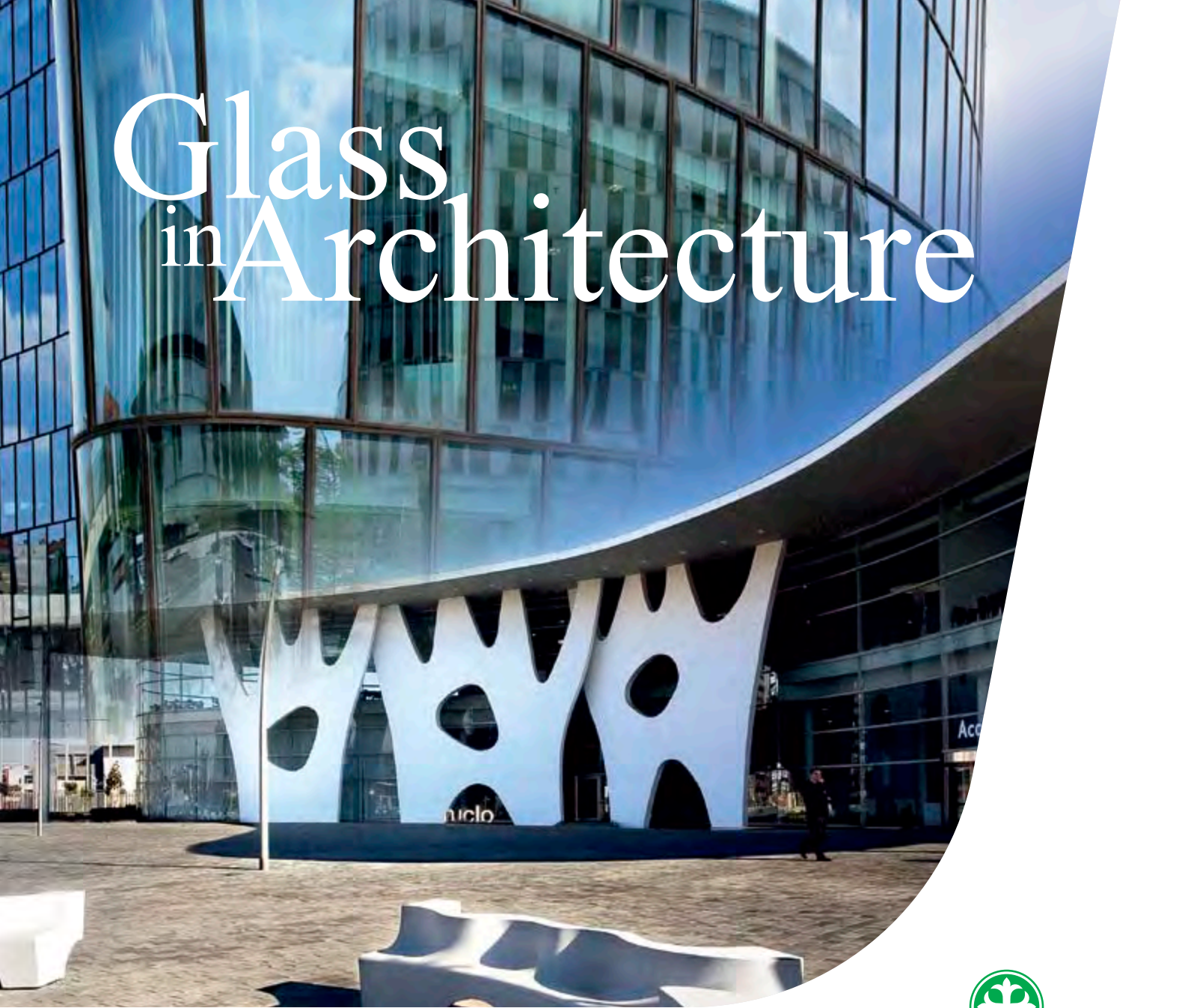


# Glass in Architecture



2011 • Architectural projects magazine



**PILKINGTON**  
NSG Group Flat Glass Business



Glass  
in Architecture

*We would like to dedicate our new edition of Glass in Architecture magazine to the memory of the Polish architects Professor Stefan Kuryłowicz and Jacek Syropolski, who recently died tragically, in acknowledgement of their work, inspiration and their outstanding contribution to the Polish architecture.*





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Dear Readers,

Light is the fundamental element of architecture and glass, over all building materials, has the unique property of transmitting it. It is by means of light that we perceive the space in and around the architecture. But today, glass goes beyond its fundamental day-lighting role as it offers many additional functions.

