



# Long-lasting durability celebrated in **EDGETECH's** Super Spacer®

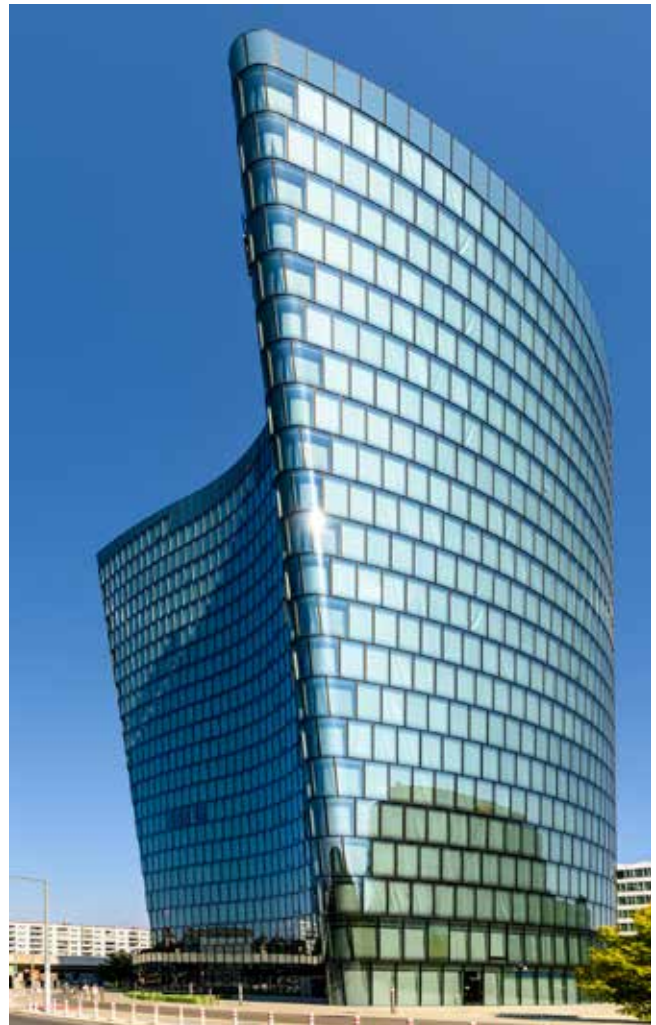
**V**andaglas Döring, known back then as Glasbiegerei Döring, was among Edgetech Europe GmbH's first customers when it started distributing the Super Spacer® system throughout Europe in 2004. According to Martin Lenz, sales manager at Döring, the fact that nothing has changed to this day can mainly be put down to the product's sustainability.

Vandaglas Döring is one of the world's leading manufacturers of curved glass panels involving sophisticated geometries. "Sustainability in terms of longevity is becoming increasingly important for our customers," explains Lenz, who then continues: "Nothing illustrates this better than functional products that can be used to achieve prestigious reference properties and where we have had no complaints - even years after their construction." Curved glass panes have

higher levels of flexural rigidity depending on their curvature. Therefore, curved insulating glass units can be exposed to higher climatic loads, placing even greater stresses on the edge seal compared to flat insulating glass units. "The sustained integrity of the edge seal is known to be crucial for the tightness of insulating glass units," said Christoph Rubel, European Technical Manager at Edgetech Europe. "A flexible spacer such as the Super Spacer TriSeal Premium used by Döring offers 100 percent recovery capability. It can perfectly offset the temperature-related expansions of glass and frame materials and reduce the stresses on the edge seal," he continues.

## **STATION ONE: PRECISION- ROUNDED CORNERS AT VIENNA'S 'HOCH ZWEI' BUILDING**

The Vienna office tower Hoch Zwei features a dis-



In its curved glass panels for architectural projects, including those of Vienna's Hoch Zwei office tower in the town's University's Learning & Library Centre, Vandaglas Döring is using EDGETECH's Super Spacer® to enhance durability, flexibility and stress resistance - triply crucial for the complex geometries and climatic loads of all such structures.



