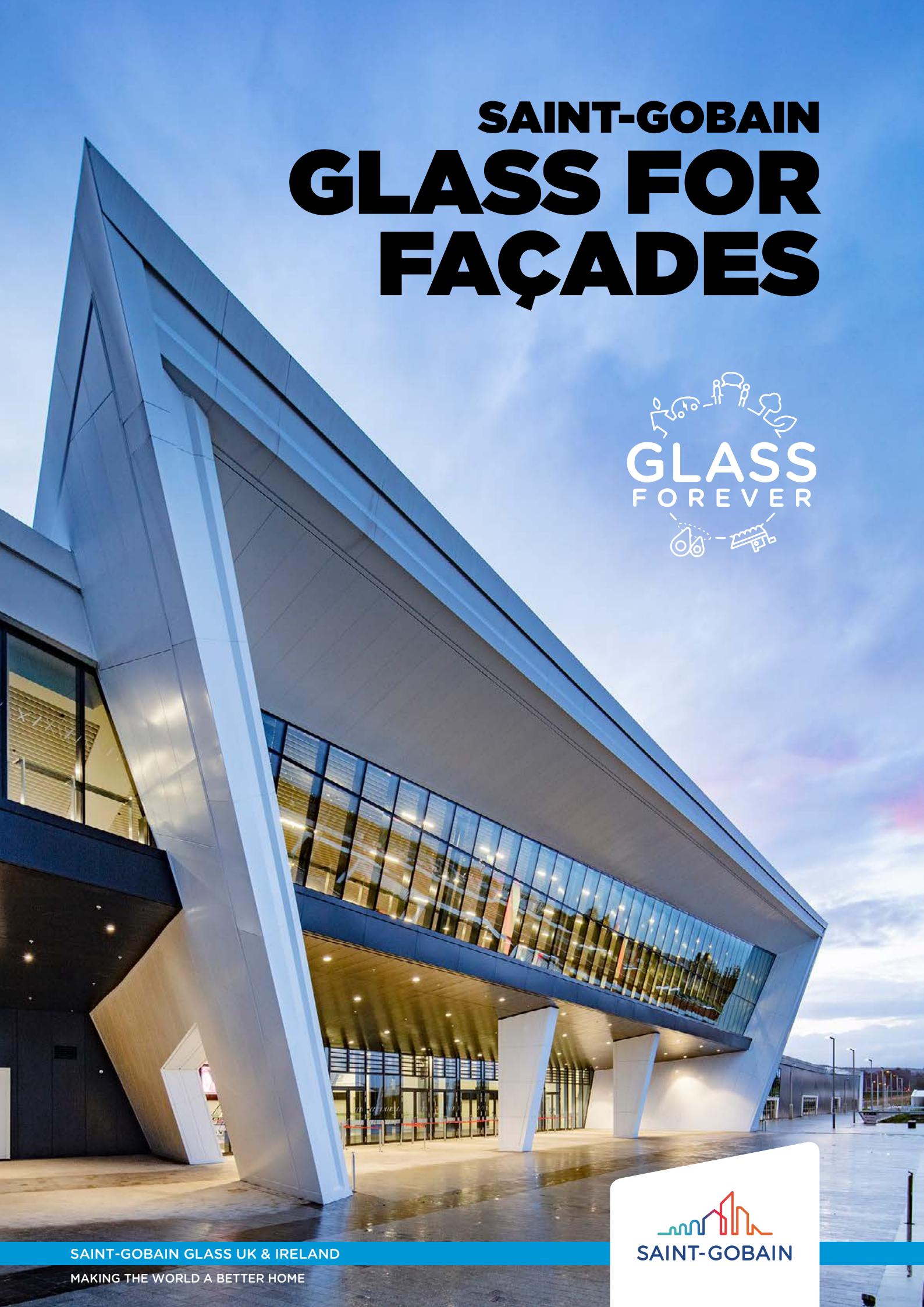
SAINT-GOBAIN
GLASS FOR FAÇADES



SAINT-GOBAIN GLASS UK & IRELAND

MAKING THE WORLD A BETTER HOME

SAINT-GOBAIN

THE EVENT COMPLEX ABERDEEN

The Event Complex Aberdeen (TECA) provides four times the exhibition space as the previous AECC and increases the maximum capacity to 12,500 in the arena. The new facility is a key element of Aberdeen City Council's Strategic Infrastructure Plan to grow the city's economy.

TECA is expected to contribute an additional 4.5 million visitors, £113 million of visitor spend to the Scottish economy. It will also result in the creation of 352 full-time-equivalent permanent positions by year 10 of operations.

TECA will play a strong role in delivering the Regional Economic Strategy, by anchoring existing international events and competing nationally, and internationally for new events, as well as broadening the appeal of the North East to a global audience.

TECA was awarded Development of the Year (Commercial Buildings) at the Scottish Property Awards 2020.

It has also been nominated for a RICS Social Impact Award for the Scottish region.

The TECA's glazing features COOL-LITE® XTREME 70/33 II to provide solar control, a key requirement for large expanses of glass. The dynamic, visual design of the building is augmented by the angular shaped glazing; creating a unique and impressive, events venue.

Project value:	£333 million
Client/Developer:	Henry Boot Developments (HBD) & Aberdeen City Council
Architect:	Keppie Design
Main contractor:	Robertson
M&E engineer:	Hulley & Kirkwood
Glass processor:	FGI
Facade fabricator:	FGS

SAINT-GOBAIN GLASS FOR FAÇADES

CONTENTS

INNOVATIVE GLASS FOR HIGH PERFORMANCE, GLAZED FAÇADES

Saint-Gobain Glass is part of the 350 year old Saint-Gobain Group; a global leader in the development of innovative, building materials. We play our part in designing some of the world's most iconic architectural projects, offering a wide range of innovative glass solutions for glazing and façades.

Partners such as visionary architects, or contractors striving to deliver the ultimate building envelope, have helped establish Saint-Gobain Glass as a key glazing supplier to the global construction industry.

We respond to the needs of building developers and designers, creating innovative glazing solutions that deliver on performance, safety and sustainability, with solar and heat control, market-leading aesthetics, large dimensions and curved glass. Our range of glazing products are ideal for all building projects, including hospitals, schools, office buildings, homes and buildings that need responsive solar heat reduction and daylight.

