EFFICIENT UNITISED FACADE

WICONA®

TECHNIK FÜR IDEEN

Taking future facades to new heights

Architect: Foster + Partners
Fabricator: Feldhaus
Photo: Olaf Rohl Aachen, © Saint-Gobain

In the future, increasingly high demands will be placed on architecture and individual buildings. At the same time, reduced construction times and cost-effective building processes are crucial factors in building projects worldwide. For this reason, tomorrow's facades must combine energy efficiency and high performance with individuality, function and environmental responsibility, within the framework of an efficient and optimised construction process.

Higher requirements for comfort and design, reduced access to developable land and continuous emphasis towards sustainability will feature even more strongly in the planning and design of buildings in future.

WICTEC unitised facade systems offer an optimal solution for modern architecture, combining outstanding energy performance with innovative ventilation solutions, maximum light provision and safety performance in a single facade design. They also help optimise the construction process by allowing more rational production and assembly. WICTEC unitised facade systems allow for plenty of creativity while facilitating the construction process and helping to transform ideas into real buildings.

With the WICTEC unitised facade system, the choices for building design are virtually limitless. The construction process is optimised from various perspectives, and all the players involved in the process benefit from the flexible facade system. Design, develop, produce and assemble to the highest quality standards according to the project's individual requirements.

Like WICONA's other facade systems, the WICTEC unitised facade system is compatible with our comprehensive window, door and sliding systems, offering you extremely flexible facade technology. From the first draft to detailed planning and completion, in our standard systems or as bespoke solutions, your individual requirements will always be fully met.

This is Technik für Ideen.

The WICONA unitised facade system offers cost-effective production that meets the highest performance requirements, with almost unlimited freedom for design.

» Efficient construction process for modern architecture

Architect: Gabriele Glöckler & ZSP Architekten
Fabricator: MBM Metallbau Dresden GmbH
Photo: Conné van d'Grachten

Short construction times are crucial in most of today's construction projects. This creates a need for efficient solutions that optimise production and assembly processes. The WICTEC unitised facade system simplifies planning, design and implementation, resulting in a time-optimised, quality-assured and simple construction process that meets modern-day needs and tailored to individual projects.

The individual units in the WICTEC unitised facade system are series-produced in the workshop. Prefabrication allows an efficient and cost-optimised production process to be achieved while ensuring high process security and product quality. Production takes place under controlled conditions and is not affected by external factors such as season and weather. This results in fast, cost-effective facade systems for buildings of all sizes, where the units are delivered ready-assembled to the construction site. Accessories such as opening elements, building technology, panels, cladding and solar shading systems can easily be pre-integrated into the system to make the construction process flexible and efficient.

The WICTEC unitised facade system is based on a recurrent modular structure that rationalises the planning and production processes. The construction process is made time- and cost-effective through just-in-time logistics, and the prefabricated units are easily assembled without need for costly scaffolding. Planning and project management are rationalised at the workplace, resulting in shorter construction times.

WICONA unitised facade systems offer additional benefits in renovation projects by allowing buildings to be upgraded to modern performance requirements while remaining in operation. This makes it possible to upgrade buildings in which operations cannot be discontinued, while eliminating costs arising from transfer or shutdown of activities. The system's flexible design allows the facade's appearance to be adapted to the building's existing architecture to create a uniform look.

Planning and project management are rationalised at the building site, resulting in shorter construction times and reduced costs.

What is a unitised facade system?

A unitised facade system consists of multiple units that are combined to create the facade surface. The facade units are prefabricated and glazed in the workshop and assembled into complete units, making production completely independent of external factors such as weather conditions at the construction site.

After being delivered to the construction site, the individual prefabricated units are easily assembled and fastened with a special anchoring system. The individual units are assembled from ground level upwards, thus allowing each individual storey to be completed independently.

This makes unitised facade systems ideal for tall buildings or expansive facade surfaces. Because each facade unit is produced and assembled individually and independently of the other elements, the system is flexible and easily tailored to specific project requirements.

» Freedom of design and unique solutions

Architect: Henning Larsen Architects
Fabricator: Schindler Fenster+Fassadenbau GmbH
Photo: Conné van d'Grachten

A spectacular fully glazed facade on a skyscraper in a metropolis, or a specific architectural look that exudes history and blends with the surroundings? WICTEC unitised facade systems offer enormous scope for designing and creating unique buildings which will become distinctive and impressive architectural landmarks worldwide.

