



## System overview | Lithodecor

Innovative façade solutions



**Building:** Earth Sciences Building, Oxford University, Oxford | **Design:** Wilkinson Eyre Architects, London



## Airtec Glass

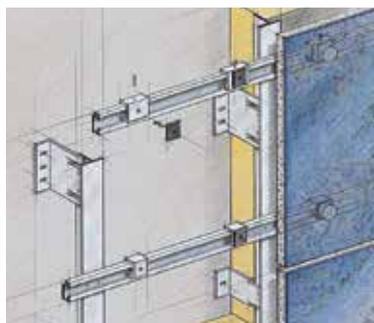
Lightweight with outstanding properties

# Principles | Airtec Glass



## Construction

The manufacture of Lithodecor Airtec Glass involves slim glass panels laminated to a specially developed lightweight concrete carrier. The carrier panels are used for fixing and load transfer.



## Structural system

In a ventilated system the composite panels are fixed to a standard aluminium base frame with special aluminium clips. The load is transferred from the panel to the clips via specially developed ceramic discs bonded into the base panel with an approved adhesive. The number of fixing points is dependent on the size and weight of the façade panels or shaped parts.



## Size

The general building-inspectorate approval for the Lithodecor lightweight glass façade covers panel sizes up to 3.80m high and individual panel areas of up to 4.7m<sup>2</sup>. Panels can be manufactured with openings, drilled holes, notches etc.



## Design

The Airtec Glass system ensures even large glass panels can be attached with invisible fixings. The almost unlimited choice of colour, printing and finish cater for almost any design preference.



## Maximum stability

The sandwich composition of these materials ensures maximum stability during transportation, installation and use. The residual load capacity achieved as a result of the composite structure, offers maximum protection against risks such as sections falling off the façade as a result of damage, e.g. external influence.



## Approval

Lithodecor glass façades have passed all the necessary durability and fire protection tests and are approved for use in the UK and Germany plus many other countries. The monitored and certified manufacturing processes guarantee maximum safety.

# System | Airtec Glass

## Lightweight with outstanding properties

The Airtec Glass system combines the unique qualities of glass with the innovative technology of a ventilated rainscreen façade. The extremely resistant composite panels, which can be up to 32mm thick, consist of toughened safety glass bonded to a lightweight concrete carrier. A wide range of colours and different types of glass can be applied to this carrier panel.

The composite panels, up to 4.7m<sup>2</sup> in size, are hooked onto the frame with an invisible clip design and with each element able to be adjusted both vertically and horizontally for perfect alignment.

In addition, sections of glass and stone can be combined in the same plane which is especially useful when installing the system on older properties with problematic substrates. This option to combine different finishes and materials is not available with classic systems. Whether transparent, tinted or enamelled, screen printed or plain - anything is possible!



Opaque white glass



Combining stone and glass



**Building:** Marks & Spencer, Warrington | **Design:** Darnton EGS Architects

#### Airtec Glass – system features

<b>System</b>	Ventilated rainscreen façade system with glass panels on a lightweight concrete carrier
<b>Properties</b>	The flexible substructure is weather- and frost-resistant and compensates for any unevenness in the substrate
<b>Fixing</b>	Invisible fixing to aluminium substructure
<b>Finishes/Appearance</b>	Enamelling or screen print
<b>Sizes</b>	Panel size up to 4.7 m <sup>2</sup>
<b>Approval</b>	Z-33.2-1033
<b>Reaction to fire</b>	Fire-resistant, construction materials class B1.
<b>Impact resistance</b>	Meets the CWCT technical note 76 and BS 8200 up to category B for impact.

# Projects | Airtec Glass



## **Indecon Court, London**

Attractive combination of different façade sections with Airtec Glass elements of storey height. Modern housing design combining different materials for the façade.



## **Marks & Spencer, Warrington**

Sophisticated appearance of a flagship store for Marks & Spencer. Extremely large, invisibly fixed glass elements create a prestigious façade.



## **Oxford University**

The façade's structural glazing look was fixed to a lightweight wall offering optimum energy efficiency. In comparison with a conventional façade system, Airtec Glass was able to deliver rapid installation together with low construction costs. See also page 34.



## **Headquarters of FC Bayern Munich, Munich**

Large spandrel units with invisibly fixed large-size glass elements on the façade of the headquarters of Bayern Munich FC. The combination with post-and-rail façades demanded an optimised solution for the base frame.



#### **Itzehoe Clinical Centre**

A winning combination of various sizes of glass panels with traditional, smaller ceramic tiles. The durable and high-quality façade solution achieves its sophisticated appearance with invisible fixings.



#### **MCR Medical Centre, Rhaderfehn**

Concrete stairwells are integrated with invisibly fixed Airtec Glass elements and a post-and-rail façade providing a striking finish. A very attractive result featuring opaque and translucent sections of glass.