THE IVY - HARDMAN PAVILION, MANCHESTER

The Spinningfields area in Manchester is the city's new financial district. Over an area approaching 430,000 square meters there are 20 ultra-modern mixed use, commercial buildings, developed for use as offices and retail spaces, along with a variety of restaurants and apartments. Spinningfields' project developer, Allied London, commissioned Sheppard Robson Architects to design a pavilion to complete the development of the last remaining plot in Hardman Square.

In contrast to the neighbouring buildings, the Hardman Pavilion surprises with a timber-framed structure and a striking green façade. Together with the small public square The Field, which was also designed by Sheppard Robson, features many green areas, creating an urban oasis in an environment dominated by steel and glass constructions.

The wooden structure and living facade is partnered with Saint-Gobain Cool-lite® SKN 176 II; a high performance, coated glass that provides solar control, high light transmission and a neutral aesthetic, whilst ensuring the building delivers on sustainability targets.

Saint-Gobain Stadip®, laminated glass, has been used in the facade to ensure mechanical strength, safety and security.

Project value:	£5 million
Client/Developer:	Allied London
Architect:	Sheppard Robson
Main contractor:	BAM Construction & Design
Engineer:	DSA Engineering
Glass processor:	Glassolutions
Façade fabricator:	Gray & Dick Ltd.

BREEAM®

KEY COMMERCIAL PRODUCTS

COOL-LITE® HIGH PERFORMANCE SOLAR CONTROL PRODUCT RANGE

Sealed Unit Configuration (6-16-4)		Visible Light		Energy Factors		Solar Factor	U-Value	Normal Internal Emissivity (Single Outer Pane)	Selectivity
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	g-value	Argon (90%) W/m²K		
COOL-LITE XTREME 70/33 II	PLANICLEAR	70	11	31	37	0.33	1.0	0.01	2.12
COOL-LITE XTREME 60/28 II	PLANICLEAR	61	15	26	43	0.28	1.0	0.01	2.18
COOL-LITE XTREME 50/22 II	PLANICLEAR	47	16	19	35	0.21	1.0	0.01	2.24
COOL-LITE XTREME SILVER II	PLANICLEAR	49	30	23	45	0.25	1.0	0.01	1.96
COOL-LITE SKN 183 II	PLANICLEAR	75	12	38	38	0.40	1.0	0.01	1.88
COOL-LITE SKN 176 II	PLANICLEAR	70	13	35	34	0.37	1.0	0.01	1.89
COOL-LITE SKN 165 II	PLANICLEAR	61	17	32	34	0.34	1.0	0.01	1.79
COOL-LITE SKN 154 II	PLANICLEAR	52	18	26	30	0.28	1.0	0.01	1.86
COOL-LITE SKN 144 II	PLANICLEAR	42	21	20	31	0.23	1.1	0.03	1.83

All the above hold CE marked performance accreditation for the products in their annealed and tempered state.

Sealed Unit Configuration (8.8SS*-16-6)		Visible Light		Energy Factors		Solar Factor	U-Value	BS EN 356 Secure by Design	BS EN 12600 Impact Safety	Acoustic Rw (C;Ctr)
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	g-value	Argon (90%) W/m²K			
STADIP SILENCE COOL-LITE XTR 70/33	PLANICLEAR	69	11	30	29	0.32	1.0	P2A	1(B)1	42 (-2;-7)
STADIP SILENCE COOL-LITE SKN 183	PLANICLEAR	69	13	33	30	0.35	1.0	P2A	1(B)1	42 (-2;-7)
STADIP SILENCE COOL-LITE SKN 176	PLANICLEAR	60	16	30	29	0.32	1.0	P2A	1(B)1	42 (-2;-7)

Please note that all the of the above configurations should be subject to a thermal safety check before specification.

COOL-LITE® XTREME is a range of extremely selective solar control glazing for the commercial market. The low solar factor and high light transmittance make it the ideal product for architects and specifiers looking to achieve the best selectivity.

COOL-LITE® SKN is a range of solar control glazing options for use in commercial & residential buildings. The range is designed to balance high performance solar control with high light transmittance and neutral aesthetics to create light comfortable interiors.

STADIP® & STADIP® SILENCE (SS) are laminated glazing products that provide additional security, safety, UV and acoustic benefits.

Please consult one of our Technical Specification Managers for more information and availability.

PARSOL BODY TINT SOLAR CONTROL RANGE

Sealed Unit Configuration (6-16-6)		Visible Light		Energy Factors		Solar Factor	U-Value
Outer Pane	Inner Pane (Coating on Face 3)	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	g-value	Argon (90%) W/m²K
PARSOL GREY	PLANITHERM ONE T	33	8	24	14	0.30	1.0
PARSOL GREY	PLANITHERM ULTRA N II	38	6	29	12	0.35	1.1
PARSOL BRONZE	PLANITHERM ONE T	38	9	25	16	0.32	1.0
PARSOL BRONZE	PLANITHERM ULTRA N II	43	7	31	13	0.37	1.1
PARSOL GREEN	PLANITHERM ONE T	56	16	27	11	0.33	1.0
PARSOL GREEN	PLANITHERM ULTRA N II	64	10	32	8	0.38	1.1

PARSOL® is a range of body-tinted glass to give both tinted aesthetics and solar control properties.

Combining these solar control glazing options with either **PLANITHERM® ONE T** or **PLANITHERM® ULTRA N II** creates an insulating sealed unit with exceptionally low centre pane U-values as well as an element of solar control.

