



TROSIFOL
CASE STUDY

KING POWER MAHANAKHON, BANGKOK





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SENTRYGLAS® IONOPLAST INTERLAYER FROM TROSIFOL DELIVERS STRUCTURAL CAPABILITIES AND UNHINDERED VIEWS IN THAILAND'S TALLEST BUILDING

The 314 m (1,030 ft) tall 78-floor King Power MahaNakhon, located in the center of Bangkok's central business district, strikes an impressive pose on the skyline as Thailand's tallest building.

In English, the mixed-use development's name translates as Great Metropolis. As well as being home to the Ritz-Carlton Residence and King Power Retail and Duty-Free, the King Power Mahanakhon also boasts the SkyWalk, a 360° observation platform and glass-floored gantry that deliver stunning views of the city all around them and immediately below.

According to the development's owner, the building's design and 'pixelated' appearance was conceived to reflect the ambition and excitement of one of the world's most dynamic cities and is a showcase of one of the most significant examples of contemporary architecture and urban design in all of Thailand.

Architects	Büro Ole Scheeren
Structural engineering consultant	BuroHappold Engineering
Laminator	Sedak
Developer	PACE Development
Building Owner	King Power Group
Façade consultants	Front Inc.



Image © Büro-OS Photo by Sirirath Somsawat

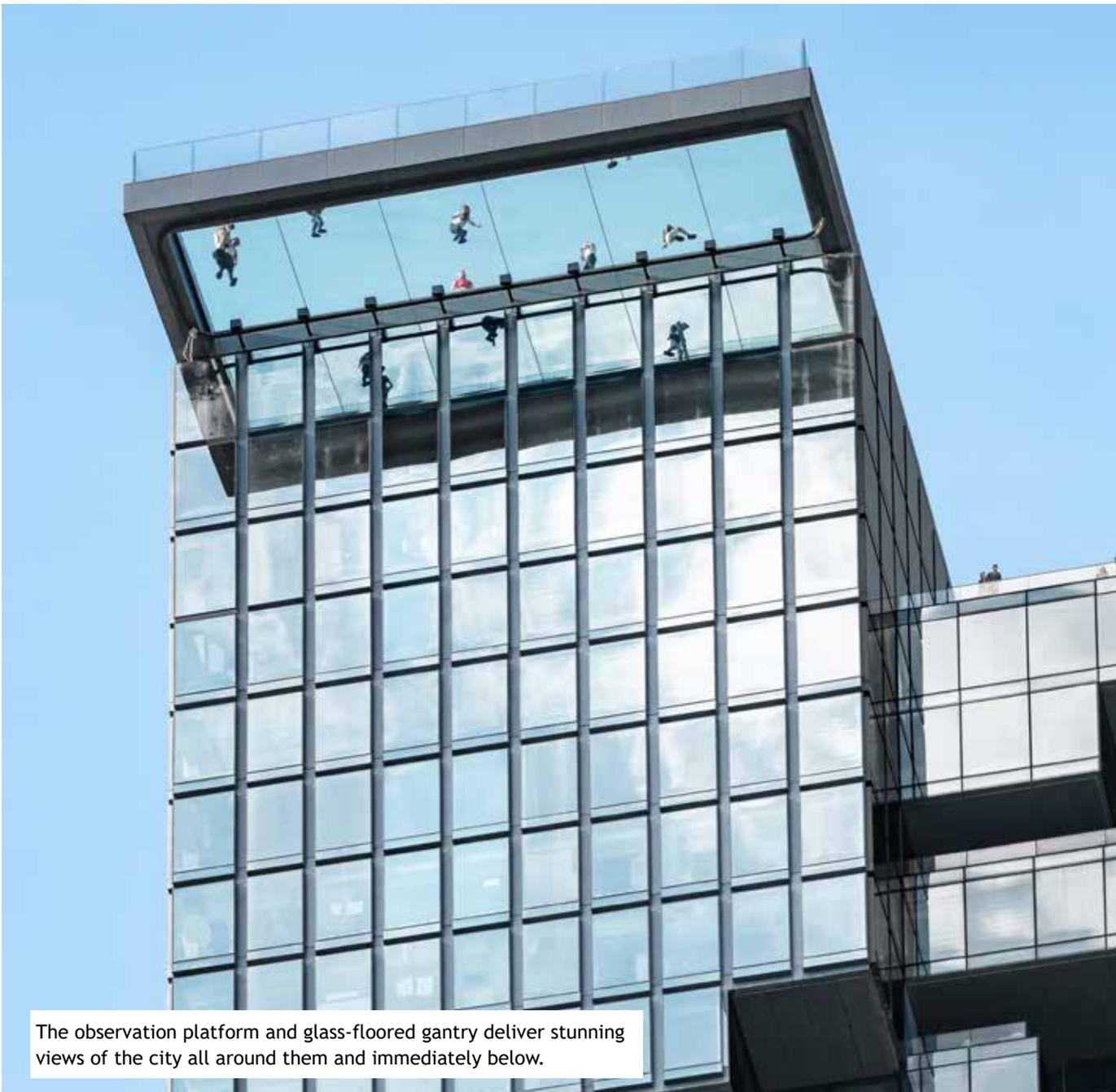
The 14 x 4 m (46 x 13 ft) glass platform, cantilevered from the building, has been called one of Bangkok's must-see attractions. And it is thanks to the strength and clarity of SentryGlas® ionoplast interlayer from Trosifol that has made the whole thing possible, catering not only for the staggering views, but also the strength to stand up to visitors and significant wind loads.



