructure and a location that couldn't be more accessible – THE SQUAIRE at the Frankfurt Airport City is a city under one roof that even has its own postal code, 60600. Individually controllable comfort and an appealing design make one of Europe's largest business buildings a place where individuals feel at home while at work.

Across the globe, international companies are discovering airports as ideal corporate locations with an optimal transportation infrastructure and modern standards. The Frankfurt Airport City not only offers airport access but also direct proximity to the ICE train station below it and several highways and other major arteries. Its new centre is THE SQUAIRE. With a floor space of around 140,000 sqm, THE SQUAIRE is one of largest buildings in Germany. Stretching along the A3 highway with a length of 660 metres and a width of 65 metres, it appears to hover above the ICE train station. By combining 'square' and 'air' in a

single word, its name reflects the special nature of this project. Optimal access to infrastructure overlaps with a broad variety of urban usages. In addition to office space, two hotels, restaurants and numerous shops, the building also houses wellness facilities and a fitness club. Doctor's offices and day care centres are planned as well.



◀ Light-flooded atria act as transitional zones between the inside and outside and have a pleasant climate in every season of the year.



With its shining hull, the long building is a beacon to drivers on the A3. JSK International, under company founder Helmut W. Joos and project manager Michael Felka, developed the prominent building that resembles an ocean liner based on the conditions dictated by the narrow property. This resulted in an unmistakable, aerodynamic form in which each surface tangentially blends into the next – a building that appears to have been conceived in a wind tunnel.

The basis of the project is an elliptical platform positioned on 86 tripod supports above the ICE train station. Its foundation and the bearing structures had already been designed 10 years earlier to bear additional loads. Like a reclining high-rise, THE SQUAIRE is twice as long as the Eiffel Tower in Paris. In its interior, light-filled atria subdivide the building into multiple sections that are accessible by foot from the train

station and the airport. The atria differ in their depth and design, and therefore offer varying ambiances and usage opportunities. They connect the individual sections as active meeting points and interfaces. The existing glass dome of the ICE train station below the building was elegantly integrated into the building, as was optimal rail access. In addition, THE SQUAIRE is fully accessible by plane and car. Its base houses two parking levels with over 600 spaces, and another 2,500 spaces will be added in an adjacent car park by 2012.

#### Facade construction

The total facade area of 145,000 sqm is equivalent in size to 18 football fields. The building's amorphous shape is built on a highly complex, three-dimensional construction that is basically a steel-glass-element facade with a curtain wall design and an exterior skin of glass elements and perforated panels. The varying degrees of curvature of the facade made a large number of different precision formats necessary. In regions with large radii, the building shape is built from polygons, while in areas with small radii, the facade elements themselves are rounded and contain curved glass panes. Because of the considerable noise levels, a double-shelled version of the facade was necessary at the ends of THE SQUAIRE.

#### Climate control

Building climate control is primarily achieved along a noise-insulated heating and cooling ceiling. It, too, required a series of special formats because of the unusual building geometry. The atria, which act as a climate buffer, are efficiently temperature-controlled to a large extent by a combined floor heating and cooling system. In the summer, excess warm air is extracted through the glass atrium ceiling. Another energy saving feature is the recovery of heating and cooling energy in the exhaust air from the offices, energy that is then returned to the fresh air in the atria. In combination with an effective sun shading system, the building meets the standards required for a LEED Gold certification.

#### Sun and glare protection

The entire sun and glare protection system is located on the inside and is therefore protected against the weather. Along the outer facade, WAREMA roller blinds, types OT.S.08 and OT.O.08, protect the interior against the ingress of excessive light and heat. They are particularly well-suited for large-area shading needs. Their screen-type fabric of Trevira CS® quality has an open woven structure that provides visibility to the outdoors even when the blinds are lowered. The material is free of PVCs and halogens, and fulfills the Ökotext Standard 100 as well as the requirements of the DGNB (German Sustainable Building Council). By providing effective glare protection, the roller blinds create optimal conditions at computer workstations. In addition, the 230V motors are fully concealed in the fabric roll to prevent lateral light slits. The aluminium vapour coated exterior of the

#### Sun shading system

5,100 roller blinds, type OT.S.08  
1,900 roller blinds, type OT.O.08  
With designs 43135 and 43138  
Aluminium parts in RAL 9006  
Powder-coated

- Effective glare protection at computer workstations, no bothersome reflections
- Visual contact with the outside is retained
- Comfort at the workplace
- Designs 43135 and 43138, flame resistant as per DIN 4102 (B1)
- Fabric qualities are characterised by very good rolling properties
- Blinds certified according to Öko-Tex® Standard 100 and DGNB requirements

For more information, please visit [www.warema.com](http://www.warema.com)



#### Sun shading system

2,300 motorised external venetian blinds, type E 80 AF, with polyamide-coated steel wire, 80-mm flat slats

- Effective sun and glare control
- Optimal indoor illumination down to the lower section of the room
  - Enhanced comfort at the workplace
  - Improved performance, lower error rate
- Optimised energy costs due to a reduction in cooling requirements and artificial light sources
- Visual contact with the outside is retained

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roller blinds enhances the reflection of heat radiation and prevents the interiors from heating up. In this project of superlatives, the requirements for noise insulation, climate control, ventilation and attenuation are extremely high. The sun shading system makes an important contribution to optimisation of the overall system, especially the indoor climate. Because outer windows and roof panes do not open for safety reasons, WAREMA added special extraction ports to significantly improve the removal of used air. The climate is further improved by 30 horizontal awnings of type H2 beneath the glass roof. Awnings mounted on the connecting bars in the hotel area extend in the mornings on sunny days to provide shade and prevent the rooms behind them from heating up. On the atria and within the double skin facade on the narrow western side of THE SQUAIRE, around 2,300 WAREMA external venetian blinds with aluminium flat slats

provide highly effective sun, heat and glare protection and minimise the incidence of solar energy. They accomplish this while still affording the user visual contact with the outside. The motorised external venetian blinds also enable occupants to make full use of natural light. They reduce the brightness directly behind the windows while redirecting daylight to the ceilings, uniformly spreading natural light throughout the room. Thanks to their polyamide-sheathed steel wire cord and the 80-mm flat slats, they are an inconspicuous element in the facade.

#### Radio control

To achieve pleasant conditions and an optimal workplace environment throughout the building, all sun shading products are controlled via a central bus system. Roller blinds and external venetian blinds move according to the position of the sun; the slats of the external venetian blinds adjust themselves automatically.

The ideal slat inclination is computed as a function of the time of year and day as well as of the facade orientation. The bus system of THE SQUAIRE is designed to permit individual control of each blind so that they can be adjusted to user requirements, overriding the central control system. The building's entire sun blind system is radio-controlled.

The uniqueness of the building architecture, its ideal location, the light-filled ambience and the pleasant working conditions have led to a high level of acceptance of this building – so high, in fact, that two-thirds of the floor space will be rented out by the time the building is completed.



„It is not the size of a project that makes it stand out above the rest. It is the courage and creativity of a few who come together to produce something outstanding. The visions for a building's utility and design blend to create a unique structure.“

Michael Felka, Project Director, THE SQUAIRE, JSK Architekten



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