Every individual building has a unique design expression and must meet specific requirements. Certain buildings are designed to stand out distinctively on the urban skyline, while others need to blend in harmoniously. Whatever the architectural design requirements, every building must have a flexible and adaptable facade system. With a tailored WICTEC unitised facade solution, a unique visual design can be created for each building. The facade system offers almost limitless possibilities for design expression in line with both the client's needs and the established project requirements.

WICONA makes it possible to create buildings that meet the high visual requirements for tomorrow's buildings, based on the needs of each individual project. With a flexible facade technology, WICTEC unitised facade systems are an optimal solution for fully glazed facades, which feature strongly in modern architecture. With their impressive, imposing appearance, these facades contribute to creating unique new urban silhouettes and exciting views worldwide. The facade system also allows freedom for creating distinctive designs in which the construction itself is visually appealing. The building design might blend in with the surrounding architecture, or stand out as a distinctive landmark.

Either way, WICONA unitised facade systems offer excellent scope for creating specific visual design. There are unique buildings with WICONA unitised facade systems in metropolises around the world today, which serve as inspiring landmarks. The system opens up new possibilities in urban development and enables impressive ideas to be realised worldwide.

Benefits of WICONA unitised facade system

Maximum process security and performance are guaranteed through numerous patents and innovative high-tech facade solutions.

Freedom of design for each unique project is made possible by tailoring facade systems to suit specific project requirements.

Efficient series production of complete facade units is carried out in the workshop, independently of external factors, guaranteeing a high level of process security and quality.

Simple, efficient assembly without scaffolding at the construction site reduces construction time and costs.

High performance values, e.g. high thermal insulation and good sound insulation.

Narrow sight lines in the technical design for maximum transparency and a slim appearance.

See the assembly of the Tower 185 unitised facade system in Frankfurt: Scan the QR code with your smartphone or visit WICONA Scandinavia on YouTube.

» Double facade technology

Zeppelin University, Friedrichshafen
Fabricator : Metallbau Schneider GmbH
Architect : Architekt Dipl. Ing. Fritz Hack

Today's modern buildings are designed to meet ecological, technical, functional, aesthetic and financial requirements. For this reason, building concepts need to be based on a sustainable perspective that takes into account the building's life-cycle. A double skin facade combines these aspects with maximum user comfort to create a building that meets future requirements.

WICTEC double skin unitised facades are the optimal facade systems for projects with extra high requirements regarding performance and user comfort. Double-glazed units create a transparent design with ultra-clean external and internal glass surfaces. The facade is ideal for environments that require high sound insulation, for instance in big cities or next to busy roads. This solution also offers outstanding thermal insulation. The function is optimised by allowing different versions of building elements, solar shading or functional elements to be easily integrated into the facade system, combined with optimal utilisation of solar energy.

The double skin facade system is designed to meet the challenges that arise when upgrading buildings' energy performance, but this system is also suitable for new buildings. This technology produces a facade that reduces the effects of external weather conditions such as frost collapse, excess sunshine and overheating, while offering superior user comfort and exciting architectural expression.

WICTEC CCF (Closed Cavity Facade)

WICTEC CCF is an innovative facade system based on a closed double skin facade with reduced construction depth. The modules are fully sealed, which stabilises the insulation gap between the layers by controlling the pressure and flow of dry air circulating inside the modules.

Automated solar shading integrated into the facade provides maximum user comfort while minimising the need for cooling. This results in very high thermal insulation.

