The WICONA partner magazine

February 2015

# impulse


## Record visits for WICONA at BAU

WICONA®

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**Editor:**
WICONA, Ulm

**Responsible:**
Christian Mettlach

**Editing:**
Ayten Yilmaz

**Text:**
Pressebüro Egen-Gödde, Kaufering

**Design:**
NETmark5 GmbH, Landsberg am Lech









# Dear customers and business associates

The BAU in Munich was a very successful platform for us to present the WICONA innovations 2015 in the areas Façade (Closed Cavity Façade), Windows (WICLINE 75 TOP and WICLINE 95), Door (WICSTYLE 75) and Software (WIC3D). The trade show is also an essential event for a global brand such as WICONA due to its international importance. This was once again spectacularly proven this year.

The managers officially shook on the cooperation between WICONA and the plastics specialist Ensinger. We will now be the first (!) aluminium system house to use windows, façades and door constructions which utilise the thermal insulation webbing made from recycled polyamide designed by Ensinger to thermally separate the profiles. This means we achieve a significantly improved ecological balance – this is of course achieved without any quality deductions and at no extra cost for the customer.

Such innovations are the basis of our clear growth strategy for 2015. We will invest consequently to strengthen our own market position. It is our goal to convince planners and architects with the innovations introduced in Munich and set sophisticated and sustainable building technology trends for the market – following our slogan “Technology for ideas”. We offer future-oriented solutions to you, as our partners from the façade and metal construction industry. This offers clear market advantages. This holds particularly for the topic of energy efficiency. WICLINE 75 TOP and WICLINE 95 are two product lines with real unique selling points. Therefore, WICONA fulfils its desire to be an innovation leader and you, as our customer, can benefit from this.

You can find all details about our new systems in this IMPULSE edition.

In the name of everybody here at WICONA, I would like to wish you a successful start to the new year.

We look forward to further cooperation with you.

Yours

Karsten Lundgaard
President Sapa Building Systems

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President Sapa Building Systems

# FIRST!

WICONA has become the first glazing system supplier to use webbing made from recycled polyamide for the thermal breaks for its range of façade, window and door systems.

## WICONA takes the lead

An industry first, WICONA now utilises webbing for thermal insulation that is made from recycled polyamide which is significantly more sustainable but with no compromise on performance and at no additional cost for the customer. This latest initiative is set to be introduced across the entire WICONA product range and we have already applied it to more than 50 % of our systems.

**Reducing impact on the environment**

WICONA is a market leader in innovation in the façade systems sector and is committed to reducing the impact of its products on the environment for future generations. That is why WICONA took the decision to use webbing for thermal insulation that is made from recycled polyamide. This reduces the consumption of precious natural resources and improves the sustainability of its products – and well before this becomes a legal requirement.

As a first step, a high proportion of all the webbing used by WICONA for thermal insulation has been manufactured using this highly sustainable, recycled material. This solution reduces fossil fuel consumption by 89 % compared to conventional polyamide 6.6, as well as $CO_2$ emissions by 84 % and water consumption by 32 %. The annual saving in $CO_2$ emissions of more than 12,000 tonnes actually exceeds the weight of the Eiffel Tower.

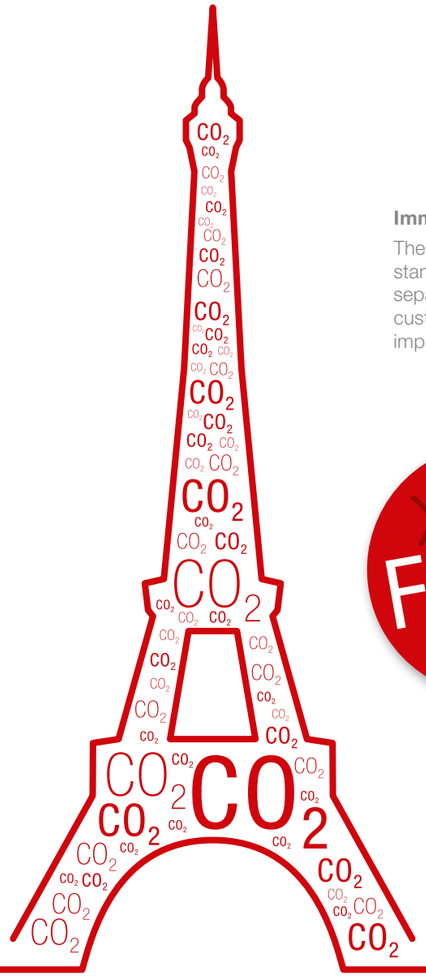
Products that use this webbing for thermal insulation are supplied with an Environmental Product Declaration (EPD) from the German fenestration technology institute – ift Rosenheim. WICONA customers can then benefit from a reduced carbon footprint when ISO Type III declarations or certifications are required in accordance with sustainability ratings such as LEED or BREEAM.

**Reassuring quality – tested and approved**

Despite significantly improving the sustainability of its products with this initiative, there is absolutely no compromise on performance or quality of finish. All webbing for thermal insulation that is manufactured from recycled polyamide is tested in accordance with DIN EN 14024 and has the same excellent performance and physical properties of thermal insulation webbing made from polyamide 6.6.

WICONA applies strict quality control procedures and requirements for its suppliers of the recycled material to ensure the highest standards of quality are maintained. Only high quality, pure recycled polyamide is used in the manufacture of the thermal insulation webbing. Polymer blends or mixed recycled materials are deemed to be substandard and are avoided. The supply chain is closely monitored and stringent controls are in place for the full production process. These systems give customers the complete reassurance that the quality is equivalent to conventional polyamide 6.6 and the WICONA product warranty applies in full to the new insulation webbing.

The annual saving in $CO_2$ emissions of more than 12,000 tonnes actually exceeds the weight of the Eiffel Tower!



**Immediately available – and at no extra cost**

The new thermal breaks made from recycled polyamide are available immediately as standard and at no extra cost. This means the profiles do not have to be ordered or specified separately and fabrication is no different in terms of materials handling or logistics. WICONA customers can now benefit from this pioneering innovation and can contribute to minimising impact on the environment – an important industry first.

FIRST!

## AT A GLANCE

**Thermal insulation webbing made from recycled polyamide**

- Used exclusively for WICONA systems
- Immediately available
- No extra cost
- Significantly reduced impact on the environment
- EPD certification in accordance with DIN ISO 14025 and EN 15804
- Tested in accordance with EN 14024
- Proven to be equivalent to conventional polyamide 6.6.

Specially-adapted WICONA windows enhance the façade of one of the most prominent new buildings in Hamburg.

# An ‘impossible building’



Fascinating perspectives: the façade of the Chamber of Commerce in Hamburg in an art deco appearance.

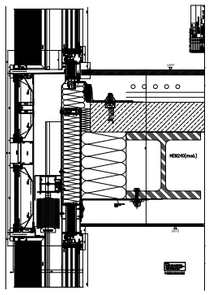
The Chamber of Commerce InnovationsCampus (HKIC) is attracting great attention. Located in the centre of the Nikolai Quarter, the building is positioned between two banks and opposite the impressive classical façade of the old stock market, where the client, the Hamburg Chamber of Commerce, is based. Window systems from WICONA are helping to give the façade of the HKIC a distinctive appearance.

The building has a challenging site, being positioned directly above an underground tunnel and railway tracks. A key design consideration for the architects and structural engineers was to address the issue of vibration. Their solution was to build the scheme on only three concrete bases. There also had to be a special ‘usage’ agreement for the project. This is why Carsten Friedrich, who leads planning and detailed design at architects Hörter+Trautmann, described this complex project as an ‘impossible building’.