Starting from Mies van der Rohe's 1922 Glass Sky Scraper project model, shown at the annual Berlin Art Exhibition, glass became not only a functional material transmitting light, but it began to play an aesthetic role. By designing a complete glass curtain wall, Mies van der Rohe could reveal the internal structure of the building and, at the same time, exploit the reflecting property of glass. Structural glazing systems were the next development, allowing glass to be released from the structure to make it the sole support of the building skin. This idea of glass as a universal and aesthetic material is still valid.

In modern architecture glass is used in windows, curtain walls, roofs, interior walls and many other interior elements such as ceilings, floors or staircases. And thanks to substantial technological developments, it can make a positive contribution to the sustainability of a building. The best energy-efficient glazing offers both solar control and thermal insulation. Glass can also offer acoustic performance so that buildings meet the appropriate standards and significantly reduce noise.

With their artistic and ingenious ideas, architects around the world are integrating all these technological solutions in their creations. They design unique buildings, filled with natural light and harmoniously integrated to their surroundings. As a global leader in the manufacture and supply of glass products, we have a great pleasure to contribute to their work. In this book we present some of the most impressive projects, hoping to give you some inspiration and a better understanding of glass – one of the most fascinating materials used in architecture.



*Hoch Zwei creates highly ergonomic workplaces  
that combine functionality, quality and design.*





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## AUSTRIA

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Hoch Zwei, 2008

Pilkington **Suncool Optilam™ 50/25**

arch. Henke und Schreieck

Hoch Zwei, an 80-metre high office tower, was designed by the architectural team Henke and Schreieck. Its glass façade, with concave-convex sculptural forms, made with Pilkington **Suncool Optilam™ 50/25** is fascinating. No wonder it is said to be one of the most interesting architectural highlights of Vienna, where glass and steel are the preferred materials.





*The homogeneous glass skin underlines the outstanding sculptural shape of the building.*



© Eric Firley

© Eric Firley

*The large amount of glass provides maximum transparency and makes this monumental building look less dominant.*



*The transparent and visionary glass façade guarantees a high level of natural light and flexibility in the layout of the internal space.*