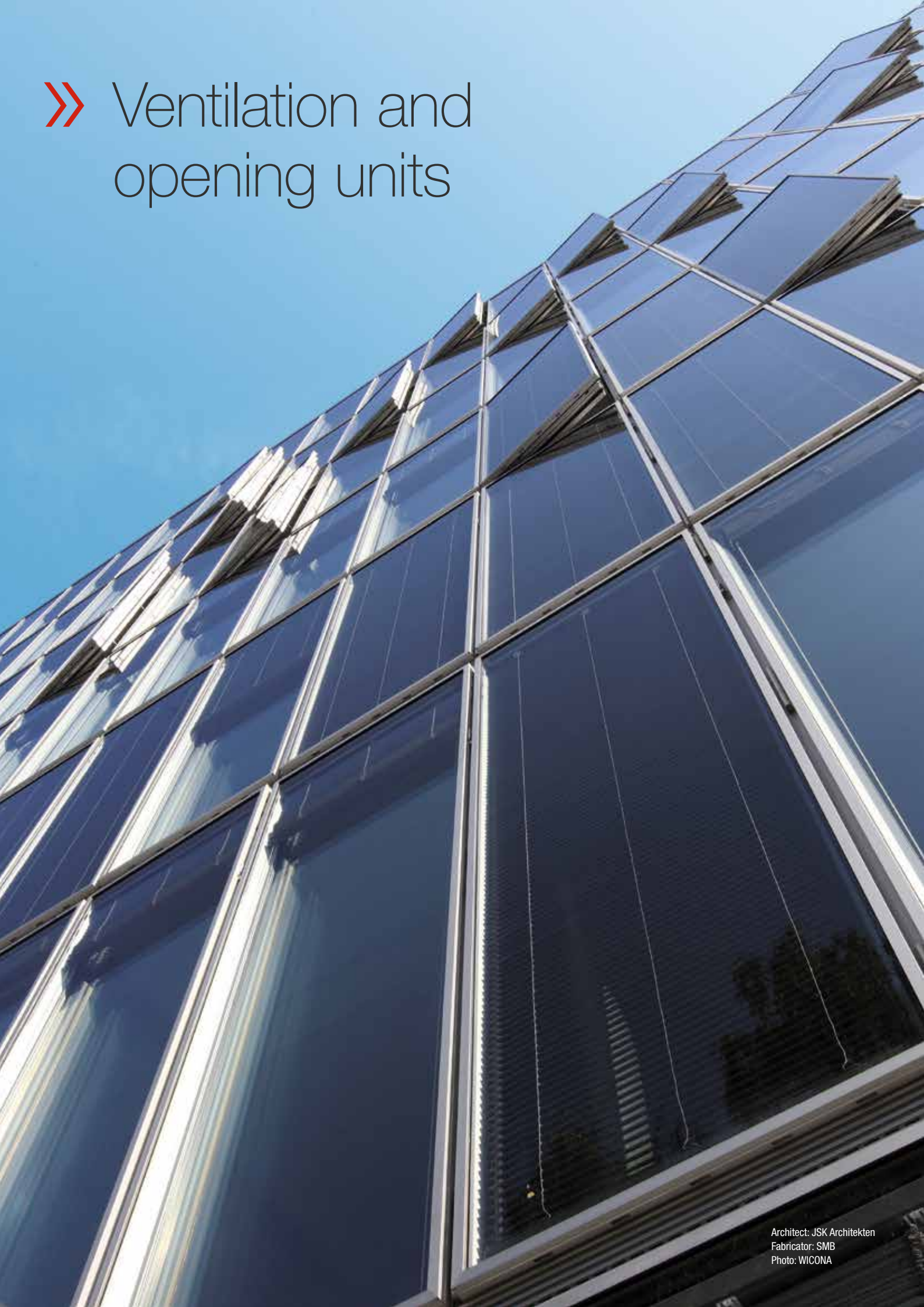
Maintenance and cleaning of WICTEC CCF are optimised. The facade requires the same level of maintenance as a standard single skin facade, while offering the benefits of a standard double skin system. This makes WICTEC CCF an optimal solution for sustainable and efficient urban planning.

The optimum facade solution for projects with extra high functional and performance requirements.

WICONA unitised facade system in double skin version

WICONA's double skin facade consists of two facade layers, of which the outer layer is usually a non-insulated layer of glass in front of an internal heat-insulated facade with opening sashes, which can be constructed in many versions and combinations. To achieve the optimum solution, the design is tailored to each individual project.

Ventilation and opening units



Architect: JSK Architekten
Fabricator: SMB
Photo: WICONA

Being able to integrate opening units and ventilation units in the facade significantly increases user comfort in buildings, and is often a project requirement. With maximum function and performance, the requirement for ventilation is met without compromising on the aesthetic requirements.

The optimum combination: WICTEC facade system with integrated opening units from the WICLINE window series. The systems' versatility makes it possible to create individual solutions at the highest level, which are fully adaptable and can be supplemented with numerous additional functions.