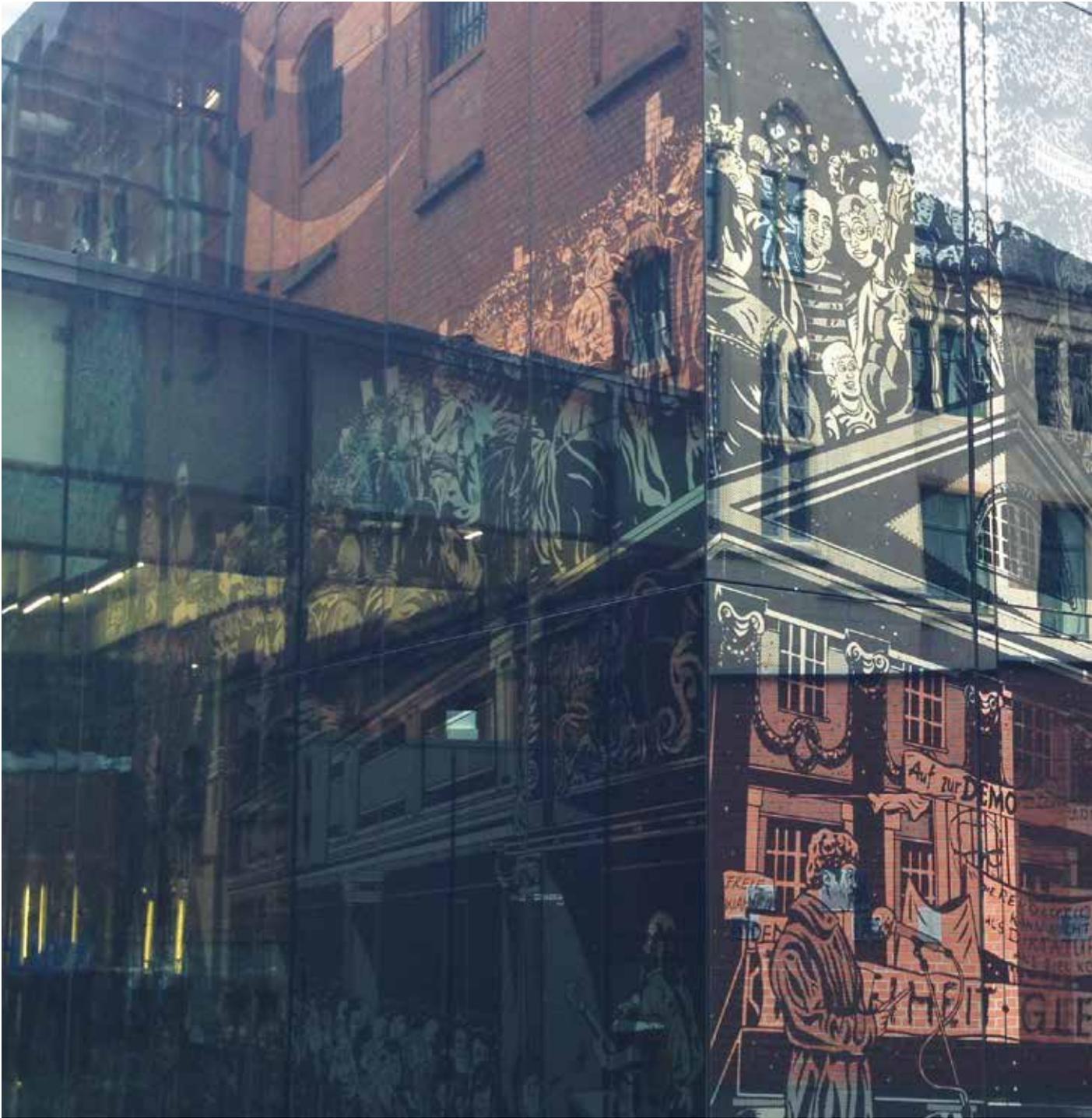
#### **Hansa Baugenossenschaft eG, Bekkamp**

The combination of an ETIC system with glass elements highlights individual areas. The solution for the interfaces presented a challenge that we were able to meet with Airtec Glass.



#### **Cartoon frieze for memorial – Erfurt**

Digital printing and chromium plating were used to apply every detail of the high-resolution motifs to the thermally toughened safety glass panels. The storey-high individual elements and their installation was straightforward as part of the Airtec Glass system.



**Building:** Memorial, Erfurt | **Design:** Freybeuter Graphics Studio, Potsdam and cartoonist Simon Schwartz



## System variants

Façade systems with design opportunities

# System | Airtec Photovoltaic

## New architectural design options

Airtec Photovoltaic offers innovative forms of solar energy generation for façades. The carrier is a lightweight façade panel with an integrated photovoltaic module of variable shape and design. The analogue construction principle allows the photovoltaic elements to be combined with other Airtec systems using the same base frame; consequently photovoltaic units can be used for specific areas.