## POLAND

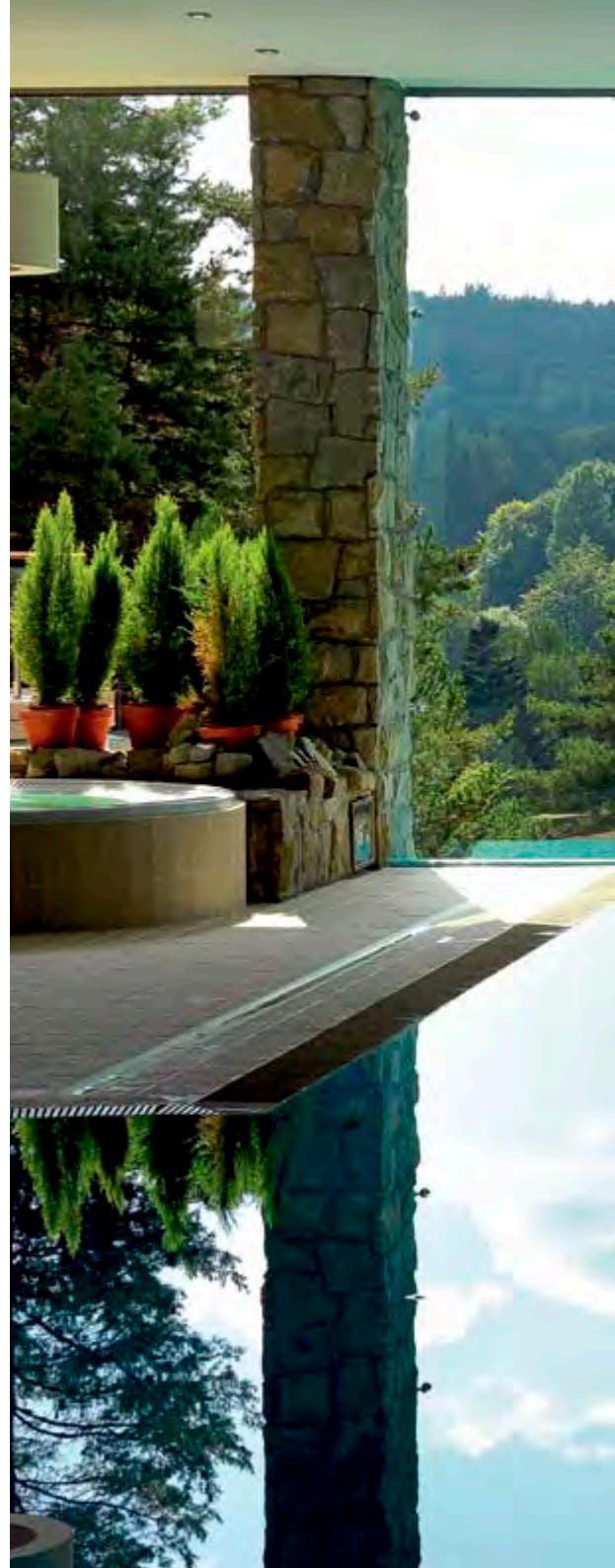
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### Hotel SPA Dr Irena Eris, 2008 Pilkington **Planar**<sup>™</sup>

arch. Ryszard Girtler, Atelier3 Girtler & Girtler

Hotel SPA Dr Irena Eris Krynica Zdrój is located in a picturesque valley, at the bottom of the Jaworzyna Krynicka mountain. Architect Ryszard Girtler, Atelier3 Girtler & Girtler, created this modern, relaxing space which is now a synonym for luxury and holistic care. The large area of glass and seamless joints between the adjacent panels of Pilkington **Planar**<sup>™</sup> allow for maximum transparency of the façade and therefore proximity to nature.

*Large windows open to a breathtaking view  
of the Beskid Sądecki mountain range.*











*High performance solar control glass provides high visible light transmittance and reduces energy consumption.*



*Safety and reliability is assured as Pilkington **Planar**™ is fully tested to comply with even the most stringent performance requirements.*

*The use of Pilkington **Planar**™ in combination with a glass fin system creates the ultimate in transparency.*







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SPAIN

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Fira de Barcelona, 2006

Pilkington **Optiwhite™**

arch. Toyo Ito & Associates

The exhibition centre Fira de Barcelona, designed by Toyo Ito with a clear emphasis on organic, wavelike forms and glass, is one of the most significant modern buildings of Barcelona. The architect decided to use Pilkington **Optiwhite™** for both the interior and the exterior, because of its excellent light transmission and attractive appearance.

*Light and water are living elements; they are always featured in the work of this Japanese architect.*





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*A clean white light illuminates the stylistic wave shapes to emphasise their purity.*

