

CASE STUDY

Silicones secure complex façade of landmark conference and congress center

ICE Kraków Congress Center



The project

The ICE Kraków Congress Centre is the business and cultural flagship of the city. Located in the very heart of Krakow, it is a convenient place for the organization of diverse events – from international congresses, conferences, symposiums and business meetings, through cultural events such as concerts, opera, theatrical and ballet performances, to social meetings. Thanks to the opening of the Congress Centre, Krakow has an infrastructure that lets everyone enjoy their visit to the capital of Malopolska to the fullest extent – a prestigious facility, the atmosphere of the city and an extremely diverse cultural, culinary and commercial offer.

The building façade is comprised of a mixture of glass, ceramics and aluminium. The eastern side of the building is glazed to allow occupants to enjoy incredible city views, whilst the reverse of the building is covered with coloured ceramic tiles, which correspond to the interior colour-scheme. This dynamic use of substrates and colours is a reflection of the architect's desire to represent the vibrancy of the Dębniki district on the right bank of the Vistula and which only joined the Kraków city limits in 1909.

DOWSIL™ sealants were extensively used for the façade construction. DOWSIL™ 3362 HD Insulating Glass Sealant was specified for the secondary seal of the insulating glass units, DOWSIL™ 993 Structural Glazing Sealant was used to structurally attach the glass units, DOWSIL™ 791 Silicone Weatherproofing Sealant for the movement joints around windows and doors and the DOWSIL™ PanelFix System secured the ceramic panels to the curtain wall frame.

City and country

Kraków, Poland

Products

- DOWSIL™ PanelFix System
- DOWSIL™ 3362 HD Insulating Glass Sealant
- DOWSIL™ 993 Structural Glazing Sealant
- DOWSIL™ 791 Silicone Weatherproofing Sealant

Key participants

• Architects

Ingarden & Ewý Architekci
Arata Isozaki & Associates

• Façade consultant

WB Projekt

• General contractor

Budimex S.A.

• Insulating glass and structural glazing fabricator

Quality Bond™ from Dow Member –
Press Glass S.A., Poland

• System supplier

Quality Bond™ from Dow
Member – Aluprof S.A., Poland

• Curtain wall contractor

Quality Bond™ from Dow
Member – Alsai Sp. z o.o.
Sp.K. Poland
Quality Bond™ from Dow Distributor –
Proventuss Poland

*Prior to February 2018, products listed were branded as Dow

The challenge

The beautiful but complex array of glass and ceramic panels posed some interesting design challenges, which required good collaboration and coordination within the design team in order to find the smartest and most efficient methods for façade construction.

Whilst silicone structural sealant was specified to retain the glass, the design of the structurally glazed façade incorporated some rather unusual features including curved and triangular shaped panes at a negative inclination of 28° and large glass sizes of up to 3850 mm in height and 2480 mm in width and up to 740 kg in weight. Normally, this requires the use of metal clips which hold the glass in place as a further safety measure. These clips add cost and disrupt the overall aesthetic appearance of the façade.

Long-term safety, quality of installation, aesthetics and high durability were also key concerns raised by the project team when considering the method of fixation for the ceramic panels.



The solution

Silicone structural bonding with DOWSIL™ sealants has a long track record of proven and safe application versatility. With this in mind, Quality Bond™ from Dow Technical Distributor, Proventuss, was able to propose an alternative solution to the project team for the fixation of the insulating glass units, which would eliminate the need for metal clips and reduce cost.

When correctly dimensioned, structural glazing with stepped-insulating glass units permits the load-bearing bonding connection to the metal sub-frame to be placed on the larger, external glass pane, which provides an added safety feature, thereby addressing concerns raised by the project team. DOWSIL™ 993 Structural Glazing Sealant meets the stringent performance requirements for this application and was also applied to the inner panes for additional security. For further peace of mind, this solution was the subject of a destructive test undertaken by Quality Bond member Aluprof S.A., which measured the impact of dual structural bonding points on glass retention.

When used in a stepped-insulating glass configuration, the secondary seal of the glass unit also needs to provide rigorous strength, UV and heat resistance, despite the fact it does not have any load-bearing function. DOWSIL™ 3362 HD Insulating Glass Sealant was specified to meet this important performance criteria. Leading glass processor and Quality Bond member Press Glass S.A. produced the insulating glass units and carried out the structural bonding to the curtain wall sub-frame.

DOWSIL™ 791 Silicone Weatherproofing Sealant was also specified for external weather sealing of the movement joints around the windows on doors for full system compatibility and long-term durability.

Fixation of the ceramic panels required extensive calculations to ascertain the correct sealant bite due to the location and intricate arrangement of the curtain wall frame, which has been designed to maximize the impact of its color and beauty. The DOWSIL™ PanelFix System, comprised of specific cleaning and priming materials, DOWSIL™ PanelFix tape and DOWSIL™ 896 Silicone Adhesive, was selected to retain the panels, due to its high strength and ease of use. This complete system of fixation has no visible connection points, thereby improving the overall aesthetic appearance of the façade.

System Supplier Alsal Sp. z o.o. Sp.K. received training in panel bonding applications and received regular site audits to monitor and control the conditions and quality of sealant application from Proventuss, which was carried out during the winter months.

DOWSIL™ 993 Structural Glazing Sealant

Certified by European Technical Approval ETA 001/0005, DOWSIL™ 993 Structural Glazing Sealant exhibits excellent weathering properties and high resistance to ultra-violet radiation, heat and humidity once cured. It is ideal for structural bonding of glass and metal and has excellent adhesion to a wide range of substrates.

DOWSIL™ 3362 HD Insulating Glass Sealant

A neutral curing silicone sealant specifically formulated for use as a secondary seal in the manufacture of high performance insulating glass units, with outstanding adhesion to a wide range of substrates including coated, enamelled and reflective glass. DOWSIL™ 3362 HD Insulating Glass Sealant has excellent temperature stability, is resistant to ozone and ultra-violet radiation. It is CE marked according to ETAG 002 and meets sealant requirements according to EN 1279 parts 4 and 6 and EN 13022.

DOWSIL™ 791 Silicone Weatherproofing Sealant

A premium performance weatherproofing sealant, DOWSIL™ 791 Silicone Weatherproofing Sealant is suitable for the weathersealing of structurally glazed facades, bolted glass systems and general glazing and building facades constructed of brick, stone and traditional building products. With excellent weatherability and UV resistance, it is ideal for expansion, connection, perimeter and all other types of movement joints.

About Quality Bond™

Quality Bond™ lifts silicone sealing and bonding to the highest level through the instigation of standards of best practice in quality control, quality assurance and product application by specialist silicone fabricators and applicators. Quality Bond™ allows customers and specifiers to share in Dow's industry-leading expertise and benefit from our proven global performance track record. For more information, please visit qualitybond.com.



For more information

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