The potential use of Airtec Photovoltaic modules is enormous, since the façade accounts for the majority of the surface area of urban buildings. The vertical arrangement of these areas allows approximately 80% of solar radiation to be used efficiently. The interplay of design and technology is extremely varied, since Airtec Photovoltaic offers not only the standard sizes available on the market, but also individual, project-specific sizes. The modules also fulfil additional functions associated with the external envelope, such as providing a water-tight and air-tight barrier or sun protection.

Integrated in the building, these solar components make a lasting contribution to reducing the energy-related running cost and CO<sub>2</sub> generation. The legal requirements of EnEV 2009, the ordinance on the saving of energy, are complied with. Furthermore, system operators benefit from statutory support schemes, such as feed-in tariffs or tax relief.



Solar energy generation for the façade

## Airtec Photovoltaic – System features

<b>System</b>	Ventilated rainscreen facade with photovoltaic panels.
<b>Properties</b>	The flexible substructure is weather-resistant and frost-resistant and compensates for any unevenness in the substrate.
<b>Fixing</b>	Invisible fixing to aluminium substructure.
<b>Finishes/Appearance</b>	Charcoal-coloured cells, almost invisible “pinstripes” and wires.
<b>Sample sizes</b>	1300 x 1100mm, 1000 x 1000mm, 1000 x 800mm, 1200 x 800mm, 1200 x 600mm – other sizes on request.



## Airtec projects

Detailed project overviews

# Project | Airtec Stone and Airtec Glass

## Farringdon Station, London

Airtec ventilated rainscreen cladding was specified by Atkins for the major redevelopment of Farringdon Station as part of the north-south Thameslink Programme. Both Airtec Stone and Airtec Glass were utilised on the project due to their compatibility, with both systems being used on the interior façades as well.

Farringdon Station was the terminus of the world's first underground railway. The historic station is being given a massive upgrade to preserve its heritage and provide space for the Thameslink and Crossrail services that will make it one of London's busiest transport hubs, with 140 trains an hour at peak times. From 2018, Farringdon will be the only station where Thameslink, Crossrail and Underground services meet, giving passengers the choice to travel north-south, east-west and around London.

This part of Farringdon Station was required to be designed to create a feeling of light and space and the use of Airtec Stone and Glass has achieved that to great effect. It was also important that the two finishes could be combined seamlessly which the Airtec system provides and that the same system could be used for exterior and interior use.

In total 2600m<sup>2</sup> of Airtec stone panels, up to 3m in size, were installed on the project; the finish being a beige-coloured Jura Limestone. For safety and security reasons the lower panels around the base of the exterior façade were filled with the upper joints being left open, which was an important feature for the exterior of the station.

400m<sup>2</sup> of Airtec Glass panels, in white glass were installed, again with panels up to 3m in height. The panels form part of the exterior fascia of the station whilst also being used extensively through the ticket hall area and extending down the stairs onto the platform areas too.