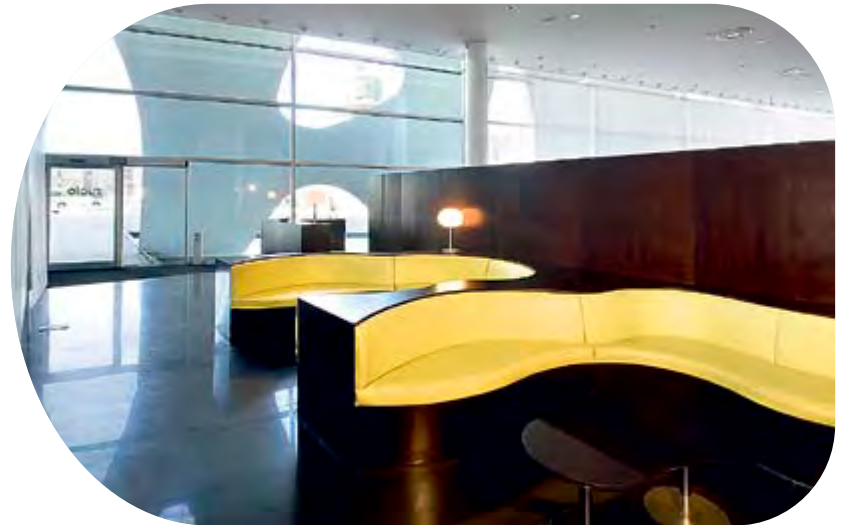


*The symbolic shapes bring to mind the elements found in nature such as rivers or clouds. They reflect the balance between modern architecture and its environment.*





Pilkington **Optiwhite™** provides purity of colour and enhances lighting effects across an extensive range of applications.



The absence of greenish tint in Pilkington **Optiwhite™**, compared to clear float glass, provides the total transparency needed in minimalist design, where every line or colour has a purpose.

ITALY

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Villa Meg, 2009/2010

Pilkington **Optitherm™** S3

Pilkington **Optilam™** Therm S3

arch. Marco Marchesi

Villa Meg at Lignano Sabbiadoro, designed by Marco Marchesi, is a dialogue between glazed and masonry sections that characterises this façade, divided into a grid of large rectangular cells. This house was built to meet both environmental and esthetical requirements. The energy-saving windows are made of low-emissivity glass Pilkington **Optitherm™** S3, an advanced product that provides excellent thermal insulation performance.

*The architecture fits seamlessly into the beauty of the surrounding landscape. The large windows integrate the interior with the Mediterranean vegetation and provide generous amounts of natural light.*







*Due to its high energy efficiency, excellent light transmittance and very neutral appearance, Pilkington **Optitherm™ S3** is ideal for large glazing areas.*



© arch. Marco Marchesi



© arch. Marco Marchesi



© arch. Marco Marchesi



*The insulating glass units within these large sliding windows are made of Pilkington **Optilam**™ Therm S3 laminated glass in order to protect against break-ins.*



© arch. Marco Marchesi

*The building was designed following the sun, with a more spacious and bright aspect to the south.*

*The rough and uncompromising shape of the Sámi Science Center  
is designed to reflect the nature around it.*





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## NORWAY

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The Sámi Science Center, 2009

Pilkington **Suncool™** 66/33

arch. Reiulf Ramstad Arkitekter AS and Sivilarkitekt Kirsti Knudsen AS

Around the small town of Kautokeino, the magnificent mountain plateau stretches in every direction. The Sámi Science Center is set on a small hillside looking down on the centre of the town. The building is meant to reflect the Sámi traditions and in particular its attachment to nature. The cultural inspirations may be found in selected materials, symbols and forms. The use of solar control glass ensures a balance of overall energy efficiency and open perspectives.

© Bert Raanes and Sarah Sørensen



*To ensure the Sámi Center is a representation of the local heritage  
the architects decided to use a limited range of materials.*





© Bent Raanes and Sarah Sorensen

*The design is based on simple geometric lines laid into a complex arrangement of rooms and functions.*



© Bent Raanes and Sarah Sorensen

Pilkington **Suncool™** 66/33 is ideal for large areas of glazing to control solar heat gain whilst providing high levels of daylight.





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## USA

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### The Glass Pavilion™ at the Toledo Museum of Art, 2006

#### Pilkington **Optiwhite™**

arch. SANAA

The Glass Pavilion™ in Toledo, Ohio can be summarised in two words – minimalism and transparency. Opened in 2006, it is the home of the Toledo Museum of Art's – world-renowned glass collection, featuring more than 5,000 works of art from ancient to contemporary times. Glass plays a key role in its architecture. The exterior and many of the interior walls of the Pavilion are entirely made of glass.

Pilkington **Optiwhite™** extra-clear low-iron float glass was chosen by the architect for its clean and colourless qualities, and its versatility.