The 314 m tall King Power MahaNakhon is Thailand's tallest building.

Image © Büro-OS Photo by Sirirath Somsawat

According to the architects, Büro Ole Scheeren, MahaNakhon's glittering stacked surfaces, terraces and protrusions simultaneously create the impression of digital pixilation while echoing the irregularity of ancient mountain topography. The distinctive cut that snakes around the building gives it an unfinished appearance from a distance, but reveals planted terraces, balconies, and cantilevering living rooms when viewed in detail.



The observation platform and glass-floored gantry deliver stunning views of the city all around them and immediately below.

Eric Chang, Partner with Büro Ole Scheeren explains: “Beyond a generic, simple tower, MahaNakhon is intended to be a living insertion into the urban fabric that engages the public and generates new relationships with the city. As such, it was critical that the public have an opportunity to participate in the life of the building. We proposed to open the very top of the tower to the public through the creation of the observation deck, carving out a space for social interaction and participation 314 m (1,030 ft) above the cityscape. We then worked closely with various engineering and façade consultants on all aspects of the design and execution.”

“Working closely with façade consultants Front Inc. and Buro Happold,” Chang continues, “we proposed an energy efficient high-performance façade for the observation deck, laminated, insulating glass units

(IGUs) in the façade, laminated glass handrails and the multi-laminated structural glass floor.”

The 14 x 4 m glass floor, constructed and laminated by Sedak, is fabricated from six multi-layered panels, each measuring 4.14 x 2.69 m (13.6 x 8.8 ft). Each panel comprises seven pieces of 12 mm heat strengthened low-iron glass alternated with 1.52 mm (60 mil) SentryGlas®, creating a 13-ply glass/interlayer construction, which still offers excellent clarity.