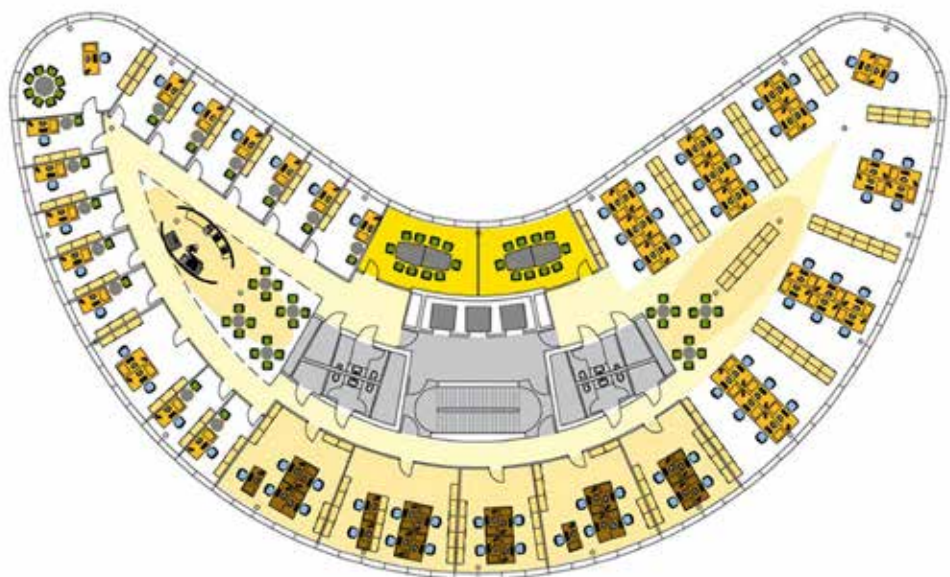
of spaces arranged around the central core. This design feature helps avoid the appearance of endless office corridors that are typically found in such buildings.

The 13,500 square metres of glass facade in Viertel Zwei combine transparency and light permeability with excellent thermal insulation and sun protection properties. Döring supplied a total of 132 model panes, which each came in six variants and in sizes of up to 1500 x

4000 mm in order to shape the two rounded corners covering an area of 2000 square metres. The cylindrical curved double glazing is constructed from 12 mm of laminated safety glass using float glass, a PVB film, 'COOL-LITE® ST 150' solar control glass, 12 mm of argon-filled interspaces, another 12 mm of laminated safety glass with thermally-insulating low-emissivity glazing, PVB film, and screen-printed float glass.

tinctive convex-concave shape which people have likened to sails or fans. Architect Dieter Henke, the male member of Henke Schreieck, jokingly refers to them as 'croissants.' Completed back in 2008, this 80-metre landmark stands at the entrance to one of Vienna's most ambitious urban development projects. Since 2004, a car-free and sustainable district called Viertel Zwei has been developing - spanning an area of 160,000 square metres. It's situated close to the Krieau trotting track, the Ernst Happel Stadium, and the Green Prater in Vienna, Austria. It has office spaces, apartments, student residences, hotels, a lake, 13,000 square metres of green space, catering establishments, nursery schools and a school - all of which create an urban living and working environment

that already accommodates in excess of 7,000 people. Atypically for high-rise constructions, the 23-storey building tapers downwards instead of upwards. The crescent-shaped floor plan of the building facilitates the flexible breaking down



© Henke Schreieck Architekten



It has a heat transfer coefficient of  $U_g = 1.5 \text{ W/m}^2\text{K}$ , a light transmittance level of 39 percent, and a total energy transmittance level of 34 per cent.

The screen printing applied to the upper and lower areas of the floor-to-ceiling glass panes conceals the floor slabs - all adding to a feeling of security, especially in the corners of the facade that faces outwards. The curved glass panes have an outer radius of 1515 mm and are uniaxially curved. The geometries of the glass panes were complex. In some cases, they had to be moulded on one side using tangential

transitions. This necessitated several sampling runs to ensure that both the mould and the bending axes were correct.