STADIP® & STADIP SILENCE® LAMINATED PRODUCT RANGE

Configuration of Unit	1/1 Octave Band Centre Frequency Attenuation (dB)							Rw(C;Ctr)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
6(16Argon)6	27	21	20	30	39	35	44	33(-1;-5)
8(16Argon)6	30	23	23	34	40	37	48	36(-2;-5)
10(16Argon)6	33	23	26	36	41	43	55	39(-2;-6)
6(16Argon)6.8SS (33.2)	30	23	25	36	46	49	56	39(-2;-6)
6(16Argon)8.8SS (44.2)	29	25	28	39	49	48	52	42(-2;-7)
6(16Argon)10.8SS (55.2)	31	25	29	40	50	46	53	42(-2;-6)
6(16Argon)10.8 (55.2)	32	27	29	38	44	44	54	41(-1;-5)
8(16Argon)10.8SS (55.2)	32	27	32	42	48	48	53	44(-2;-6)
8(16Argon)10.8 (55.2)	31	28	31	40	42	42	55	41(-1;-4)
10(16Argon)12.8SS (66.2)	29	30	33	43	45	47	57	44(-1;-4)
10(16Argon)12.8 (66.2)	24	26	32	39	38	43	56	40(-1;-4)
10(20Air)12.8SS (66.2)	-	29	36	43	44	46	59	45(-1;-5)
10(24Air)14.8SS (86.2)	27	33	37	44	45	44	54	45(-1;-3)
12.8A (66.2)(16Argon)8.8SS (44.2)	31	30	35	46	54	55	63	48(-2;-6)
10.8A (64.2)(24Air)14.8SS (86.2)	28	36	42	48	52	53	60	51(-1;-4)

STADIP® is a laminated product that provides additional security, safety & UV benefits over and above annealed, heat strengthened or thermally toughened glass.
STADIP® SILENCE (SS) is a laminated product that provides all the benefits of STADIP® with additional high acoustic performance.
*SS denotes the use of **STADIP SILENCE®** acoustic laminate interlayer. All acoustic performances are tested and certified in acoustic test reports and can be requested through Saint Gobain Glass.

PLANITHERM® HIGH PERFORMANCE LOW-E PRODUCT RANGE

Sealed Unit Configuration (6-16-6)		Visible Light		Energy Factors			Solar Factor	Shading Coefficient	U-Value
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	Absorption %	g-value	SC	Argon (90%) W/m²K
PLANITHERM ONE T	PLANICLEAR	66	24	41	38	18	0.44	0.51	1.0
PLANITHERM ULTRA N	PLANICLEAR	79	12	55	26	15	0.59	0.67	1.1

SEALED UNIT CONFIGURATION (6-16-6.8SS)		Visible Light		Energy Factors			Solar Factor	Shading Coefficient	U-Value
Outer Pane (Coating on Face 2)	Inner Pane	Total Light Transmission %	External Reflection %	Direct Transmission %	External Reflection %	Absorption %	g-value	SC	Argon (90%) W/m²K
PLANITHERM ONE T	STADIP SILENCE	65	24	38	38	18	0.44	0.50	1.0
PLANITHERM ULTRA N	STADIP SILENCE	79	12	52	26	15	0.58	0.67	1.1

STADIP® & STADIP® SILENCE (SS) are laminated glazing products that provide additional security, safety, UV and acoustic benefits.

PLANITHERM® All coatings feature on this substrate as standard.

Availability - Please consult one of our Technical Specification Managers for more information and availability.

SPECIALIST SOLUTIONS

SPANDREL GLASS AND GLAZING

Spandrel glass or non-vision glass is used on buildings to conceal essential components from view, such as floor levels, columns, ventilation systems, wiring and pipes. Used mainly for curtain walling and structural glazing, spandrel glass is a common component of building design. It is typically located below the vision glass on each floor of the building.

Spandrel glass is often necessary to achieve the vision of the architect or designer to create a consistent, fully glazed building façade. It can be complementary or contrasting in colour and texture made using various technologies and finishes.

Saint-Gobain Glass can provide support to architects, specifiers and glass processors looking to match or contrast spandrel and vision glass within a façade.

ENAMELLED GLASS

The main component of a spandrel is the opaque, coloured glass that is produced by enamelling one side of the glass. The glass is fired at very high temperatures to fuse the enamel and glass, giving the finished product a robust, uniform finish. Heating the glass to high temperatures tempers the glass which avoids thermal stress breakages following installation.

MATCHING

The matching of spandrels can be a subjective process as it can be influenced by changing viewing conditions and the opinion of the person observing the glass. Due to this variation it is difficult to guarantee a perfect match between spandrel and vision glass.

Saint-Gobain Glass is continuing work on the development of a frame of reference for the matching of spandrel and vision glass. To find out more please visit the Tech Hub or contact a member of the Saint-Gobain Glass team.

CURVED GLASS FAÇADE

Curved glass is very often used in architecture to give a building an organic look, using the curves to emulate nature and to provide a premium finish to a building.

Curved glass can be used as part of a building façade or as interior features including stair cases, balustrades and glazed atriums.

The use of curved glass does not mean a loss of performance. Saint-Gobain's range of high performance glass can be transformed to create curved structures that deliver on safety, security and performance.

NON-FRAGILE ROOF GLAZING

The specification of roof glazing is particularly challenging due to the loads affecting the glass, including loading due to weather conditions and the need for access to carry out maintenance, along with the weight of the glass itself.

Security and safety is also a key concern when specifying roof glazing. Should a pane break it's vital that the glass remains intact and doesn't fall from height onto the ground below, causing injury to people inside the building.

Saint-Gobain Glass has supported numerous building projects that feature complex roof glazing. There are a number of case studies for you to view on the Tech Hub and if you require more information a member of our technical team can help.

SPECIALIST SOLUTIONS

Discover more: **techhub**.uk.saint-gobain-building-glass.com

OVERLENGTH GLASS FAÇADE

The use of large panes of glass creates awe inspiring spaces. Producing and installing overlength glass panels from 6 to 18 metres in length is now possible.

Working in large scale using glass delivers on aesthetics, functionality and sustainability when considering the performance of glass and the infinitely recyclable nature of glass.

Saint-Gobain's overlength glass technology makes almost anything possible, including:

- Pre-cuts and edge processing with an arrissed, cut or polished edge.
- Drilled and cut holes in glass.
- Curved and shaped glass.
- Toughened glass and heat-soak tested glass.
- Laminated safety glass.
- Fall-proof glazing.
- Glass with bespoke laminated colours or decorative foils
- Glass with single colour or multi-colour patterned print.
- Glass with full surface enamelling.

POINT-FIXED FAÇADE

A point-fixed façade is built using panes of high performance glass fastened by bolt point fixings to a supporting metal structure.

This specialist structural glazing can be installed in single, double or triple glazed formats and provides a spectacular finish, particularly when used as part of a large scale, glazed façade or atrium.

Saint-Gobain high performance glass has been used to create a number of fully glazed, bolt fixed facades. Our team of experts can assist in the selection of the most appropriate facade glazing configuration that considers solar control, mechanical strength, safety and security, along with the overall aesthetic finish.