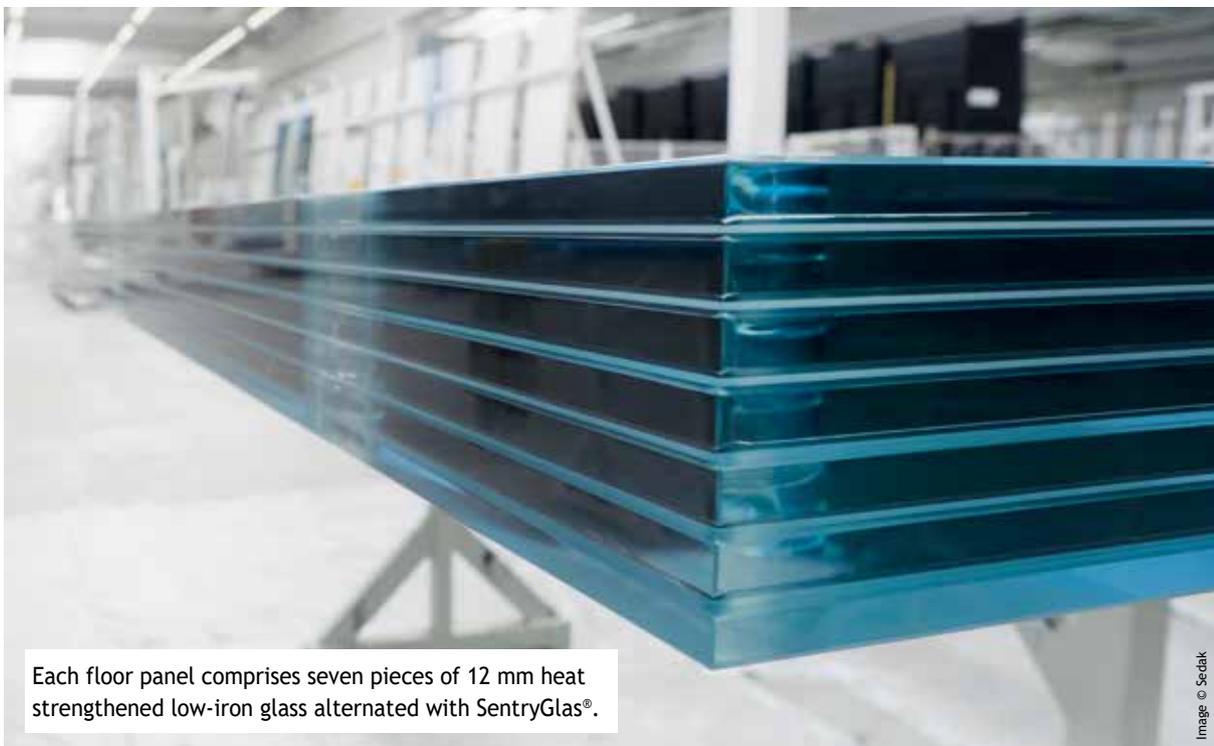
Buro Happold, which acted as the specialist structural engineering consultant, helped the architects realize their vision, while also taking into account not only the structural concerns, but also the logistics, which defined the maximum panel size due to the fact that the main cranes had been removed before the panels were installed.

Trosifol is the global leader in PVB and ionoplast interlayers for laminated safety glass in the architectural segment. With the broadest product portfolio Trosifol offers outstanding solutions:

- **Structural:** Trosifol® Extra Stiff PVB and SentryGlas® ionoplast interlayer
- **Acoustic:** Trosifol® SC Monolayer and Multilayer for sound insulation
- **UV Control:** from full UV protection to natural UV transmission
- **UltraClear:** lowest Yellowness Index in industry
- **Decorative & Design:** black & white & colored interlayers

Each panel has four 80 mm (3.1 in) mechanical fixtures at each end, which are necessary due to the potential wind uplifts being greater than the weight of the panels. These end fixings are the only non-glazed element of the floor's structure, maintaining the unobstructed view so desired by the architect and loved by the visitors.

As architect's and structural engineers begin to embrace the capabilities of modern laminated glass constructions, we are starting to see some truly incredible structures and features appear in modern building design. From relatively simple 'big-glass' concepts through to breath-taking tourist attractions, such as the MahaNakhon Skywalk, glass as both an aesthetic and structural material has so much to offer, especially when used in conjunction with advanced interlayers such as SentryGlas® from Trosifol.



Each floor panel comprises seven pieces of 12 mm heat strengthened low-iron glass alternated with SentryGlas®.

Image © Sedak

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