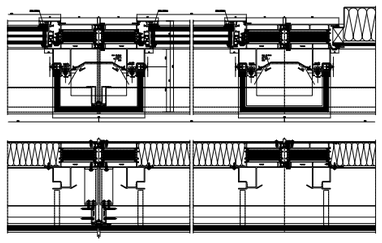
The lead tenant of the HKIC is the Hamburg School of Business Administration (HSBA) – a private, international institute for ambitious new business talent, which recently celebrated its ten-year anniversary. In well-appointed seminar and meeting rooms, a 240-seat auditorium and in a public café, there is a clear campus feel, which creates a pleasant environment for study and learning. Designed by Johann von Mansberg Architekten, the new building is an adaptation of the classic art deco appearance of a high-rise façade with eco-building principles. It has six storeys with façades that are very structured and with a high level of glazing illuminated by translucent pilaster LED strip lighting.

The aluminium system is finished in ‘anodised champagne’ which blends in well with the surrounding architecture. The traditional and the contemporary are combined here. This design concept is also reflected in the warm white tones of the back-lit glass pilaster strips.

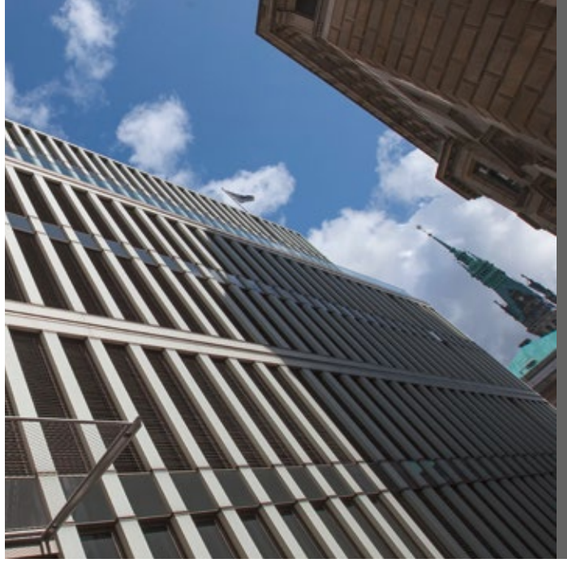
>>>



WICLINE 75 vertical section of the panel



WICLINE 75 Horizontal section of the sash and the parapet area



>>> The project team succeeded in implementing this challenging and energy-efficient architectural design using WICONA WICLINE 75 ribbon windows. The units have concealed sashes and the 'tilt-first' option fits in well with the façade construction.

With an overall depth of 75 mm, this window system is a high performance fenestration product, which has a high level of energy efficiency to achieve the demanding 'Swiss Minergie' standard. The entire façade of the HKIC scheme achieves $U_w$ values of less than 1.0 W/(m²K).
The window units were manufactured by Heinrich Würfel Metallbau GmbH & Co Betriebs KG in Sontra. Based on the WICLINE 75 series, a number of aluminium profiles were specially adapted for the project to meet the architect's specific requirements.

The window systems are entirely prefabricated and assembled off site, including the profiles and the glazed units. This approach achieves a high level of precision and reduces time on site.
The back-lit pilaster strips are also fully prefabricated in the factory and installed on site using special fixings. The ESG glass was also specially developed for the project and features etching and screen printing. These glass panes are held in place by purpose-designed aluminium profiles. The corners are mitre glued and sealed – another challenging requirement for the project. Normally invisible 'inner elements' of the seals are now very visible when the back-lighting is turned on.

The WICONA technical team worked on the project to accommodate and develop the special modifications required for this project.

The window frames were adapted to the width specified by the architects. The exterior of the frame was also fitted with 'pressed-on pilaster strips', which enhance the static load bearing capabilities and provide solar protection. For this purpose, the pilaster strips were fabricated with 'notches', into which the guide rails for the solar shading could be integrated. The pilaster strips create a transition into the warm-white illuminated light pillars.

"This is a highly-insulated window construction which was developed from a standardised system into a more bespoke solution", explains Mike Schmidt, Sales Manager i-Project at WICONA. According to Schmidt, "Projects such as this demonstrate the highly successful collaboration between architects, fabricators and the WICONA technical team". ■■■

**Project details**

| | |
|---|---|
| Building client | Hamburg Chamber of Commerce |
| Architects | Concept design: Johann von Mansberg Architekten, Hamburg<br>Planning, detailed design: Hörter+Trautmann, Hamburg |
| Façade construction | Heinrich Würfel Metallbau GmbH & Co. Betriebs KG, Sontra |
| Façade completed | 2013 |
| Building cost | approx. EUR 45 million |
| WICONA solution | WICLINE 75 windows with concealed sashes |





# WICSTYLE 75 – Innovative door technology with comfort and design elements

To complement and complete the WICSTYLE 75 evo series, WICONA is launching the new WICSTYLE 75 door system at BAU with concealed fittings – a first for WICONA and with other technical advancements in the doors sector.

The WICSTYLE 75 is a complete system for single and double-leaf doors that open both inwards and outwards. An important feature of the door profiles is the 'floating' bearing for the panel fitting. The new door construction has strong visual appeal and distortion of the door is reduced to an absolute minimum. The WICSTYLE 75 system can take door leaf weights of up to 160 kg, and in sizes of up to 1,400 mm wide by 2520 mm high.

The new door suite, which has a patented construction, has a stylish, contemporary appearance and is designed to meet increasingly high energy efficiency requirements. It has a smooth operation and is designed to practically eliminate draughts. The rebate has a cover profile for a flush appearance and making it extremely easy to keep clean. The system also benefits from outstanding thermal performance.

**Other features include:**

- With a depth of 95 mm, the new frame profiles in the Classic design theme are fully compatible with the existing WICSTYLE 75 evo suite.

- A newly-developed concealed hinge with an opening angle of almost 180° maximises the door opening space. The door leaves can be installed quickly and easily and, unlike any other products on the market, can be mounted and dismounted without having to unscrew the entire hinge from the frame.

- The new generation motorised lock can be operated by remote control, fingerprint scan, smartphone or transponder as well as external access systems of any type. These convenient security features mean the door is suitable for both individual houses and apartment buildings. The system can also be integrated into a building's access control systems. With the mechanical locking option, two deadbolts simultaneously lock into place, which is a robust security feature. The door can be unlocked automatically and – as with the opening of the door – this can be activated or opened using an intercom system. The lock, which has a concealed, integrated motor, is very easy to use, making it ideal for sheltered housing, for example, and for people with restricted mobility. It can be opened and closed without the need to pull or push the door.

- The WICONA evo system has been optimised with a roller belt, which is easily adjustable using the adjusting screws, which replace the existing spacer plate technology. ■■■

With the introduction of closed cavity façade technology (CCF), WICONA, the market leader in aluminium glazing solutions, is demonstrating the integration of building automation and façade design. This is the theme for our presence at BAU 2015.

Max Radt: “The leading façade design consultants are all active in this area in various ways. There is considerable interest in a systems provider that can offer such advanced façade technology. By moving into CCF, we hope to capitalise on a highly specialised sector of the market that also has global potential.”

WICONA began with a research project to investigate building automation and the effect of closed cavity conditions on solutions and materials used in façades. This research and development work was carried out at the WICONA test centre (ZEB lab) in Bellenberg, Germany and is ongoing. The true innovation is in building automation for ‘dry’ air and its circulation throughout the building and in the closed cavity of the double façade elements.

# WICONA introduces Closed Cavity Façade Technology (CCF)

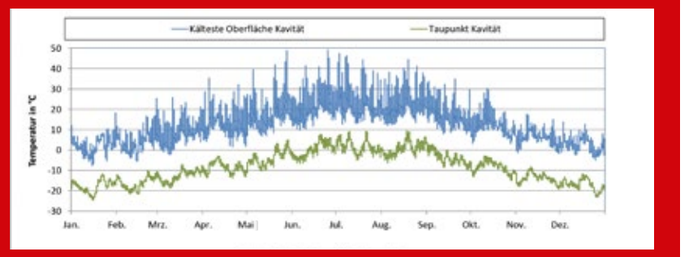
WICONA is currently developing its first façade to use CCF principles. This work is in partnership with the façade specialists App (Leutkirch) on a project for the AXA Winterthur insurance company in Zurich. This double skin façade, developed and almost fully produced and assembled in Switzerland by Gartner, is more typically used for large-scale, high-quality office schemes and is increasingly successful.
Commenting on this latest development, Max Radt, Sales Director at WICONA, said, “As market leaders in innovation, we have always pioneered new developments in building technology. Here we are implementing a project that combines façades with building automation. The success of projects such as zero energy buildings (ZEB), initiatives such as the Powerhouse, our ZEB labs in Ulm, Toulouse and Doha, our façade solutions such as TEmotion and WICTEC CPC, TOP Window and many other innovations, are the foundation of this project.”