Facade-integrated window units

The opening window units in the WICLINE series are as flexible and versatile as the WICTEC facade system. They can easily be individually adapted and integrated into glass facades and glass roofs. Besides being easy to integrate aesthetically into the facade structure, WICONA facade-integrated windows have exceptionally high functionality. Various opening systems are available for the inward- and outward-opening systems, with either manual or motorised control. Thanks to a wide choice of system designs, the windows can freely be adapted to specific performance requirements. The type of thermal insulation can be choosen, the facade can receive a slim appearance with fine-lined profile geometry and special frames can be used. With WICONA facade-integrated window units the perfect solution can be found, regardless of the performance or design requirements.

Available window types include:

- Inward-opening turn/tilt-turn/tilt
- Outward opening top-hung/side-hung
- Outward opening italian sash
- Pivot window, horizontal or vertical

Facade-integrated structural glazing

WICLINE 90SG is an integrated window that makes an attractive complement in a facade. It provides efficient ventilation and is available in a fully automated version on request. Its slim frame design creates maximum transparency and ultra-thin exterior sight lines. This all-glass window is available in a top-hung or parallel-opening version, and can be integrated in either all-glass or standard facades.

Facade-integrated ventilation unit

With a thermally insulated ventilation unit that can be elegantly integrated into the facade, it is easy to meet the market's needs for ventilation. The ventilation unit blends in perfectly with the facade design, giving the appearance of an integrated insulated panel. The unit can also be used to create exciting coloured detailing on the facade. With either centralised or individual control, there is a full range of possibilities for optimal indoor climate and individual comfort.

The opening units and window systems can be discreetly integrated into the facade, or can be used to create exciting detailing.

» New urban silhouette in the heart of Rotterdam

De Rotterdam is a spectacular new building designed by the architects Rem Koolhaas, Reinier de Graaf and Ellen Van Loon (OMA), creating a new urban silhouette in Rotterdam's old harbour district. Through close collaboration between various players, the building was given an innovative facade system that fully meets the requirements of the architects and the client with regard to design, function and performance.

De Rotterdam is part of an ambitious project for the redevelopment of the old harbour district of Wilhelminapier. The idea was to transform the area into an urban zone with shops, offices, apartments and spaces for recreation. De Rotterdam is conceived as a vertical city, and has three spectacular 150 metre high towers that are interconnected at ground level. One of the towers contains hotel and office premises, another contains offices of various sizes with a total area of 60,000 m^2, and the third contains 240 apartments. The three towers share joint facilities on the ground floor with shops, restaurants and parking facilities. The towers are positioned seven metres apart from each other and have a total floor area of 162,000 m^2. The challenge of building towers with 44 storeys and a height of over 100 metres was never a problem when creating this exceptionally compact building, thanks to its design consisting of multiple overlapping blocks and a shared, interconnected base. The different sized blocks create a feeling of continuous change and give the building a different appearance depending on where in the city it is viewed from. Energy performance and sustainability were other key factors in the project process. All offices in the building are energy class A, and a large proportion of the energy is produced by rooftop solar panels on the towers. The building is heated and cooled using water from the river.

Project information

Location:	*Rotterdam, Netherlands*
Architectural firm:	*OMA (Office for Metropolitan Architecture)*
Architects:	*Rem Koolhaas, Reinier de Graaf, Ellen van Loon*
Facade design:	*Permasteelisa, Middelburg (office, hotel and ground floor), TGM, Asten (housing)*
Facade:	*WICTEC EL bespoke unitised facade*
Windows:	*WICLINE 65*

Architect: OMA (Office for Metropolitan Architecture)
Fabricator: TGM (Technisch Gevelbouw Management)
Photos: Ossip van Duivenbode

A unique facade system. At the start of the project process, after the contract had been signed, the facade solution had still not been decided. Instead, the contract was based on the design and function developed by the architect. Due to WICONA's expertise in major projects, the company was chosen as the system supplier for the third tower. WICONA's excellent resources for in-house testing and the company's direct association with Sapa Extrusion were other factors that determined the choice. Calculations were made and tests were performed to ensure that the high project requirements for wind resistance, air permeability, water tightness and thermal insulation could be met.