## **STATION TWO: COMPLEXITY SQUARED AT WU VIENNA'S LEARNING & LIBRARY CENTRE (LLC)**

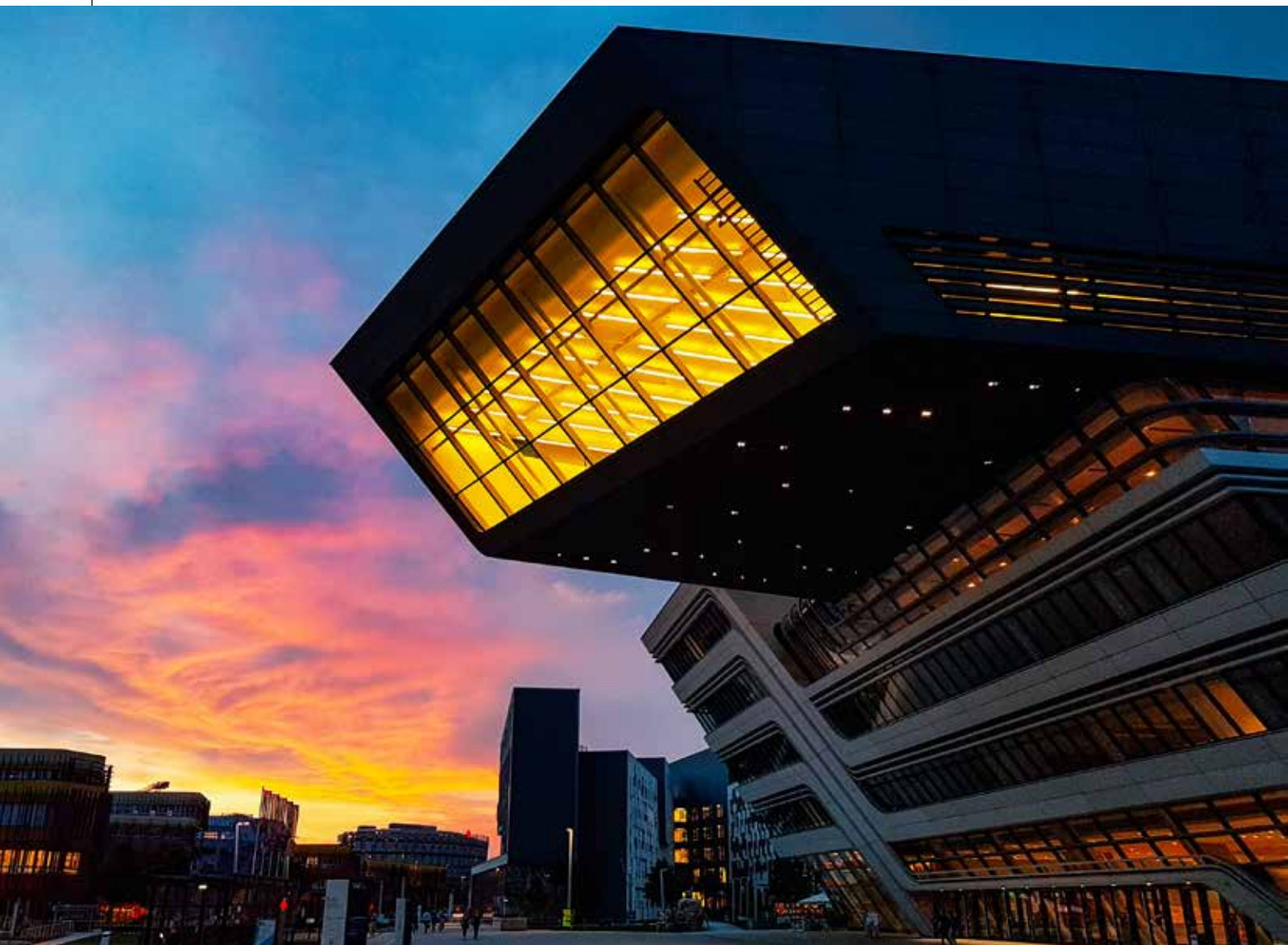
Vienna University of Economics and Business, which Döring also supplied with curved glass, is a mere 400 metres away from Hoch Zwei. The campus is characterised by seven building complexes designed by internationally renowned

architectural firms. Zaha Hadid's Learning & Library Centre - located at the heart of the site - celebrated its opening ceremony in 2013. Among other things it accommodates the university's main library.

A white and a black structure are interlocked and visually separated by a glass joint that incorporates some of Döring's glass panes. Here, known as the 'monitor,' the projecting roof with its large window front is the most striking element. "There are 360 degrees, so why stick to one?" is among their most famous quotes - and curved, cantilevered

and inclined elements alternate accordingly in the LLC (Learning & Library Center). This has posed a challenge for every company that is involved in its facade design and construction.

Lenz provides an example of the complexity of the cylindrically convex curved glass panes that come with outer radii of between 750 and 1500 mm, heights of up to five metres, and unfolded lengths of nearly four metres. "The structure of the SGG CONTOUR CLIMAPLUS glazing includes laminated safety glass with two layers of extra-clear diamond float glass, an 18 mm





### STATION THREE: STANDARDISED GLASS SUPERSTRUCTURES FOR 'SIXTY LONDON'

Döring has also garnered some excellent reference projects in London. One of the most spectacular is certainly the 60 Holborn Viaduct. It was designed by the London office of Kohn Pedersen Fox Associates (KPF) and completed in 2013, in what is now the borough of Camden, where Apple has moved into its UK headquarters. Queen Victoria herself inaugurated the eponymous Holborn Viaduct, an ornate road bridge that links the City of London with the West End, in 1869. As part of a major revitalisation project, the north-eastern gatehouse on the bridge, which was destroyed during World War II,

was rebuilt true to its original design. Sixty London, a 9-storey office and retail building, rises up behind it, and with its curved facade it provides an authentic backdrop to the surrounding Victorian architecture.

The organic design and the curved building envelope, which tapers towards the top, are intended to mitigate the bulky appearance of the building. The approx. 1,400 aluminium louvres produced by facade manufacturer Seele, which are curved at different heights whilst offering different perspectives into the building, constitute a particularly eye-catching detail in front of the unitised facade.