© Floto & Warner



*The walls, which are 4.6 metres high, are made of over three hundred glass panels, of different sizes and curvatures.*



© Floto & Warner

*The architect has created a transparent structure that blurs the boundaries between the interior and exterior spaces.*



*The design prioritises minimalism, also noticeable in the clean, modern and spacious interior.*

*Simple in appearance but flexible in usage, Pilkington **Optiwhite™** can be toughened, bent, enamelled or silk-screen printed, and laminated with PVB or resin.*





## POLAND

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Harmony Office Center II, 2010

Pilkington **Suncool™** 50/25

Pilkington **Optilam™**

arch. APA Kuryłowicz & Associates

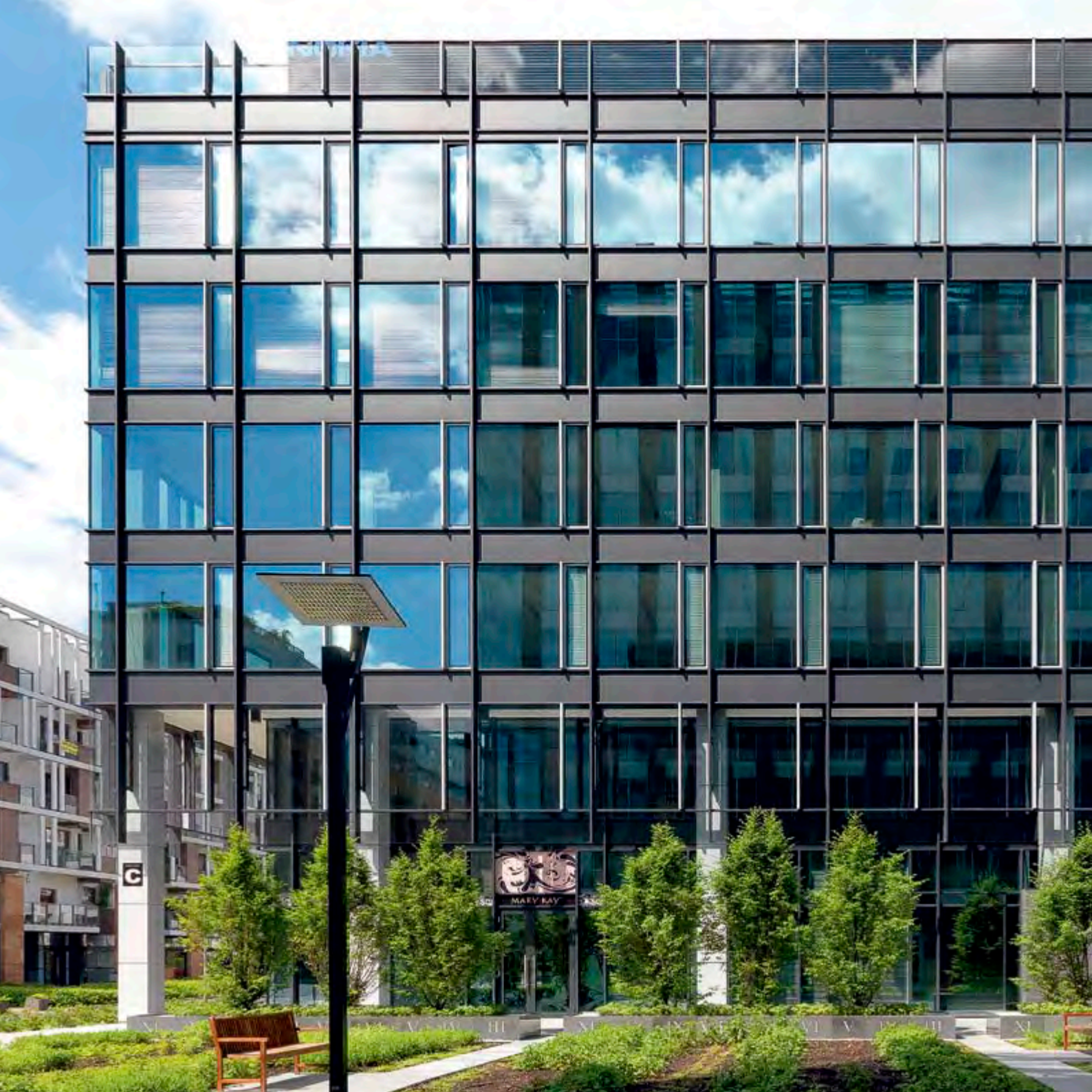
The Harmony Office Center II, located on the outskirts of the city centre, adjacent to the Pola Mokotowskie Park, regroups modern Class A office buildings which are connected to the housing and service – trade. The building complex is distinguished by elegant façades that combine stones and glass, positioned into green spaces and courtyards. By using innovative glazing solutions with high performance glass, the Polish designers – Prof. Stefan Kuryłowicz and Jacek Syropolski with their APA Kuryłowicz & Associates team – have created a range of functional buildings that are in total harmony with the surrounding park and that meet the highest requirements in terms of thermal insulation, solar control and security.