The tower's facade consists of one of the most state-of-the-art system solutions on the market with 9,200 m^2 of WICONA facades. A bespoke solution was developed for the project based on WICONA's WICTEC EL unitised facade system. Over 27 project-specific profiles and 35 special accessories were designed for the project. The opening units on the building are WICONA WICLINE 65 parallel-opening windows.

De Rotterdam is an excellent example of how strong collaboration and project-specific solutions can create unique and spectacular buildings. The building was named "Best Tall Building in Europe" and ranked second in the "Best Tall Building Worldwide" class. And we certainly agree that the building makes a strong impression in Wilhelminapier…

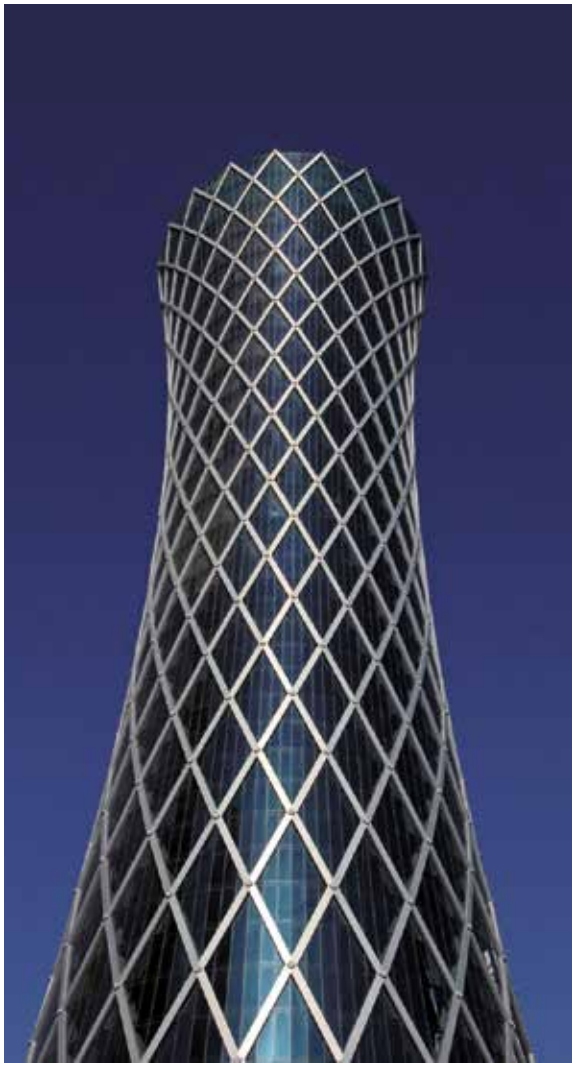
Named the "Best Tall Building in Europe" and ranked second in the "Best Tall Building Worldwide" class by CTBUH. Finalist in Mies Van der Rohe Awards 2015.

References

WICTEC unitised facade systems create exciting architectural expression on facades and urban skylines, both locally and worldwide.

Segerstedthuset, Uppsala University

Location: Uppsala, Sweden
Architect: 3Xn
Fabricator: Staticus UAB
Facade: WICTEC 50EL, WICTEC 50, WICTEC 50HI
Illustration: 3Xn



Tornado Tower

Location: Doha, QA
Architect: CICO
Fabricator: QIPCO
Facade: WICTEC EL
Photo: WICONA

Fornebuporten

Location: Oslo, Norway
Architect: Dark Arkitekter
Fabricator: Staticus UAB
Facade: WICTEC EL SK, WICTEC 50
Photo: ©Hufton+Crow

Scandic Havet Hotel

Location: Bodø, Norway
Architect: BOARCH arkitekter AS
Fabricator: Staticus UAB
Facade: WICTEC 50EL, WICTEC 50
Photo: Staticus UAB

The Cube

Location: Birmingham, UK
Architect: Make Architects
Fabricator: HAGA Metallbau
Facade: WICTEC EL
Photo: Craig Holmes/Images of Birmingham

Stranden 1, Aker Brygge

Location: Oslo, Norway
Architect: Ghilardi + Hellsten Arkitekter
Fabricator: AS UPB
Facade: WICTEC EL
Photo: Roland Halbe

Hus Kuggen, Lindholmsplatsen

Location: Gothenburg, Sweden
Architect: Wingårdh Arkitektkontor AB
Fabricator: Staticus UAB
Facade: WICTEC 50EL, WICTEC 50, WICTEC 50HI
Photo: WICONA

Copenhagen Towers

Location: Copenhagen, Denmark
Architect: Foster + Partners
Fabricator: Feldhaus
Facade: WICTEC EL60
Photo: Olaf Rohl Aachen, © Saint-Gobain

» Project support

WICONA - your partner from the start

The WICONA support team has many years' experience, and will support you through your project. Our design engineers will assist and advise you regarding choice of profiles, planning, technical design, calculations, project adaptation and drawings. Countless projects of various sizes have been realised worldwide with WICONA unitised facade systems.