# Project | Airtec Glass

## Earth Sciences Building, Oxford University

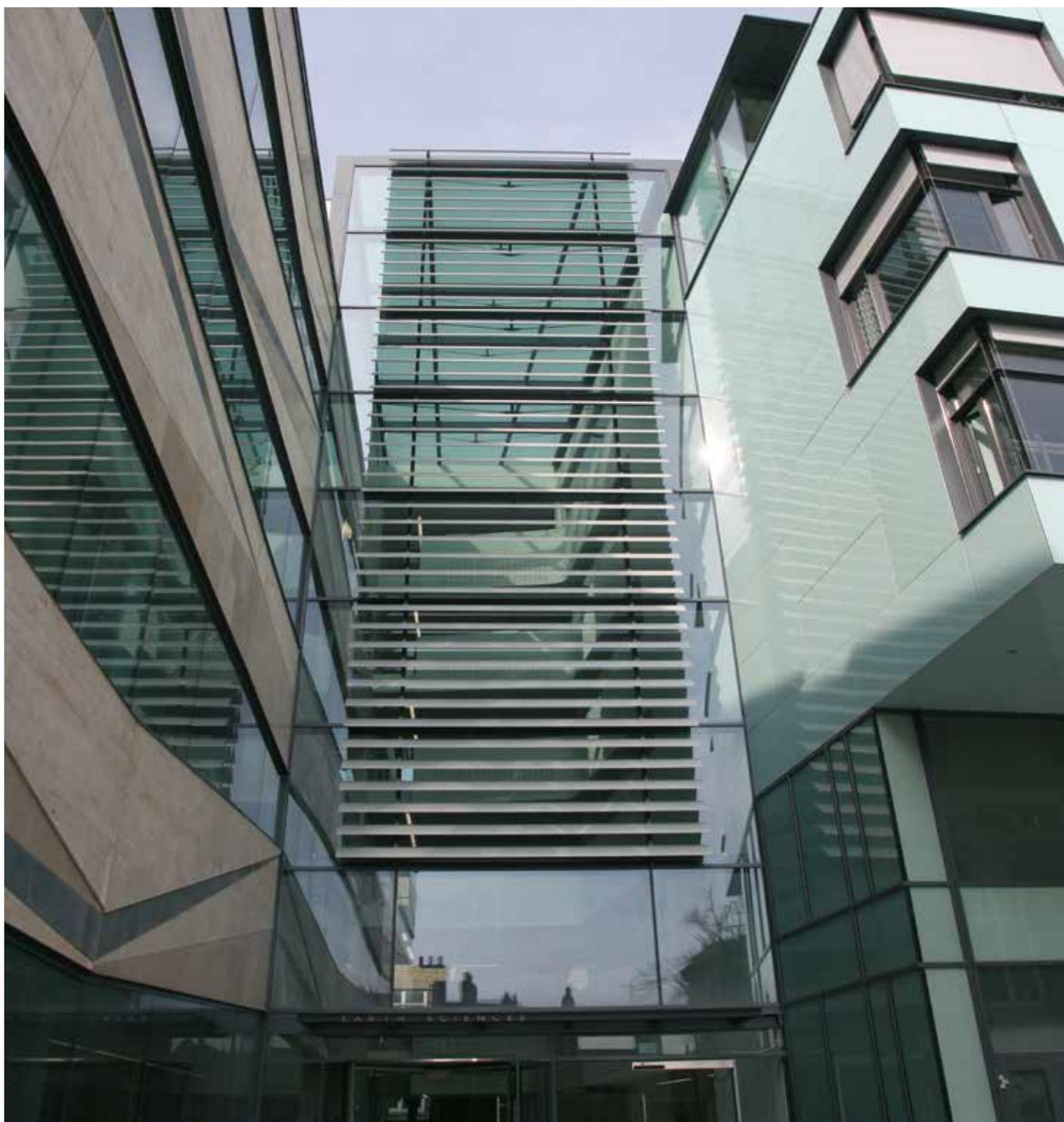
Lithodecor's Airtec Glass system was specified by Wilkinson Eyre Architects for the new Earth Sciences Building at Oxford University. This prestigious project has provided this department not only with a world-class teaching environment but also with excellent research facilities. The Airtec Glass system creates a building façade that is not only striking in appearance but satisfies structural and architectural demands.

Colin McAuley, Project Manager, RBDML, commented, "This is a very significant project for the university in the development of its science area and the architectural design of the building needed to reflect that. The Airtec Glass system has enabled the design to be realised and the team at Lithodecor gave their technical support throughout the installation."

The new building is the flagship for the university's redevelopment of its science area and provides laboratory and office space for around 400 students and staff. The purpose-built centre will enable the department to maintain its international reputation as a centre for research excellence as well as signalling to the wider public the interests and concerns of the users. The most striking element of the building is a "narrative" wall which will act as a shop front for the ideas and activities of the department.

The building has been designed around a strong sustainability ethos, exceeding targets set by the local planning department for its embodied energy, which stipulates a minimum of 20% recycled materials in buildings of this type. The building also uses ground source heat pumps providing around 43% of the building energy needs and there is also a recycled rainwater system in place.





# Project | Airtec Stone and Airtec Glass

## Information, Communication and Media Centre, University of Potsdam

Staab Architects were required to design the new Information, Communication and Media Centre at the University of Potsdam near Berlin. The architect's vision was to create a seamless transition of glass and stone for the exterior façade of the building to create a distinguished and striking finish which would provide a clearly visible focal point for the university campus.

The exacting requirements were to create a façade of natural stone and glass with a smooth surface to create a "patchwork" finish. It was also important that the finish was seamless so invisible fixings were going to be an essential criteria when choosing the individual system, as was the need for panels up to 2.9 metres in height.

Identifying the individual ventilated rainscreen system offering both a glass and a natural stone finish was a challenge for Staab Architects as finding compatible systems which give the same finished depth to the cladding as well as using the same installation, was proving difficult. Lithodecor's Airtec system was identified as being the perfect solution to this technical and design issue.

The architects required a sample façade to ensure that the Airtec Glass and Airtec Stone systems could be combined successfully and create the desired finish. It was also important for the architects and client to assess the installation and view the invisible fixings and check that the stone and glass would successfully be installed in "plane". The architects were delighted with the test and the system was then fully specified for the project.

The new centre at the University of Potsdam houses over a million books and is open plan in its layout incorporating bright airy reading areas. From the upper levels there are fantastic views across the campus with daylight being an important feature flooding areas with light and atmosphere.







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