MUSEUM SPECIFICATIONS

Museums and galleries understandably want to protect artefacts and works of art from damage and so place emphasis on the performance of materials to limit the damaging effects of natural and artificial light.

Saint-Gobain Glass works with partners throughout the specification, fabrication and installation stages of glazing to help develop bespoke specifications, formed using our range of high performance solar control glass.

KEY PROJECTS

OFFICE

100 AVEBURY BOULEVARD, MILTON KEYNES

A landmark building for Milton Keynes, 100 Avebury Boulevard is 140,000 square feet of grade A office space; completed to the highest standards with exceptional attention to details considering design, materials and finishes.

Saint-Gobain Cool-lite® Xtreme 50/22 was selected for the large expanses of floor to ceiling glazing and the 10 metre height, glazed reception, due to the products very high selectivity of 2.24 (ratio of visible light to solar heat gain). The product performance values maximise light transmission whilst reducing the need for expensive and non-eco-friendly air conditioning; perfect for this sustainable and low energy BREEAM accredited building.

Project Value: £29 million
Client/Developer: AW James
Architect: PHP Architects
Main Contractor: Galiford Try
Glass Processor: Dual Seal Glass
Façade Fabricator: Casu Consulto

BREEAM®

WINDMILL GREEN, MOUNT STREET, MANCHESTER

Central, adaptable, collaborative and sustainable, Windmill Green is a Grade A, refurbished office space in central Manchester.

The building has achieved a WELL Rating of Gold, a BREEAM Outstanding and EPC A, based on overall building performance.

The triple silver coated glass has been used throughout the facade, processed into flat double glazed units (DGUs) and more specialist curved DGUs, located at the corners of the building. The mixed texture facade features teal glazed terracotta tiles combined with glass. It provides a dynamic finish to the building.

This sustainable building features Saint-Gobain Cool-lite® Xtreme 60/28, an extremely selective solar control coating that's perfect for use in high end commercial developments and buildings looking to achieve rigorous sustainability standards.

Project Value: not confirmed
Client/Developer: Fore Properties
Architect: TP Bennett
Main Contractor: Kier Construction
Glass Processor: System 3
Façade Fabricator: MTW Architectural

BREEAM®

OFFICE

THE RAY, 119 FARRINGDON, ISLINGTON, LONDON

Now home to tech company LinkedIn, The Ray is an 8-storey redevelopment, with an architectural design that incorporates inspiring details from surrounding buildings, whilst preserving its own clear identity.

It features large double glazed windows created using Saint-Gobain's laminated Stadip Protect combined with Cool-lite® SKN 165, that allows light to flood the interior, whilst ensuring the safety and security of the building's occupiers. The use of Saint-Gobain's double silver coated glass creates a light and airy space, and minimises the risk of overheating; creating a pleasant working environment.

The building has achieved a BREAAM Outstanding, which means the building delivers on strict sustainability targets.

Project Value: £40.8 million
Client/Developer: Viridis Real Estates
Architect: AHMM Architect
Main Contractor: McLaren Construction
Glass Processor: Stargrup
Façade Fabricator: Alumet

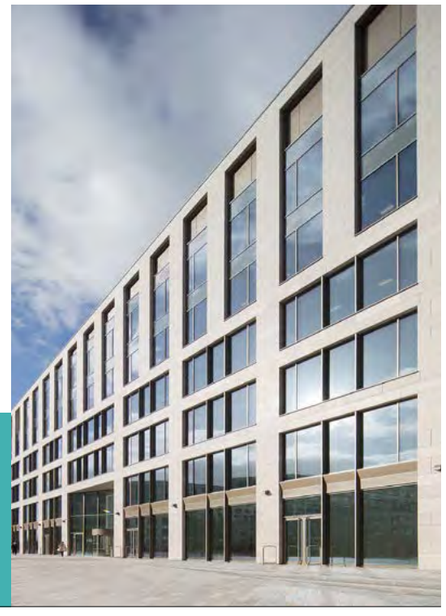
BREEAM®

WELLINGTON PLACE, LEEDS

The Wellington Place development in Leeds is positioned as a perfect location for business. When complete, the scheme will provide work and living space for up to 16,000 people. The mixed use buildings feature offices, retail and leisure facilities.

Saint-Gobain Glass is featured throughout the development. The specification team has helped specify the glazing and supported the design and site teams throughout the implementation of the phased building project.

The Wellington Place office buildings feature a range of coated glass from the Cool-lite® range, to ensure the highly glazed facades deliver exceptional levels of light into the buildings, whilst limiting the overheating effects associated with solar gains, that would occur with less selective coatings.



Project Value: £200 million
Client/Developer: MEPC
Architect: Sheppard Robson
Main Contractor: Wates Construction
Glass Processor: Dual Seal Glass
Façade Fabricator: Speedclad

BREEAM®

KEY PROJECTS

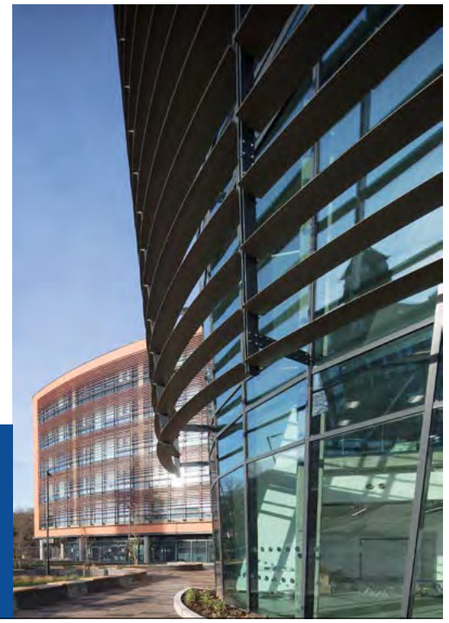
EDUCATION

VIJAY PATEL BUILDING, DE MONTFORD UNIVERSITY, LEICESTER

The Vijay Patel Building is the centre piece of the £136 million investment strategy at De Montford University, focused on developing the 'campus of the future'. It houses art and design subjects and is filled with innovative teaching facilities that demonstrate the university's commitment to creative education.

The unique architect features a blend of glazing structures including curtain walling, sloped duty entrance doors, all fitted with premium glass.

Saint-Gobain Cool-lite® SKN 165 II and Cool-lite® SKN 176 II has been used in the glazing to ensure the interior environment is bright and inspiring to students and staff, whilst remaining at a stable, comfortable temperature; all achieved with minimum expense to the environment and running expenses when considering the cost of cooling and heating within the building.