*To provide users with maximum comfort, the building façades are made of high performance solar control glass Pilkington **Suncool™** 50/25, which provides superior protection from the sun, excellent thermal insulation and high levels of daylighting.*









C

MARY KAY





*Thanks to the large area of glass, the Harmony Office Center II office users can enjoy a full view of the Pola Mokotowskie Park.*

*For additional security, the designers opted for a combination of Pilkington **Suncool**™ 50/25 and security glass Pilkington **Optilam**™. If broken, this glass will remain in place, avoiding injury and preventing entry.*



*Used for structural glazing, Pilkington **Insulight**™ Sun double glazing units are made of high performance solar control glass Pilkington **Suncool**™ 50/25 and laminated glass Pilkington **Optilam**™. This combination provides high light transmission, excellent solar and thermal control for reduced energy consumption and comfortable environment, as well as protection from injury and burglary, all in one product.*





GEORG  
**D**



## FINLAND

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Kinnarps Kolmio, 2009

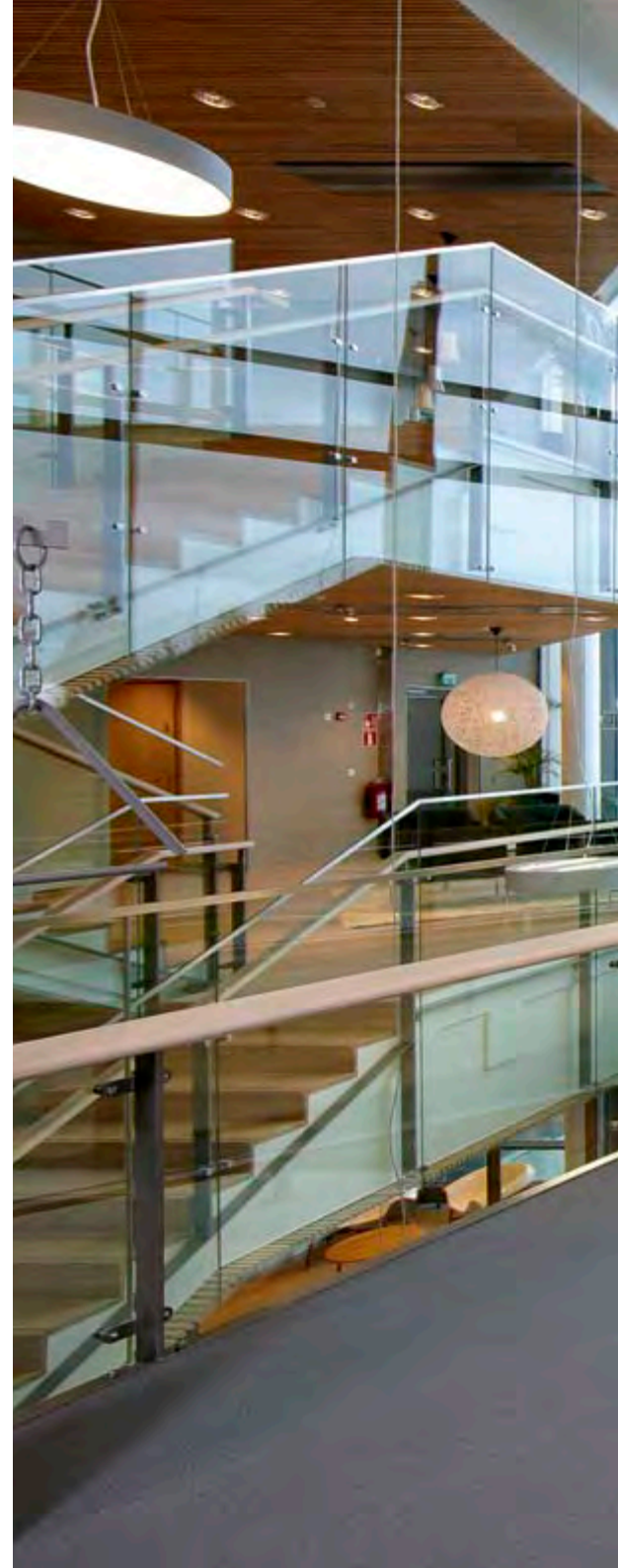
Pilkington **Suncool™** 50/25

Pilkington **Optitherm™** S3

arch. Arkkitehtitoimisto Petri Rouhiainen Oy

The Kinnarps Ltd's new building in Helsinki, designed by Petri Rouhiainen Oy, offers a bright and spacious showroom with a total floor area of over 2,400 m<sup>2</sup> which can be freely adapted for exhibition or office rooms. The four storey building consists of two interlaced triangles maximising daylighting. This approach, when combined with glass offering high energy efficiency and solar control ensures optimum conditions inside at any time of the day or year.

*Pilkington Suncool™ 50/25 helps reduce  
the solar heat gain from the windows.*









© Mikael Lindén

*Its high level of neutrality makes Pilkington Suncool™ 50/25 ideal for large glazing areas.*

*Minimising energy consumption and maximising both the environmental and functional aspect were the architect's first priority.*







© Mikael Lindén

## ITALY

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### Anva Snc, di Vanin Fabio e Mauro, 2009 Pilkington **Optilam**<sup>™</sup> Therm S3

arch. Gianni Rigo, arch. Carlotta Rigo