WICONA was approached by customers and building designers in Switzerland and Germany looking into CCF. Research conducted in the Swiss and German markets has shown a clear demand in both countries for this type of façade.

Max Radt explains: “Regulating the necessary pressure conditions in the units is a particular challenge. Here, WICONA has entered completely new territory, and is working on the Zurich project with compressed air specialists.”
Dry air blown into the cavity requires accurate testing of the materials that will come into contact with it. Seals, sealing compounds, surfaces, varnishes, solar protection etc, are all being tested for their reaction with dried air and their durability and longevity. The increased requirements for cavity sealing require adjustments in the manufacture of the units and in their fabrication.
The AXA building in Zurich, which features around 5,000 m² of CCF, will be completed in 2015. The project involves the refurbishment of a building in the centre of Zurich, which not actually a typical CCF solution. The relatively small façade area has partially-rounded corners that are also designed using CCF.

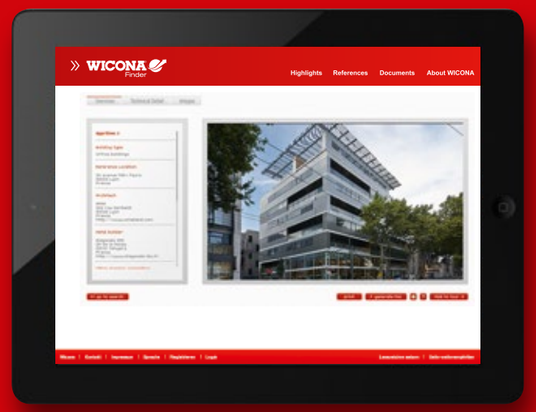
Max Radt concludes: “In terms of requirements, this is probably the most complex scheme that could have been chosen for CCF technology. However, by working closely with App, we are taking on this challenge with the view that ‘if we can make it here – we can make it anywhere!’”

**Graphical representation of the dew point and the temperature of the cavity’s coldest surface.**




## WICONA Finder –

The architecture database for façades, windows and doors




WICONA Finder offers an enormous overview of the reference buildings of all types, styles, uses and construction techniques built with WICONA systems worldwide. Users receive direct and rapid answers to their queries in a most enjoyable way. It provides access to the design details behind the architecture and demonstrates potential solutions based on real-life construction examples. The design and structure of the WICONA Finder are based on new media technology: simple direct access to information by means of the latest technologies, with a graphically attractive design and the possibility for the user to interact.

**Discover impressive reference buildings at WICONA Finder:**

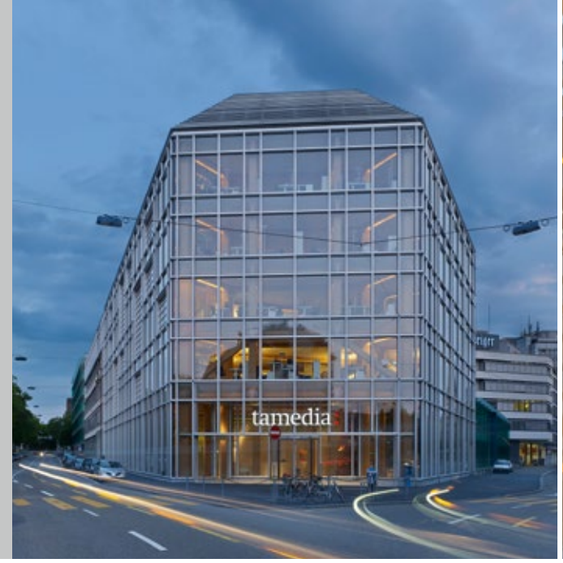
**www.wicona.com**

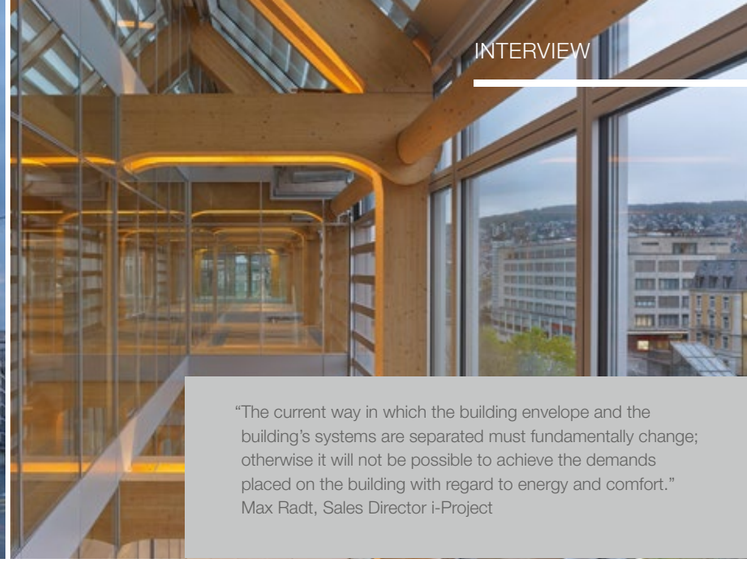
WICONA®
TECHNOLOGY FOR IDEAS

Development of façades – Interview with Max Radt, WICONA

# "The current way in which the building envelope and the building's systems are separated must fundamentally change"

Max Radt, Sales Director WICONA i-Project, describes the current developments of the manufacturing of metal and glass façades.





"The current way in which the building envelope and the building's systems are separated must fundamentally change; otherwise it will not be possible to achieve the demands placed on the building with regard to energy and comfort."
Max Radt, Sales Director i-Project

**impulse – What trends do fabricators expect to see emerging from the façade sector at BAU 2015?**
**Radt –** Glass façades remain fashionable, and are customised on a very individual basis to meet the requirements of each construction project. At the same time, cost pressures on building owners and investors are increasing. There is a demand for systems that can be manufactured quickly and at a reasonable price, without architectural compromises having to be made. The total costs of the façade over its lifetime, particularly cleaning and maintenance costs, are at the same time also coming more and more under scrutiny. This is why systems such as Closed Cavity Façades are gaining a foothold, because they meet the demand for optimum energy efficiency and economical maintenance of the façade.

**impulse – What significance do you see sun protection having in the future?**
**Radt –** Many modern façade solutions are derived from sun protection considerations: Installed externally or internally, protected against wind and rain, automated or manual etc. Sun protection is the central factor when it comes to glass façades. The simple external blind is just one variant here.

**impulse – Wouldn't it be enough to use only high-quality sun protection glazing or switchable glass?**
**Radt –** Sun protection solutions are varied, and it normally comes down to an intelligent combination of available technologies with respect to the particular requirements of the project. This is where switchable glass certainly opens up new possibilities, including when combined with blades. This is particularly the case when the intention is to combine protection against overheating in summer and visual interior comfort.

**impulse – What role will the networking of the individual building elements and the building's systems play in the future?**
**Radt –** The current way in which the building envelope and the building's systems are separated must fundamentally change; otherwise it will not be possible to achieve the demands placed on the building with regard to energy and comfort. The interlinking of the façade's functions and intelligent networking with the building's technical systems are the key to answering these questions. The building envelope plays the crucial role here, since the climate in a building is predetermined by it. Ideally, this would render the building's conventional technical systems largely superfluous, but those involved should be receptive to all-inclusive innovative technical building services concepts.