Project Value: £5 million
Client/Developer: De Montford University
Architect: CPMG
Main Contractor: Balfour Beatty
Glass Processor: Dual Seal Glass / Carey Glass
Façade Fabricator: APIC UK

BREEAM®

ENGINEERING INNOVATION CENTRE, UNIVERSITY OF CENTRAL LANCASHIRE (UCLAN)

In 2019 UCLan launched a £35 million state-of-the-art teaching facility that addresses the need for innovation to encourage the next generation of world-class engineers.

The research and teaching facilities include a range of laboratories focused on driving across sector technologies forward.

The centre features a range of Saint-Gobain's coated glass products in the façade including Cool-lite® SKN 176 II, Cool-lite® SKN 144 II and Cool-lite® Xtreme 60/28 II. The specification of high-performance glass ensures energy efficiency throughout the building, as the coated glass enables balance due to solar control and thermal insulation properties.

Project Value: £35 million
Client/Developer: UCLan
Architect: SimpsonHaugh and Partners
Main Contractor: Bam
Glass Processor: Dual Seal Glass
Façade Fabricator: Dortech

BREEAM®

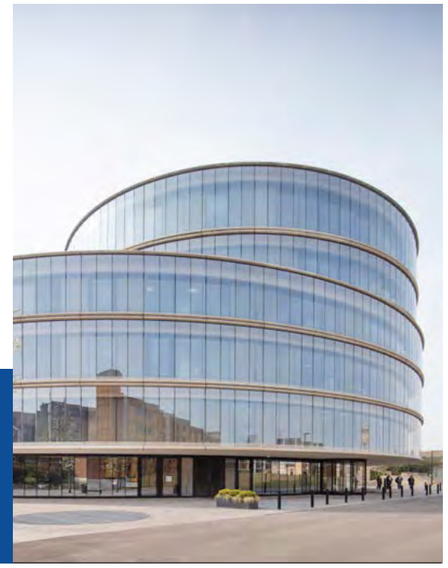
EDUCATION

UNIVERSITY OF OXFORD, BLAVATNIK SCHOOL OF GOVERNMENT

A RIBA award winning project, The Blavatnik School of Government seeks to improve, inform and support better public policy and government in every country of the world.

From the street the building is a true statement, that uses materials to stand out from the background. The interior of the building presents and organic image, built using curves and some natural materials soft in appearance.

The building façade features Saint-Gobain, a glass chosen for it's neutral aesthetic along with its outstanding performance values when considering light transmission, solar control and processibility which has led to the creation of a truly beautiful, glazed façade, that works well with the curved of the building.



Project Value: £30 million
Client/Developer: University of Oxford
Architect: Herzog & de Meuron
Main Contractor: Laing O'Rourke
Glass Processor: Glassolutions
Façade Fabricator: Euro Clad

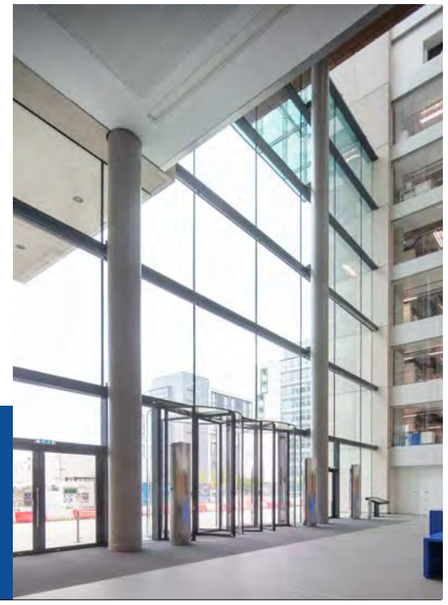
BREEAM®
RIBA

MRSH IMPERIAL COLLEGE LONDON

A ground-breaking, multi-disciplinary hub for research, education and community engagement in health and wellbeing, the new, impressively glazed MRSH Imperial College London building has been completed to a very high standard to draw in a full spectrum of academics, students and members of the local community.

The innovation campus will support modern advances in genomics, data sciences and clinical trials.

Creating an atmosphere that is modern and inspiring is vital to the success of the campus, which led to the selection of a range of building products and materials that provide a high end finish, including Saint-Gobain COOL-LITE® SKN 165 II and STADIP® PROTECT; to ensure solar control, safety and security.



Project value: £5 million
Client/Developer: Imperial College London
Architect: PLP Architecture
Main Contractor: Laing O'Rourke
Glass Processor: Glassolutions
Façade Fabricator: Novum Structures

BREEAM®

KEY PROJECTS

RETAIL

VICTORIA GATE, LEEDS

The £165 million scheme, adjacent to Hammerson's Victoria Quarter arcade, forms part of the new 53,400m² Victoria Leeds shopping destination. It has created the largest premium retail and leisure venue in Northern England moving Leeds up to third in the UK's best place to shop retail rankings.

Designed by architects Acme, the development provides Leeds with a 21st century retail arcade and is an exceptional addition to the city's rich merchandising and textile history. Its striking façade takes inspiration from the surrounding architecture of Leeds' historic buildings and uses a mixture of white terracotta and red bricks which were manufactured in Yorkshire and Staffordshire. The premium interior features curved glass, shop windows, created by Glassolutions, using Saint-Gobain Contour Diamant®. The low-iron glass provides clarity and light throughout the space.

Project Value: £165 million
Client/Developer: Sir Robert McAlpine
Architect: Acme
Main Contractor: SRM
Glass Processor: Glassolutions
Façade Fabricator: Lindner

BREEAM®

MERCEDES BENZ (LSH AUTO UK) SHOWROOM, STOCKPORT

At 350,000 sq ft, the Mercedes Benz showroom in Stockport is the largest showroom in Europe.

The site has been regenerated with a state-of-the-art, 3-storey facility to provide a hub for the entire Greater Manchester area. Clad in the very best glass, an exceptional finish has been achieved to create a building that presents the range of Mercedes Benz vehicles at their best.

The light levels within the building have been carefully specified and achieved using Saint-Gobain Cool-lite® Xtreme 70/33 II, Saint-Gobain's highly selective triple silver coating, supplied on Diamant® substrate, Saint-Gobain's premium, low iron glass.