At WICONA, we know the importance of local contacts and fast, efficient support in project planning and implementation. We also know that a global reference and knowledge base is invaluable in all phases of the construction process. WICONA combines both these strengths. With our local presence, we make sure you always get the support you need for efficient, optimum planning. We will work together to design the perfect solution for your specific project, with regular meetings and a close dialogue. We offer you a strong reference portfolio of global WICONA projects realised worldwide. With our know-how and support, you can rely on us throughout the whole process, whatever the nature of your project.

Project support

Contact us to find out more about how you can benefit from WICONA's unitised facade systems, all the way from the planning process to efficient construction and reliable implementation. Together, we ensure that your project is implemented efficiently and that your WICONA facade system gives you the optimum results you expect. You can always rely on WICONA's system products and support.

All the material you need in a single place

Via WICTIP, WICONA's technical information platform, users have access to WICONA's entire database of drawings and technical documentation. We have compiled all the material in a single platform to give our users simple, practical access to up-to-date information and complete documentation regarding our system products.

Visit **www.wictip.com** and access material that makes your daily work easier.

Tools for an efficient planning process

To facilitate and speed up the planning process, WICONA provides access to a wide range of available BIM objects. Having access to finished BIM models allows projects to be designed and created faster and with maximum precision. WICONA's WIC3D drawing tool offers new possibilities for creating 2D and 3D facade designs. The software can also be used as a BIM configurator.

All our high-quality WICONA models are available in various formats (Autodesk Revit, ArchiCAD, IFC), and can be downloaded via the WICONA website.

Architect: FXFOWLE
Fabricator: Intercom
Photo: Williams New York / Alchemy Properties Inc.

» Technik für Ideen

Buildings currently account for a large proportion of global energy consumption, and immediate measures are required to upgrade energy efficiency. High demands are already being placed on architecture in terms of function, environmental responsibility, performance and design. With a wide range of innovative solutions, WICONA is ready to meet individual and high requirements of tomorrow's construction projects.

The future cities are facing big challenges. Urban populations are rising. Less developable land is available and land prices are changing. At the same time, it is becoming increasingly imperative to save energy and reduce environmental impact. In 2008, the United Nations calculated that 50% of the global population was living in cities. Some of these cities have grown into metropolises in the space of just two decades, and 36 of them already have more than 10 million inhabitants.

80% of Europe's population are expected to be living in urban areas by 2020. Over two thirds (a staggering 70%) of the global population will be city dwellers by 2050. And 2050 is not very far away.

This trend towards demographic centralisation poses great challenges. How can people live together under these conditions? It also raises questions regarding other issues such as climate change, natural resource consumption, digital evolution and new lifestyle trends. They all represent both challenges and opportunities, and force us to think in new ways.

Tomorrow's urban development is moving towards a more sustainable trend that combines economic, social and ecological aspects. The aims include managing the use of natural resources from a sustainable, long-term perspective, and focusing on the inhabitants when planning cities. Architecture must be adapted to these goals, while also meeting city dwellers' requirements. Future generations and living habits will place new, higher demands on urban architecture.

With this in mind, what will tomorrow's architecture bring? Building Information Modelling (BIM) has already started revolutionising the way buildings and architecture are designed, created and managed. It is also clear that tomorrow's buildings and architecture will require solutions where design and performance go hand in hand. Unique buildings require individual solutions in which the requirements for energy performance and unique design expression will pose significant demands. When that happens, it will be both challenging and exciting to be involved in shaping tomorrow's buildings.

WICONA is ready!

Let's build the city of the future – together!

Architect: X. Barrutieta, E. Goikoetxea, J. delaFuente, S. Pérez
Fabricator: Uxama
Photo: Agustín Sagasti

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