**impulse – But how does the "normal metal constructor" then deal with increased building networking? Who programs the controller?**
**Radt –** These are precisely the interfaces for which solutions need to be found, and this is where many approaches to technical solutions fail. The "normal metal constructor" will not be able to afford this. A rethink is needed by all those involved. The role of what we could call system integrators will become increasingly important.

**impulse – What is the situation regarding additional costs here?**
**Radt –** The decisive factor in terms of economy is the timeframe against which they are examined. As soon as you start looking at longer periods and comparing the savings and improvements achieved as a result, it quickly becomes clear how financially worthwhile intelligent façade concepts are. Besides energy savings, the evaluation parameters should also include other factors of a life cycle assessment such as servicing, maintenance, replacement etc.

**impulse – And what qualifications do façade designers need in order to create façades that are suitable for passive houses?**
**Radt –** First of all, the façade designer requires a good system that meets the relevant requirements.

**impulse – With regard to energy production in the façade, when will there only be 'façade power stations'? In other words are 'ordinary' façades going to become obsolete in the future?**
**Radt –** There will still also be ordinary façades. Not all façade surfaces are suitable for energy generation. In future we will certainly see very different façade characteristics, depending on alignment, climate conditions and what is required inside the building.

**impulse – Do you believe that when it comes to façades, the passive house standard will soon play a decisive role?**
**Radt –** As a building observation and analysis instrument, the passive house standard is largely geared towards thermal insulation. The façade has much more to do than just protect against cold and heat. For this reason I believe that the passive house standard will to some extent come to be used because the legal requirements in Germany are above all geared towards it, and the passive house standard makes clear stipulations. However, the façades offer many more options that cannot be covered by the term 'passive house' alone and that in some cases go against it. I would Radter talk about active façades in future.

**impulse – The traditional glass and metal façade is silver in colour. Will building envelopes become more colourful in the future? And if so, what colours are popular?**
**Radt –** There are almost no limits faced by architects as far as the colours of façades and design possibilities are concerned. Silver façades remain very much in the majority. We have recently seen a revival in gold eloxal, one reason being that many 1960s and 1970s buildings are currently being renovated, although gold is also in demand for some new buildings. High-gloss black is also popular for projects, along with two colours (inside and outside).

**impulse – How are façade glazing and sun protection coming together as a result of amended EU standards (e.g. g total)?**
**Radt –** The combination of glass and sun protection that has been adapted to the building's ambient conditions will be decisive. The façade as a whole should be considered in this context, not just the standardisation of indi-vidual building materials or components. ■■■

Source: www.glaswelt.de

# WICONA pivot windows for the Headquarters of Volkswagen

A special kind of pivot window has been developed for the VW headquarters in Wolfsburg and incorporated in the building.

With its distinctive logo, Volkswagen's landmark building in Wolfsburg, Germany signifies what is claimed to be the world's largest automotive factory. The 'VW Hochhaus' building accommodates the headquarters of the Volkswagen Group, and offices for each of its divisions, including research and development. The Group has 12 world-famous brands – Volkswagen, Audi, Bentley, Bugatti, Lamborghini, Porsche, Ducati, Scania, SEAT, Škoda, MAN and Volkswagen Commercial Vehicles.

Construction of the administrative building began in 1957. It was regarded as a forward-thinking design, developed by VW's structural engineering department, which was a common approach at the time. The company's rapid expansion during the scheme's two-year construction period and the need for a significant building led to the scheme increasing in height by two floors to 13 storeys high. It was crowned with the Group's unique circular logo, which spans an impressive 8 m. The VW Hochhaus was officially opened in 1959, and has been in use ever since.

Now a listed building, the world-famous landmark is being extensively refurbished. The Group's management and 700 employees have been relocated to a newly-constructed office building during the refurbishment programme.

An ambitious target has been sent for the project to achieve the very latest standards in energy saving, sustainability and lower running costs. As well as upgrading the building itself, the project will also involve renewing its IT infrastructure.

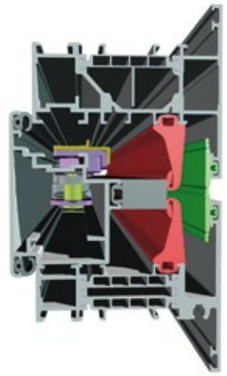
The client was also looking for a more cost-effective and sustainable solution for renewing the building envelope. It was agreed the appearance of the original building should be preserved as far as possible, including the 'filigree' design of the existing pivot windows whilst at the same time, improving thermal efficiency.

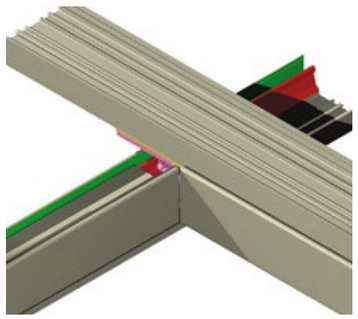
WICONA worked closely with fabricators FKN FASSADEN GmbH & Co. KG (www-fkn-gruppe.de), to develop a pivot window specifically for the project, based on the WICLINE 75 window system.

The design of the window is in keeping with the slim sight lines of the original pivot windows whilst meeting stringent weather resistance and radically improving thermal performance.

The specially-designed WICONA fenestration solution features slim profiles, a high degree of transparency, and maximum natural ventilation whilst achieving a $U_w$ value of 1.2 W/(m²K).

Key design features of the pivot windows are its silicone-free sealing system and the concealed turn fitting, which is sufficiently robust to accommodate loads of 145 kg for the glazed units.



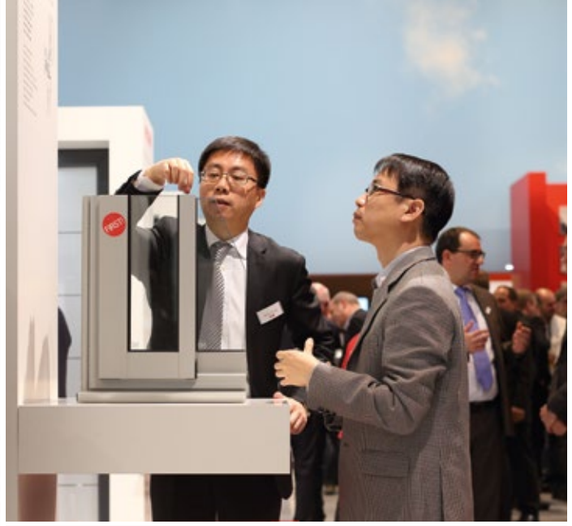


In performance testing carried out at WICONA's test centre in Bellenberg in Germany, the windows easily exceeded 600 PA for:

- Air permeability in accordance with DIN EN 1026: Class 4
- Impact resistance in line with DIN EN 12211: Class C5
- Water resistance in accordance with DIN 1017: Class 9A.

The specially-developed WICONA pivot window actually achieved the same standards as high-quality turn/tilt windows.

The WICONA Unisys principle was also applied to this project with around 80 per cent of the window construction being completed using standard components.





# Record visits for WICONA

The BAU 2015 was a massive success for WICONA. The newly designed stand was a visitor magnet right from the first day of the trade show. The visitor registration determined: There have never been this many WICONA guests at any BAU.

The innovations were at the centre of the interest: the energy-efficient window systems WICLINE 75 TOP and WICLINE 95 as well as the new version of the WICSTYLE 75 door with sash-covering filling.

The cooperation between WICONA and the plastics specialist Ensinger which was started at the trade show also generated a lot of interest. Ensinger's insulation webbing made from recycled polyamide will now be exclusively installed in WICONA profile constructions in the next two years.

Another visitor magnet at the trade show stand were the façade examples: the HSBA InnovationsCampus (Hamburg) as an original mock-up, the renovation of the VW administration building in Wolfsburg and – as a particular highlight – for the first time, the Closed Cavity Façade (CCF) which is currently being built at an administrative building in Zurich.