Project Value: £50 million
Client/Developer: Lei Shing Hong
Architect: ATA Design
Main Contractor: RG Group
Glass Processor: Glassbel
Façade Fabricator: FK Group

BREEAM®

RETAIL

INTU LAKESIDE, ESSEX

A shopping centre and social venue, the 1,000,000 square feet INTU Lakeside, originally built in 1990 has been completely refurbished to satisfy increasing demands for high value leisure opportunities.

The venue provides fashion, food and entertainment on the outskirts of Essex.

The main building was revitalised to create The Pavilion with the introduction of eight new restaurant units and a boardwalk; maximising al-fresco dining next to the 26-acre lake.

The front of the shopping centre features a large façade, along with new roof lights, created using a mix of Saint-Gobain products including Planitherm® and Cool-lite® SKN 165 II, to provide a premium finish and light, airy but sheltered interior.

Project Value: £33 million
Client/Developer: Intu Properties Plc
Architect: Lesley Jones Architects
Main Contractor: McLaren
Glass Processor: Glassbel
Façade Fabricator: FK Group

BREEAM®

VANGUARD SHOPPING PARK, YORK

Home to a wide range of department stores and restaurants including John Lewis and Partners, Next and M&S, Vanguard Shopping Park is a premium shopping destination that has been constructed in stunning surroundings on the outskirts of York.

The 339,000 sq ft has been completed to a very high specification.

Glassolutions created the bolted facade using Saint-Gobain Securipoint® technology.

Saint-Gobain's Cool-lite® Xtreme 70/33 glass used on the project achieves a high level of performance in terms of light transmission and helps to limit overheating, along with ensuring mechanical strength and safety.

Project Value: £27 million
Client/Developer: Oakgate Group Plc
Architect: DLA Architecture
Main Contractor: Caddick Construction
Glass Processor: Glassolutions
Façade Fabricator: Quest

BREEAM®

KEY PROJECTS

RESIDENTIAL

THRAYLE HOUSE, LONDON

The redevelopment of Thrayle House, in Stockwell, south London, replaces an existing 1970s block with a family of buildings varying in scale up to 20 storeys, but united in their style and articulation. The 170 homes for Network Housing Group include family houses and duplex dwellings, dual aspect apartments and penthouses.

The façade features Saint-Gobain Cool-lite® SKN 176 II, a coated glass that delivers multiple benefits, focused on comfort and performance.

Project Value: not confirmed
Client/Developer: Network Homes
Architect: PRP
Main Contractor: Henry Construction
Glass Processor: Euroview Architectural Glass
Façade Fabricator: Glassolutions

BREEAM®

HEALTH

RTC, SHEFFIELD

The new state-of-the-art research centre will allow businesses to gain access to university research expertise and test out 4IR technologies such as AI, sensor technology, big data and robotics. The centres will further boost Sheffield's reputation as a hub for advanced engineering.

The design utilises a frameless glazing system that does away with aluminium mullions, transoms or point fixing.

The unit sizes are 2.0m wide and 7.6m tall and supported by one-piece full height 7.6m multi-ply glass fins, which makes them the largest application of this style of glazing in the UK.

Cool-lite® SKN 176 II was specified. The laminated glass fins were produced in extra clear low iron glass – Saint-Gobain Diamant® in order to give a clear transparent view through the façade glass with minimal visual obstruction.

Project Value: £47 million
Client/Developer: University of Sheffield
Architect: Bond Bryan Architects
Main Contractor: JF Finnegan Ltd
Glass Processor: Glassolutions
Façade Fabricator: Casu Consulto

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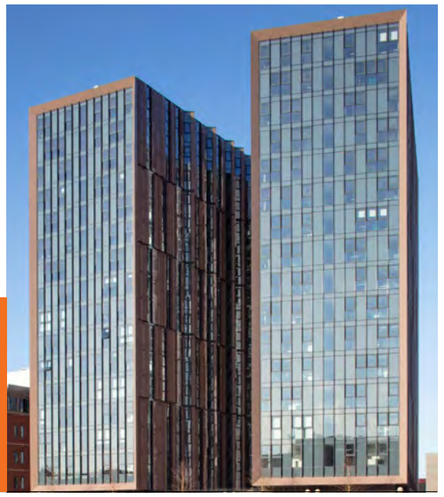
RESIDENTIAL

ERIE BASIN, SALFORD QUAYS

Erie Basin is a build to rent scheme that houses one, two and three bedroom apartments over 16 storeys. Quality is key to a development of this type to ensure the building is attractive to investors and robust enough to handle the challenge of the quick turnaround rental market.

Saint-Gobain was used for the glazing to produce a building that can perform in all weather conditions, providing stable temperatures and will be robust to cope with tenants of varying ages.



Project Value: £20 million
Client/Developer: Glenbrook
Architect: Sheppard Robson
Main Contractor: Graham
Glass Processor: Glassbel
Façade Fabricator: FK Group

BREEAM®

LEISURE

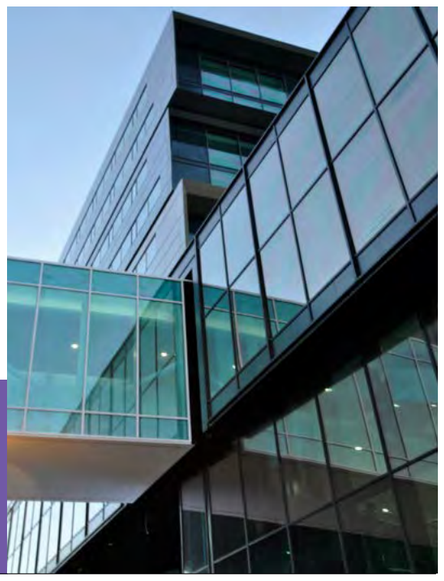
ECL

Exhibition Centre Liverpool is a multi-million pound exhibition centre, the latest addition to Liverpool event campus, alongside interconnected sister venues ACC Liverpool and M&S Bank Arena.

Located on Liverpool's Waterfront, Exhibtion Centre Liverpool is an exciting part of the city and a great place to visit.

The 81,000 sq m exhibition centre welcomed more than 100,000 visitors during its first year.

The exhibition centre features a large glazed façade, created using Saint-Gobain's extreme performance glass, to minimise overheating and reliance on air cooling, and heating systems. The glazed façade features Saint-Gobain Cool-lite® Xtreme 50/22 II solar control glass.