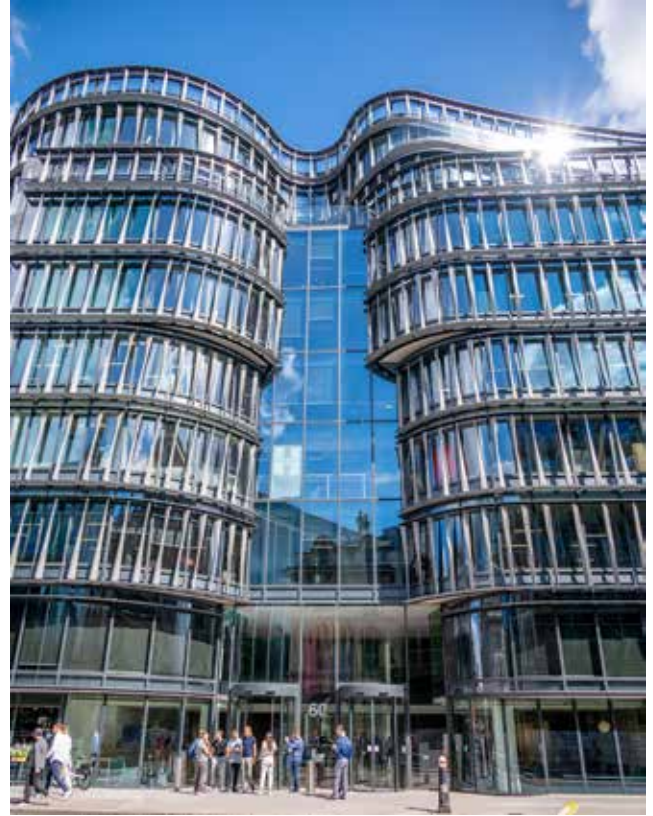
Döring supplied some 1000 square metres of convex and concave curved insulating glass complete with laminated safety glass for the facade and the balustrades

argon-filled interspace with an 18 mm Super Spacer, as well as laminated safety glass constructed from Planitherm thermal insulation glass and diamond float glass." The vertical edges at Position 2 were painted on the edges in black, grey-ground and fitted with short U-shaped sections. "The smaller the bending radius, the higher the demands placed upon the spacer, which has to fit seamlessly to the contour and, in the case of freely moulded glass sections, in all directions," says Lenz.



of Sixty London's roof terrace. In total, the facade consists of a 220-square-metre glass facade on the ground floor, 7,600 square metres of unitised facade elements, and a two-storey glass facade at the very top of the building. Due to the fact KPF attached great importance to the uniform glass structures for both the curved and flat elements, and different photometric values were required, solar control coatings that would be technically-feasible for the curved glass panes were initially specified in collaboration with Döring. Finally the highly-selective solar control glass from the Guardian SunGuard® product family was used. Rubel then went on to list the additional benefits of the Super Spacer®: "The insulating glass units can be picked up and handled immediately following production due to the material's high levels of adhesive strength. We demonstrated this impres-

sively a few years ago when we conducted a shear load test. The Super Spacer TriSeal™ Premium Plus product was applied to a 3.21 m x 6.0 m insulating glass unit consisting of float glass panes with a thickness of 6 mm, using only the acrylic adhesive without a secondary seal. The unit was lifted using vacuum suction cups on one side and held in place for 30 minutes. Throughout this process the panes didn't budge a single millimetre." By virtue of its low profile, Super Spacer® can also be used where narrow glass gaps and slim frame sections are present. The flexible material facilitates precise mitre joints at the corners. The polyisobutylene seal is concealed, preventing it from migrating into the visible area of the pane even after many years have passed. "All these properties guarantee an aesthetically flawless end result," says Rubel. Martin Lenz concurs:



"The appearance is also clearly a very important aspect of the long-lasting durability of architectural glass. Although we primarily have to deal with the technical and functional features in our daily

work, the beauty of glass architecture continues to inspire us. We take great pride when our glass panes retain their original appearance even decades after their installation."

## ABOUT EDGETECH EUROPE GMBH, A PART OF SOMETHING BIGGER

Located in Heinsberg, Germany, Edgetech Europe GmbH is a fully-owned subsidiary of Quanex Building Products Corporation, (NYSE: NX) a global, publicly-traded manufacturing company primarily that serves OEMs in the fenestration, cabinetry, solar, refrigeration and outdoor products markets. Edgetech Europe GmbH services markets in continental Europe with a total of 490 employees and 17 extruders. We are 'A Part of Something Bigger' by improving the performance and aesthetics of end products through continuous innovation, helping customers achieve greater production efficiencies and giving back to communities where we operate.

Edgetech Europe GmbH

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A SUBSIDIARY OF **Quanex**

Glabbacher Strasse 23  
52525 Heinsberg - GERMANY  
Tel.: +49-2452-964910  
Fax: +49-2452-9649111  
E-mail: info@edgetech-europe.com  
[www.superspacer.com](http://www.superspacer.com)