The design of the local enterprise centre (ANVA) at Scorzè near Venice by the architects Gianni and Carlotta Rigo, is distinguished by its remarkable form and colour. It consists of two simple, rectangular buildings in reinforced concrete, set side by side and painted in vivid red. The predominant feature of the structure is the set of large windows made of laminated low-emissivity glass Pilkington **Optilam**<sup>™</sup> Therm S3, and assembled in double glazing with Pilkington **Optilam**<sup>™</sup> for additional safety properties.

*The strong colour contrast is attenuated at sunset when the structures are illuminated by ground-level LEDs and the interior lighting floods through the large glazed surfaces.*









*At night time, the glass surface is covered in soft light  
which reflects in the water surrounding the building.*





© Paolo Monello

*For added safety, Pilkington **Optilam**™ Therm S3 has been combined with impact resistance Pilkington **Optilam**™ glass that, if ever broken, will remain in place, avoiding injury and preventing intrusion.*



© Paolo Monello



© Paolo Monello

*The light colours of the interior, visible from the outside, give a sense of uncluttered space that contrasts with the brilliant red of the façade.*

*The irregular high glass façade gives a simple and geometrical form to the building, providing a sense of structural continuity between the inside and the outside.*



© Paolo Monello

*A calculated use of colours, shapes and glass provides a structure with dynamics and lightness, unprecedented in the industrial architecture.*



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## GERMANY

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ThyssenKrupp Quartier, 2010

Pilkington **Suncool™** 70/40

arch. JSWD Architekten, Chaix & Morel et Associés

The Q1 office building, which forms the heart of the new ThyssenKrupp Quartier, is located in the middle of downtown Essen. Up to 54 metres high, it is taller than any other buildings on the campus yet without dominating them. With its large panoramic windows, the Q1 expresses corporate culture as well as transparency and openness. The impression of transparency is reinforced by the windows' structure without frame or divider. From the outside it looks like a single oversized glass cube.