Project Value: £66 million
Client/Developer: Liverpool City Council
Architect: Denton Corker Marshall
Main Contractor: ISG
Glass Processor: Dual Seal Glass
Façade Fabricator: Bennett Architectural Systems

BREEAM®

KEY PROJECTS

LEISURE

TOTTENHAM SOUTH STAND, NORTH LONDON

With the opening of the Tottenham Hotspur Stadium in April 2019, 'Spurs' have a new home designed by Populous. The football club's arena is located in the Tottenham district of Haringey, North London. It replaces White Hart Lane, which was demolished there in 2017.

In addition to football matches, the new building will also host US Football League NFL matches - the American football field is located under the completely retractable lawn.

In addition, concerts or private events such as banquets and conferences take place in the multifunctional arena, which can accommodate up to 62,062 spectators. In terms of safety, acoustics and comfort, the building meets the highest standards.

The multi-layer stadium shell rises above an earthing concrete base. It consists of an outer circumferential steel level and an inner layer of 14,500 square metres of Saint-Gobain Stadip® Cool-lite® SKN 165. The upper section of the building is formed by a vaulted roof clad in steel. The outer façade layer consists of 4,801 vertical, perforated steel panels, some of them are arranged like scales. In dynamic wave motions, this veil traces the contours of the flanking historical residential buildings. Generous views are also offered by the two-storied restaurants in the northeast and northwest. The design highlight, is certainly the fan zone with its five storey atrium facade of 7,000 square meters of glass.

Project Value: £1 billion
Client/Developer: Tottenham Hotspur
Architect: Populous
Main Contractor: Mace
Glass Processor: Glassolutions Eckelt Glas
Façade Fabricator: Josef Gartner and IPIG

BREEAM®

LEISURE

MACALLAN DISTILLERY, SPEYSIDE

The £140 million Macallan Distillery and visitor centre in Speyside, Scotland, features a glazed façade by Saint-Gobain Glass, which reveals the production processes to visitors while remaining sensitive to the beautiful surrounding countryside. The new distillery will enable production of The Macallan to increase by a third if required. It is expected to deliver significant benefits for the tourism industry, Scotch whisky exports, and the economy.

The project has won a national RIBA award and was one of just six UK buildings shortlisted for a RIBA Sterling Prize 2019.

The undulating timber roof structure is one of the most complicated timber roof structures in the world, comprising 1800 single beams, 2500 different roof elements, and 380,000 individual components, almost none of which are equal or the same.

Additionally, the Glulam roof structure was expected to provide up to a possible 60mm downward deflection and 38mm outward deflection, so the main façade screen had to accept this level of movement. Solar control was also a high priority for the glazing specification: it was important that the building's temperature should remain as consistent as possible to ensure comfort, energy efficiency, and reliable conditions for distillation. Saint-Gobain Cool-lite® SKN 165 II solar control glass was specified.

To insulate the glass units and limit heat exchange, the glass was retained in a thermally broken channel at its base. This channel enabled the glazing to function efficiently as well as aesthetically, allowing the installation of glass units which span continuously from the floor slab to first floor level whilst providing a contained thermally broken solution throughout. The façade glass is also retained in a channel at its head; however, to allow it to accommodate the anticipated deflection of the roof, the channel was not fixed directly to the Glulam structure.

Arguably the distillery's most striking glazed feature is the Cave Privee, a stunning 3m-high curved glass viewing deck and function room located in the visitor area. This was created using 41mm toughened double glazed glass units, both straight and curved, comprising 10mm panes of toughened glass for the outer and the inner panes. The units were then glazed into steel channels at the head and base, and direct fixed to concrete slabs.

Project value: £140 million
Client: The Edrington Group
Architect: Rogers Stirk Harbour & Partners
Contractor: Robertson Construction
Fabricator: Glassolutions
Glass processor: Glassolutions

BREEAM®
RIBA

"The vision was always ambitious, but this enabled us to challenge our own thinking to create something so dramatic and awe-inspiring."

Graham Stirk, senior partner and lead architect, Rogers Stirk Harbour & Partners

DEVELOP THE RIGHT GLAZING SOLUTION

GLAZING SPECIFICATION PROCESS

The team at Saint-Gobain Glass UK and Ireland work closely with stakeholders throughout the building design, glazing fabrication and installation process, to ensure the correct glazing solutions are selected.

During the specification process there are numerous considerations, from performance, safety and sustainability, to quality, lead-time and cost.

Saint-Gobain products deliver a wide range of benefits. Not only the most aesthetically pleasing, Saint-Gobain Glass products are the most sustainable, and the range consistently delivers on thermal and solar performance; making them excellent value for money when considering the complete lifecycle of a building.

GLAZING SPECIFICATION SUPPORT

Saint-Gobain is focused on ensuring safety and compliance throughout the supply-chain.

During the specification process the Saint-Gobain Glass technical team propose glazing solutions based on the particular requirements of a building project, using legally approved calculation tools and methods, and guided by regulations.

GLAZING SPECIFICATION DOCUMENTS

A glazing specification considers the use of a particular building, the safety and comfort of people in and round a building, and the security and necessary maintenance required.

The Saint-Gobain Glass specification process is traceable and supported by a legal framework to help limit risk. Please contact your local Technical Specification Manager to find out more.

More information including a range of guidance documents, calculation tools and digital resources can be found on the Tech Hub; accessible on smartphone, tablet and PC.

VISIT THE TECH HUB:

techhub.uk.saint-gobain-building-glass.com

DIGITAL TOOLS

To support your glazing specifications, take a look at the Tech Hub and access Saint-Gobain's range of digital tools and supporting information. You can also place orders for glass samples to help in your product selection.

Access Saint-Gobain Glass UK & I tools and resources:
https://techhub.uk.saint-gobain-building-glass.com

TECH HUB

The Saint-Gobain Tech Hub provides product information, project case studies and a technical library, along with other tools and resources to help you design and specify glazing.

BIM OBJECTS

Saint-Gobain Glass provides Building Information Modelling (BIM) objects to be used in your Revit and AutoCAD software. Two BIM objects are currently available: one for windows and the other for the curtain walling, to help with the design of glazing solutions that deliver thermal insulation and solar control.