WICONA Marketing Director Christian Mettlach reports: "Monday was still manageable, but Tuesday became very busy. The concept of the stand as a light and airy street scene proved itself because, despite large crowds, all visitors still had sufficient room and there was space to talk." Highest number of visitors on Thursday: Metal and façade fabricators, planners, architects and investors bustled about the stand the entire day – from Russia, the Baltic nations, China, Japan and the USA, amongst others.

WICONA's General Manager Arnd Brinkmann concludes: "We are really happy with how the BAU went for us. The trade show was an exceptional event from every aspect. Our innovations earned us a lot of respect from the professional visitors, particularly from abroad. It is now our job to translate these dynamics into our everyday business and into successes for our partners and us."

# WICLINE 75 TOP – Intelligent, energy-efficient design

With the new WICLINE 75 TOP system, WICONA is raising the benchmark at BAU to meet the increasing demand for even more energy-efficient window solutions.

The WICLINE 75 TOP is the world's first casement window suite to combine the user-friendliness and quality of the highly successful WICLINE 75 evo window system with highly efficient thermal insulation. The new WICLINE 75 TOP is also the first application of the 'ETC Intelligence thermal break, which introduces new levels of thermal insulation in line with passive house standards. With a combination of technically-advanced components and materials, this window achieves $U_f$ values for the sash/frame combination of up to 1.0 W/(m²K), without the need for thermal inserts.

**WICLINE 75 TOP stands for:**
T = thermal insulation of the highest level
O = optimum performance and fabrication
P = passive house standards.

'ETC Intelligence' represents a thermal break 'zone' which offers high levels of thermal insulation without the need for thermal inserts or foam fillers. A Low Emission film effectively reflects heat, while the Low Transmission insulation strips keep thermal conduction to a minimum. Low Convection insulation strip 'fins' minimise heat loss from convection in the thermal break zone. When combined, these technological advancements have outstanding levels of energy efficiency.
ETC Intelligence improves the $U_f$ value of visible sash-to-frame combinations by up to 0.3 W/(m²K). For hidden sash-to-frame combinations, the $U_f$ value is improved by up to 0.6 W/(m²K).

The new WICLINE 75 TOP suite is fully compatible with all accessories, fittings and tools in the WICLINE 75 evo series, for ease of specification, fabrication, and installation.

Another key feature of the WICLINE 75 TOP system is the wider restraining thickness of the concealed sashes which are now 50 mm thick. WICONA will also be introducing 44 mm tensioning frames for concealed and visible casement profiles, which widen the scope for tripled-glazed window applications in WICTEC curtain wall façades.

The WICLINE 75 TOP suite has high-quality, fully concealed fittings and a direct positioning system (DPS) for ease of installation in any sequence or combination.





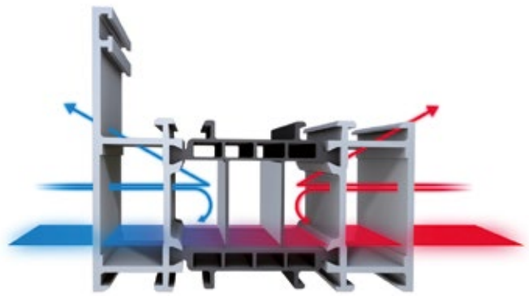
# WICONA ETC Intelligence – The 4th generation thermal break zone

The innovative WICONA ETC Intelligence 'thermal break zone' is the latest technical advancement which will maximise the energy efficiency of the new WICLINE 75 TOP and WICLINE 95 window series. These are intelligent, energy-efficient solutions which demonstrate WICONA's market-leading expertise, and build on the success of our current product portfolio.

**The 1st generation: thermal breaks**
This process began back in 1972. Wieland Construction Aluminium, or WICONA, was the first German façade specialist to successfully implement thermal breaks in aluminium profiles using polyamide insulated strips (Low Transmission Technology) and in doing so, considerably reduced heat loss from the only non-insulated aluminium window profile available at that time. 1979 then saw the launch of the WICLINE RMG 1. WICONA developed cavity wall insulation strip technology, which reduced the thickness of the insulating strips. This resulted in a further reduction in heat loss with no impact on overall performance.

**The 2nd generation: X composite zone**
In 2001, the WICONA X composite was developed and launched and the second generation of insulating strip technology was introduced. WICONA also successfully registered a patent for this technical advancement.

**The 3rd generation: Cavity wall composite 'fin' strips**
With the WICLINE 77 window series, WICONA was celebrated as a market leader in energy efficiency innovation at BAU 2001 and successfully implemented cavity wall composite strips with 'fin' technology into a window system – a world first. The composite use of 'fins' in strip form to reduce air turbulence in the thermal cavity, led to a significant reduction in heat loss due to convection. This was the third generation of insulating strip technology which brought window systems in line with the latest building regulations requirements and the first for more than a decade.
As part of the evolution of the WICLINE series, WICONA launched the WICLINE 75 evo at BAU 2011. This was a window system to offer an improved thermal break with 40 mm composite strips to meet the high energy standards of the more demanding Energy Saving Ordinance (Low Transmission + Low Convection).



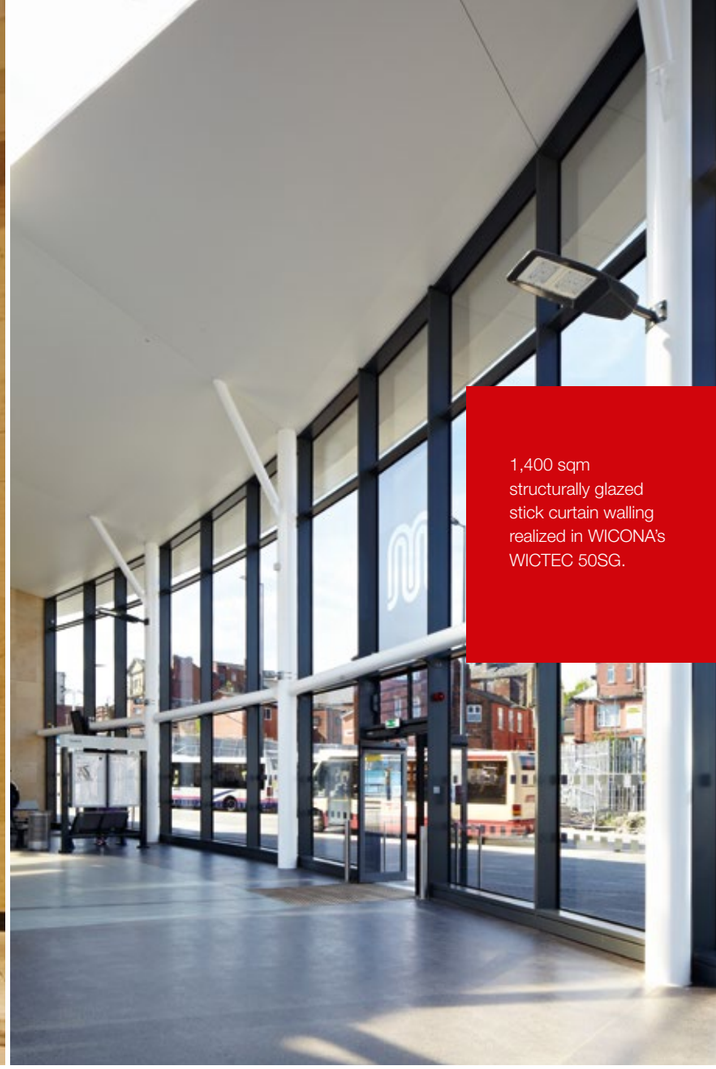
**The 4th generation: ETC Intelligence**
2015 sees the launch of the WICLINE 95 and WICLINE 75 TOP with ETC Intelligence – the composite fourth generation thermal break. This comprises of an advanced combination of innovative insulating strips and a highly reflective, aluminium insulating strip fin coating (Low Emission). WICONA's new WICLINE 75 TOP and WICLINE 95 are the result of decades of research and development with advanced technology (Low Emission + Low Transmission + Low Convection)

ETC Intelligence® represents:
- a composite thermal break zone offering a high level of thermal insulation without the need for thermal infills or foams
- Low Emission film to more effectively reflect heat
- Low Transmission insulating strips to reduce heat loss
- Low Convection insulating strip fins to minimise heat loss through convection in the composite thermal break zone.