*The lack of frame or sash bar on the windows gives the initial impression that the panoramic windows consist of a single giant panel.*





*The architects call this shape “the geometric articulation of different volumes around a common centre”.*



© ThyssenKrupp

*ThyssenKrupp Quartier offers space for work, free time and culture.*



© ThyssenKrupp

*The atrium of the main Q1 building is the heart of the ThyssenKrupp campus. The 25 metre wide and 28 metre high windows open up the view into the interior space from the south and north.*

© ThyssenKrupp





*The sun shading system plays a big part to the building's energy consumption, protecting from overheating still allowing a large amount of natural light in the interior space.*



© ThyssenKrupp



*The inside of the building is characterized by a succession of exciting rooms around the glazed atrium that forms its centre.*



*The wide use of glazing gives an impression of space, providing the greatest possible amount of natural light and therefore a bright and friendly working atmosphere.*









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## FINLAND

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KyAMK Paja, 2010

Pilkington **Optiwhite™**

Pilkington **Optifloat™** Clear

arch. Arkkitehdit NRT Oy

The Kymenlaakso University of Applied Sciences is an excellent example of combining modernity and historical heritage. The almost 100 year old red brick buildings of the military base in Kouvola were released for civilian use in the 1990's. The Kymenlaakso University of Applied Sciences has occupied the area since 1998. The architecture of the new building is highly exceptional, with its glass façades and its large workshop facilities buried below the historical parade ground.

*The workshop rooms are hidden underground. To achieve maximum light transmission, the internal walls have been made of Pilkington **Optiwhite™** glass.*

*The most visible part of this new building is a glass café and exhibition gallery. Thanks to its 18 glass panes the space is open and bright.*



© Mikael Lindén





© Mikael Lindén

*The new construction is located on the slope between the main building and the library.*



© Mikael Lindén

*The large glass walls create a fascinating contrast to historical setting.*

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## POLAND

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Floating Arena, 2010

Pilkington **Profilit™**

arch. Orłowski, Szymański – Architekci Sp.J.

A simple shape and the use of a limited amount of materials don't automatically create an uninspiring architecture. The Olympic Pool in Szczecin, known as the Floating Arena, is an example of a good mix of minimalism and modern requirements. The Polish architects – Marek Orłowski and Marek Szymański – inspired by the work of Frank Lloyd Wright and Mies van der Rohe, decided to integrate a new element with the existing modernist architecture. Glass plays the main role in their project.

*In the evening an artificial light passes through the glass  
and creates a visual spectacle.*













*To maintain continuity of the glazing around the project,  
the architects have used glass corners without any traditional pillars.*



*Bricks, glass and profiled glass were used in elevation to maintain  
the simple and rough character of the building.*



*This visionary architects' concept  
is based on glass of different shapes  
and textures.*







*Numerous elements were designed with Pilkington **Profilit**™.*

*The product has been used in both the façade and the roof, allowing the light to enter the building whilst presenting a translucent external appearance.*



*The profiled glass gives the interior an intriguing look, providing it with soft, diffused light.*



*Pilkington **Profilit**™ proved to be an excellent material for this interior design. It appears in many elements, such as the reception counter and the bar.*



*The curved wall and the 70 foot tall atrium are the most remarkable architectural elements of this project.*



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USA

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Presbyterian Hospital, 2010

Pilkington **Planar**<sup>™</sup>

Pilkington **Optiwhite**<sup>™</sup>

arch. Pei Cobb Freed & Partners and daSilva Architects

The Vivian and Seymour Milstein Family Heart Center is constructed within the courtyard of two existing buildings owned by New York – Presbyterian Hospital. Located on Fort Washington Avenue and 165th Street in Manhattan's Washington Heights neighbourhood, it features a dramatic glass curtain façade and offers extensive views of the Hudson River. The building was designed by award-winning Pei Cobb Freed & Partners and daSilva Architects.



*The building features a dramatic glass curtain façade and offers sweeping views of the Hudson River.*



*Electronically controlled vertical shades track the movement of the sun, maintaining a temperate internal environment and presenting a constantly changing façade.*



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*The double skin glass construction allows for both energy efficiency and visual transparency.*





*At night, strategically deployed lighting refracts through the glass envelope, which is suspended from the uppermost floor by a web of stainless steel cables.*



*The curved climate wall is constructed of vertical tensioned cable trusses located within the wall cavity, with Pilkington **Planar**™ structural glazing on the exterior.*



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