With this latest technological milestone, WICONA will again maximise the energy efficiency of its aluminium windows and reinforce its position as a market leader in fenestration innovation.

A highly innovative, bespoke and energy-efficient aluminium and glass façade solution has been developed and engineered by WICONA for a new landmark transport interchange in Rochdale – the first in Europe to use integrated hydropower.


# Brightness, transparency and energy efficiency



1,400 sqm structurally glazed stick curtain walling realized in WICONA's WICTEC 50SG.

Designed by architects Aedas and built by Kier Construction, this £11.5 m project for Transport for Greater Manchester and Rochdale Council replaces an outdated bus station built in the 1970s and is part of a wider £ 250 m redevelopment of Rochdale town centre.

Fundamental to the scheme's design was to construct a fully enclosed single concourse with a high degree of transparency – creating a striking gateway into the town and a statement building, and improving safety and security for bus passengers.

The new interchange allows for around 160 bus movements an hour and links directly with the Metrolink extension which is due to open later this year. The facility has 14 bus stands which are co-ordinated by electronic passenger information displays and other amenities include a travel centre, public toilets, café and retail outlets.

Fabricated and installed by Glassolutions Installation, around 1,400 sqm of WICONA's WICTEC 50SG structurally glazed stick curtain walling was used at first and second floor levels, and for the large spans of glazing to the retail units inside the building. This solution delivered a frameless appearance to the external façade and visual consistency in the glazing across the project.

The WICTEC system was sufficiently robust to carry large spans of glass up to 3 m high, allowing 360° views from inside the concourse. This maximises natural light to help reduce the building's energy cost.

The curtain walling for the interchange features fixed glazing and was also faceted to follow the curved contours at each end of the building.
This was a particularly complex façade project because the facility is located on a sloping site, resulting in the angle increasing from one mullion to the next, which meant every pane of glass was different.

According to Alistair Branch, Project Architect at Aedas, "This was a challenging project because of the sloping site and the fact that there are very few straight lines in the building. The WICTEC system was sufficiently flexible to deliver all the technical requirements for this scheme – spans, loads and faceted elements, and to fit into a complex building envelope. It also met the client's requirements for providing a seamless external façade with contemporary clean lines for a modern appearance."

He added, "We are pleased to report the WICONA solution is performing very well and the approach has proved to be cost effective and brought value engineering opportunities to the project."

The new facility is located next to the River Roch and is the first building of its kind in Europe to have integrated hydropower generation. A hydroelectric turbine converts energy from the river as it flows through a weir. This produces up to 86,000 Wh of electricity per year, which will help to reduce the development's carbon footprint by over a quarter.

Developed in Germany, WICONA's WICTEC aluminium curtain walling suite has been used extensively for complex façade projects in both the UK and internationally. It features a wide range of structural aluminium profiles to accommodate vertical, angled, sloped and faceted situations for optimum creative freedom.

As with all WICONA products, the WICTEC curtain walling range is based on one single system and common components to simplify specification and reduce time and costs in fabrication and installation. The suite includes classic 'stick' curtain walling and unitised, structural glazing and double skin façades, meeting almost any application and building design – such as vertical and sloped glazing, pyramids and barrel vaulted roofs.

# WIC3D – A new dimension in façade software

Architects, engineers and fabricators benefit from significant time reduction.

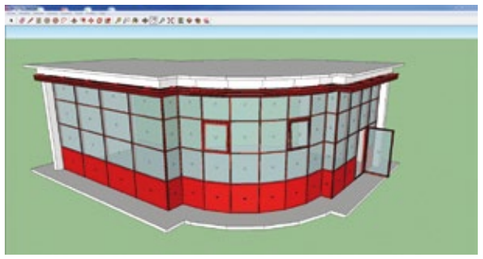
WIC3D is the latest software tool from WICONA which allows building designers, architects, engineers and fabricators to significantly reduce time in the production of 2D and 3D drawings and 3D renders of aluminium façades.
WIC3D has been developed following consultation with leading architects.

The tool enables specifiers to sketch out their initial design concepts and ideas quickly and easily at the earliest stages of a project and incorporate WICONA façade products, including WICSOLAIRE solar shading, WICLINE windows and WICSTYLE door systems.
Façades created using the WICONA product range can be visualised true-to-scale, improving accuracy and saving time.

Specifiers can see what a façade will look like, both internally and externally, so proportions, configurations and options can be assessed and developed.
WIC3D is designed to interface with widely-used architectural CAD systems so users can import and export 2D and 3D design drawings.

A 3D visualisation created in Google SketchUp can be imported into WIC3D to produce and show a 3D render featuring WICONA façade systems where required in the 3D construction.

A 2D elevation drawing can be imported into WIC3D for use as a template to create a 3D render. This can then be exported for use with all major CAD software including AutoCAD®, Bentley®, ArchiCAD and ADT.
The WIC3D tool also has the option to export 3D renders for use with Google SketchUp or in 3ds format for use with AutoDesk 3ds Studio Max.







# WICONA releases BIM Components for its façade systems

WICONA partners with bimstore.co.uk
BIM (Building Information Modelling) is an interactive platform which enables architects, consultants, contractors, facilities and project managers to have access to, and share, comprehensive information about a building's components as well as the specifications of different WICONA products (curtain walling, windows and doors).

BIM software allows all design information to be organised in one place Radter than through many separate drawings, and uses 3D constructions to improve efficiency in building design. Each 'object' contains detailed specifications and performance data, such as size, colour and materials.

The aim of BIM is to achieve significant improvements in construction costs, value and carbon performance with the use of open, shareable asset information throughout a project and a building's life cycle – from initial design and construction through to operation, maintenance, dismantling and recycling.

The following components are free to download from www.bimstore.co.uk and can be integrated in the BIM modelling:

- WICLINE 65 evo windows
- WICLINE 75 evo windows
- WICLINE 90SG structural glazing integration sash
- WICSLIDE 160 sliding systems
- WICSTYLE 75 evo door
- WICTEC 50 curtain wall
- WICTEC 50SG structural glazing
- WICONA Materials Library

WICONA's BIM objects are fully compatible with Autodesk Revit 2013 and later editions.

In addition to its BIM components and technical support, WICONA provides a range of technology-based specification tools to assist with façade design, including downloadable technical information, an 'ideas' app, and WICONA Finder – an architectural database and invaluable source of innovative design solutions for curtain walling, windows and doors.

To view and download WICONA's BIM components, see www.bimstore.co.uk

For further information see: www.wicona.com

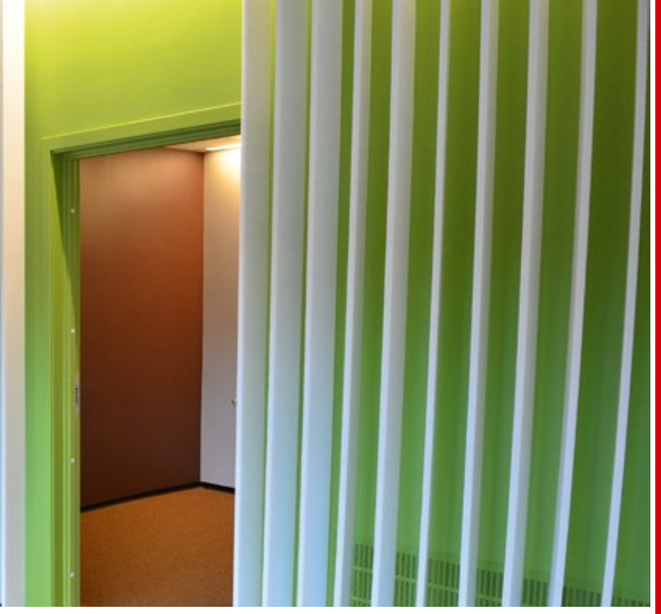
The Powerhouse 2 in Kjørbo (Norway)

The first conversion of an office complex from an existing to an energy plus house has become the second Powerhouse project in Norway, the Powerhouse Kjørbo in Sandvika near Oslo. Based on two buildings of a total of five houses included in the complex, the aim is to demonstrate that upgrading existing buildings to the plus energy standard is economic and also beneficial with regard to the environment – in northern Europe as well.

# Plus energy for an existing building

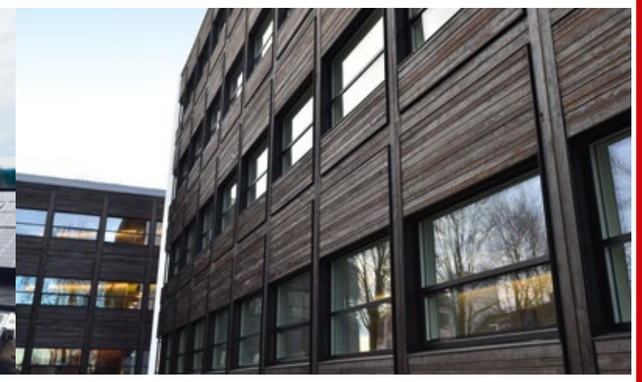
In Norway, a building is defined as a Powerhouse when more energy is generated during its lifecycle than that deployed for the materials used or required for the construction, operation, renovation and later demolition. Another criterion is its construction under commercial conditions: the energy balance of the building is specified as "Plus-Energy" or "Energy-positive" if the "imported" energy procured and used to construct the house can be compensated for by the energy generated in the house and "exported" into the network. The lifecycle performance of the Powerhouse is calculated over a timeframe of 60 years.

The key to the success of this project lay in the integration of holistic architecture, the design of the building shell, the use of more energy-efficient technology and consideration of the user's interests. "Whilst we combine existing technologies in a new form and manner, we have employed simple and economic solutions in order to transform a normal office building into a building that produces more energy than it consumes during its lifecycle – and this even includes grey energies", said Kjetil T. Thorsen, Director and Partner at Snøhetta Architects in Oslo and member of the Powerhouse Alliance. The alliance was founded in 2010 as a working group comprising building contractors Entra Eiendom, Skanska construction group, >>>



**Overview of structural-physical values**

| | | |
|---|---|---|
| Transparent façade areas | $U_w$ = | 0.80 W/(m²K) |
| Glazing | $U_g$ = | 0.5, Tl = 68%, g = 49% |
| External walls (opaque) | U = | 0.15 W/(m²K) |
| External walls (ground floor) | U = | 0.15 W/(m²K) |
| Floor slab for cellar | U = | 0.30 W/(m²K) |
| Floor slab to ground | U = | 0.12 W/(m²K) |
| Cellar ceiling to ground floor | U = | 0.16 W/(m²K) |
| Roof | U = | 0.08 W/(m²K) |



>>> Snøhetta architects, Zero environmental group and Sapa Building Systems with its WICONA brand. In 2015, Asplan Viak Architekten will join as another partner. The alliance set itself the objective of completing the Powerhouse Kjørbo so that it met the specified requirements and, at the same time, set itself apart through optimum user-friendliness and economy.

A case study conducted by the Skanska Group in April 2014 outlined the economic, ecological and social criteria for sustainability and future capability of Powerhouse Kjørbo:

- 100 % lower costs for power than in conventional office buildings in Norway;
- 100 % energy-saving, EnergyPlus building;
- no $CO_2$ emissions until approximately 2070;
- responsible handling of raw materials and 97 % of the excess materials provided for land fill;
- savings of around 10 % in water compared to conventional office buildings;
- healthy working conditions in the building.

**Initial situation**

The existing building in Kjørbo was a complex of five office buildings in the form of a cube, erected in 1979 around a central building and with access provided by glazed connecting bridges. The complex was considered to be of historic significance; therefore, its architecture had to be preserved during renovation. The Powerhouse Kjørbo project comprises only two of the office buildings. House No. 4 has three storeys, house No. 5 four storeys. The existing buildings converted to the Powerhouse were erected with the classical Norwegian timber pillar façades (here, a timber pillar is installed between the reinforced steel ceilings) and, from the outside, with parapet glazing and aluminium pressings, provided a weather protection layer – virtually a wood-aluminium façade.

**Architectural concept**

The building to be renovated has been subject to digital building data modelling (Building Information Modeling, BIM) optimum design for planning, implementation and management, in which all relevant data was linked. The result was a solution for renovation, photovoltaic installation, ground heat, ventilation and façade concept harmonised so that the plus energy standard sought was feasible.

Due to building conservation requirements, the external appearance of the building remains largely the same. In order to preserve the impression of the original black façades, traditional Japanese technology known as Shou Sugi Ban was used, whereby the surface of the wood is charred by flame treatment.

As a member of the Powerhouse Alliance WICONA provided comprehensive design services:

- Feasibility concept and calculations for the use of photovoltaic and thermal solar energy;
- Numerical simulations for the overall performance of the façade, heating/cooling energy requirement, thermal and optic comfort, as well as the natural ventilation through the windows;
- Design of the transparent and opaque components of the façade;
- Calculation of the grey energies and lifecycle data for windows, doors and curtain walling.

**The façade**

The façade concept of the Powerhouse Kjørbo project has been implemented using a passive house façade. The façade projects over the cellar. This special feature had to be retained to meet building conservation needs. Thermally insulated to a high degree, the timber pillar construction received a facing formwork, designed as Shou Sugi Ban for protection against the weather. >>>

**Design team**

- Constructor/client: Entra Eiendom AS, Kjørbo Bærum, www.entra.no
- Architecture, process management: Snøhetta Oslo, www.snohetta.com
- Project management, overall energy concept, energy calculations: Skanska, www.skanska.com
- Thermal energy supply, frame planning, supply technology, fire protection: Asplan Viak Architekten, www.asplanviak.no
- Climate calculation, grey energy, primary energy factors: ZEB, www.zeb.no
- Conception and calculations for façade, windows, PV: WICONA, www.wicona.com

>>> In the area of the window hinges, the timber pillars were combined with the mullion-transom construction provided by the WICTEC 50PH system, suitable for passive houses – with a 2.25 m wide and 0.6 m high top-hung fully glazed vent and fixed glazing arranged above it. For unchanged parts of the window areas, the larger fully glazed windows, WICLINE 90SG, now provide the best possible supply of daylight to the rooms behind. At the same time, they allow natural ventilation. The triple-glazed window opens outwards without motorised assistance.

For high-quality and efficient installation, the film connections were delivered to the construction site preassembled on the mullion-transom element. Fixed lights and top-hung windows were installed on the building. For thermal performance, coefficient $U_w$, 0.80 W/(m²K), was specified. The top-hung windows separated by supports with the fixed glazing above form window hinges, whose parapet area appears opaque as previously. Solar protection is hidden behind the weather protection layer. For the 45° building ceilings, for instance, special façade elements with fixed glazing have been developed.

Insulation of the external wall comprises three layers that are connected to one another with low thermal bridging. The inner layer is placed between the ceilings of the storeys. The middle one forms the primary insulating layer, in which the mullion-transom element is installed. The outer insulation layer runs completely in a plane from top to bottom and is loaded at the base of the building above the cellar.

**Energy management**

A heat pump supplies the thermal energy. For this, ground probes were inserted into bores at depths of 100 to 300 m. The heat pump operates in different operating modes: during heating periods, the probes extract heat from the ground, in the cooling periods, they transport heat there.

Ventilation centres were erected in the building's upper storey. Air is distributed to the outside from the core of the building. If the windows are used for ventilation, only exhaust air can escape.

The roof areas of the office building were furnished with on-roof photovoltaic modules, dual inclined – 15° in a south-easterly and 10° in a north-westerly direction. They are 464 units of highly efficient, monocrystalline SunPower modules with 333 Wp, on an overall area of 756 m². They will provide 115,000 kWh of power per annum. Furthermore, two-fifths of the roof area of the multi-storey car park was covered with photovoltaic (PV) units, they generate 98,000 kWh of power per annum. Both PV installations are included in the values for the balance of both office buildings. The so-called grey energy is also included in this energy balance. The grey energy took into account the primary energy required for extracting raw materials, manufacturing materials and intermediary transport.

The Powerhouse was certified in accordance with BREEAM and ZEB zero emission building. This project shows that all influencing variables that are essentially holistic can be successfully used in practice, taking a lifecycle approach into account.

Information at: www.powerhouse.no

**Overview of energy requirement**

Efficient energy = 20.4 kWh/m²a
The energy requirement sum does not include the server room and office appliances. The requirement for office appliances has been calculated at 12.0 kWh/m² year. No data for the server room are available.

Primary energy over 60-year lifecycle = 16.8 kWh/m²





# WICLINE 95 – The accredited passive house window

With the WICLINE 95 window series, WICONA is breaking new ground for maximising energy efficiency to meet demanding passive house criteria, whilst allowing unrivalled design flexibility with its intelligent modular design.

With a frame depth of just 95 mm and narrow sight lines of only 125 mm, the WICONA WICLINE 95 sees the development of a window system which fulfils the stringent requirements of the Dr Feist Passive House Institute.

WICLINE 95 achieves a $U_f$ value of just 0.80 W/(m²K). and a $U_w$ of only 0.80 W/(m²K)., without the need for thermal inserts in the sash or frame profile. Achieving the phB passive house efficiency standard, the WICLINE 95 is one of the most advanced aluminium frame components to be accredited by the Passive House Institute.

The WICLINE 95 system removes the need for external 'over-insulation' commonly seen today. The main insulation sits inside the window and can be fabricated as a sash frame. Its unique clip fastening facilitates installation. This means thermal insulation that is easy to fit and a $U_f$ value which is variable and can be tailored to individual project requirements. With such a flexible but achievable U value, the WICLINE 95 is a widely adaptable suite.

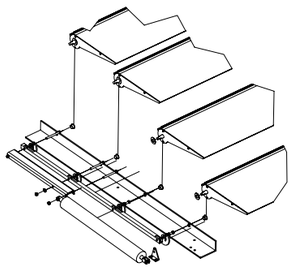
The WICLINE 95 window also uses ETC Intelligence which represents a thermal break zone for high levels of thermal insulation without the need for thermal inserts or foams. A Low Emission film efficiently reflects heat radiation, while the Low Transmission insulation strips keep thermal conduction to a minimum. Low Convection insulation strip 'fins' minimise heat loss from convection in the thermal break. These technological advancements combine to produce passive house-certified energy-efficiency levels.

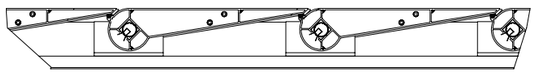
In line with WICONA Unisys ethos, the WICLINE 95 system uses a high number of components from the WICLINE 65/75 window series, including the centre seal gasket, corners and fittings. This feature reduces cost and component storage requirements for the fabricator.

The WICLINE 95 suite also benefits from high-quality, fully concealed fittings and a direct positioning system (DPS) for fast and simple installation.

# WICSOLAIRE Project solutions – Intelligent climate concepts for modern architecture

WICSOLAIRE shade systems control the entry of daylight and reduce the requirement for artificial light. They control the intrusion of heat from sunlight and reduce the energy requirement for cooling.





The visual contact to the outside remains and increases the feeling of comfort. As a passive system, WICSOLAIRE can be matched to the individual requirements and the architecture of the building and is the optimal, system-spanning solution in connection with the WICONA façade and window constructions.

The blades for WICSOLAIRE can have an important effect for the aesthetics of the design due to the colouring and its basic construction: They can be aligned vertically or horizontally; they can be installed vertically, angled or horizontally. Many different versions of blades with different contours are available:

**WICSOLAIRE Small blades**
- Installation depth 100 mm or 150 mm
- Blade holder for fastening in four angles (15° / 30° / 45° / 60°)

**WICSOLAIRE Large blades**
- Size, installation method and alignment can be selected individually; this ensures the greatest possible freedom of application for your project solution
- Inclination angle 0° to 45°

**WICSOLAIRE with integrated photovoltaic elements**
- Blade module size 185 mm x 1,200 mm
- Inclination angle 0° to 45°, optimal alignment towards the sun, therefore maximum energy efficiency





# “Knowledge gives the edge”

This guiding principle characterises the new 2015 WICONA seminar brochure and describes our goal of giving managers and colleagues in façade and metal construction a genuine competitive edge thanks to the high-quality symposiums of the WICONA academy.


For the first time, planners and architects are now included in the targeted group of interested parties for these expert seminars. Once again, numerous ideas from the industry have been incorporated into the 2015 seminar programme. In the words of Richard Weiß, director of the WICONA academy: “Our events are now structured so that they are orientated more towards target groups. We have split the new seminar blocks into separate ‘beginners’ and ‘advanced’ categories. We are now also addressing architects, planners and contract partners with the expert seminars.”

As in 2014, the brochure contains on an overview page personal introductions of the internal and external specialist speakers and of the training director, with photos and brief information about the person. Besides basic and extended knowledge, the academy programme also focuses on current specifications and regulations (e.g. the construction products ordinance) as well as the technical innovations that WICONA makes available to its market partners. For this there is a special “new products seminar”. It is still also possible to hold a WICONA seminar in your own company by prior arrangement. Interrelated software training courses complete the academy’s seminar programme. In 2014, a total of more than 1,700 managers and colleagues from the metal and façade construction industry participated in WICONA events.
The brochure with the complete programme is now available on the internet as a pdf file at www.wicona.de

## The world needs answers:

## WICONA Academy seminars 2015 – “Knowledge gives the edge”

It is the job of the WICONA academy to answer technical and contextual questions.
Book the relevant seminar now.

You can find the complete seminar schedule in the new academy brochure for 2015.

**Register for seminars at:**

**www.wicona.de**
**www.wicona.at**
**www.wicona.ch**

**or via e-mail:**

**wicona-akademie@wicona.com**

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**Benelux**
3400 Landen
+32 11 690316
info@wicona.be
info@wicona.nl

**Czech Republic**
63900 Brno
+420 543 422030
info@wicona.cz

**Denmark**
7430 Ikast
+45 7020 2048
info@wicona.dk

**España**
08195 Sant Cugat del Vallès
Barcelona
+34 902 222323
info@wicona.es

**Estonia / Latvia / Lithuania**
11317, Tallinn
+37 2657 6635
info@wicona.lt

**France**
02200 Courmelles
+33 3 23598200
info@wicona.fr
94388 Bonneuil-sur-Marne
Cedex
+33 1 45138000

**Hungary**
1031 Budapest
+36 (14533457
info@wicona.hu

**Ireland**
Dublin 22, Eire
+353 1 4105766
info@wicona.ie

**Italia**
20063 Cernusco sul
Naviglio MI
+39 02 924291
info@wicona.it

**Norway**
0283 Oslo
+47 22 422200
info@wicona.no

**Poland**
03-828 Warszawa
+48 22 3308170
info@wicona.pl

**Russia**
123995, Москва
+7 495 207-75-30
info@wicona.ru

**Sweden**
352 45 Växjö
+46 470 787400
info@wicona.se

**United Kingdom**
Wakefield WF5 9TG
+44 845 6028799
info@wicona.co.uk

**Africa / Asia / America**
31037 Toulouse
+33 5 61312626
info@wicona-int.com

**China**
Tongzhou District,
Beijing, PRC 101102
+8610 60595686
info@wicona.cn


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