ACOUSTIC CALCULATOR

The acoustic calculator allows you to search by performance requirements and glazing parameters, to find glazing solutions for your building projects.

GLASSPRO APP

GlassPro is interactive software that simulates a realistic image of different glazing products on building facades.
GlassPro helps you to visualise the rendering of a glazing product under a variety of exterior lighting conditions, and several interior design settings.

SAMPLES

Saint-Gobain can provide glass samples, including our Cool-lite® and Planitherm® products, along with our complete range of decorative glass.

CALUMENLIVE

CalumenLive is a digital simulation program that calculates the light, energy and thermal performances of glazing. The program is designed to calculate the performance of any single glass or combination of glass types and thickness for double and triple insulating glass units.

Each of the surfaces can be coated with a thin coating providing the glazing with specific characteristics (enhanced thermal insulation, solar control, self-cleaning function, etc.).

Calculation reports can be easily outputted to compare performance of alternative configurations and shared electronically if required.

The engine for every technical detail of your glazing configuration. https://calumenlive.com is free and will help you to find and evaluate the most suitable glazing for your projects.

You can use CalumenLive to find the glazing products that meet your technical requirements or to evaluate the technical performances of your glazing.

Take a look online and contact a member of the team to find out more about Saint-Gobain's Calumen software solutions.

TECHNICAL EXPERTS

TECHNICAL SPECIFICATION MANAGERS

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TECHNICAL SPECIFICATION

Saint-Gobain Glass UK & I provides nationwide support to architects and specifiers of glazing.

The technical specification team can help in the development of glazing solutions that deliver on performance, safety and sustainability, backed by a legally compliant process.

Please get in touch to discover more.

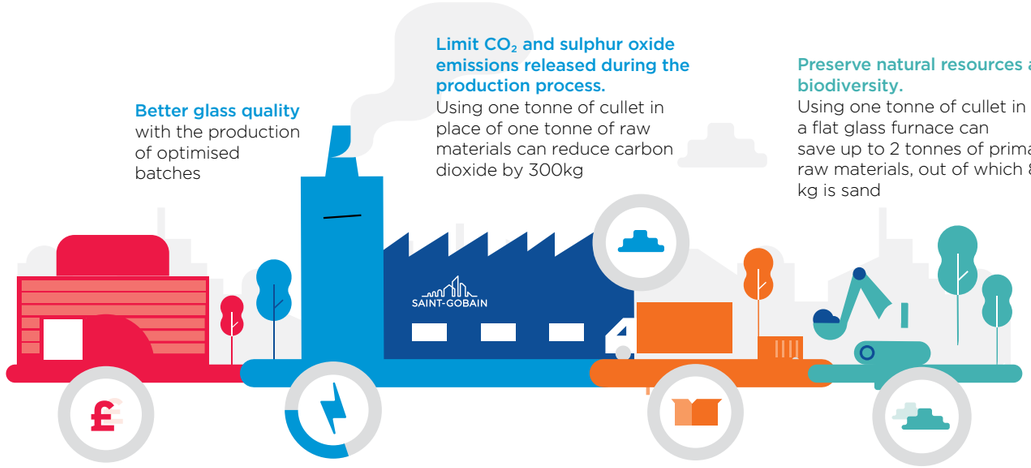
Contact a member of the team for technical and specification support, or to organise a RIBA approved CPD.

Discover more: **techhub**.uk.saint-gobain-building-glass.com

Project Value:	£19 million
Client/Developer:	Hiscox Insurance
Architect:	MAKE Architects
Main Contractor:	BAM Construction & Design Services
Glass Processor:	Glassolutions
Façade Fabricator:	Glassolutions

GLASS FOREVER: LEADING SUSTAINABILITY IN BUILDING GLASS

Saint-Gobain Glass is leading the industry in the design and production of sustainable building glass.



Better glass quality with the production of optimised batches

Limit CO_2 and sulphur oxide emissions released during the production process. Using one tonne of cullet in place of one tonne of raw materials can reduce carbon dioxide by 300kg

Preserve natural resources and biodiversity. Using one tonne of cullet in a flat glass furnace can save up to 2 tonnes of primary raw materials, out of which 850 kg is sand

Increased competitiveness by meeting the market demand for recycled products

30% less energy is required in the furnace when melting cullet than raw materials

Less requirement for raw materials. Due to the demand and scarcity of raw materials, the price of raw materials is likely to rise.

www.saint-gobain-building-glass.com/en-gb/our-sustainability-journey

Discover more: **techhub**.uk.saint-gobain-building-glass.com

OBJECTIVE: TO USE 50% CULLET IN THE MANUFACTURE OF BUILDING GLASS BY 2025

There are 3 types of cullet, depending on its origin, as defined by the ISO 14021 standard:

INTERNAL CULLET

Cullet that comes directly from glass production. This type of cullet does not leave the flat glass making facility, it is directly recycled on the production lines.

POST-INDUSTRIAL CULLET

Glass waste coming from glass sheet processing and from products that have not yet been delivered to the final customer. This type of cullet can be found on coating lines and glass processing sites.

POST-CONSUMER CULLET

Cullet generated after the delivery of glass to the end user. In the construction industry, post-consumer cullet mainly comes from the renovation and the dismantling of buildings.

LEADING POST-CONSUMER BUILDING GLASS RECOVERY AND RECYCLING

A COMMITMENT TO A CIRCULAR ECONOMY FOR FLAT GLASS

Saint-Gobain has for several years led the industry in the recovery and use of post-industrial glass cullet.

Now Saint-Gobain has extended this programme to recover 'post-consumer' glass from old windows which has, until now, typically been discarded into land-fill.

The climate emergency means we must challenge existing business models, to achieve a sustainable future for everyone on our planet.

Saint-Gobain's cullet return scheme is a key initiative to achieve this target. We must work in partnership with our customers to ensure that when possible, all post-industrial and post-consumer glass is recycled to manufacture high performance glass.

Saint-Gobain will manufacture all flat glass using

50% cullet by 2025

Saint-Gobain takes it's responsibility very seriously. On the 23rd September 2019, at the United Nations Summit on Climate Change, the Saint-Gobain Group Chairman and CEO, Pierre-Andre de Chalendar gave a commitment that the entire Saint-Gobain global group will achieve

net-zero carbon emissions by 2050

Discover more: **techhub**.uk.saint-gobain-building-glass.com

MAKING THE WORLD A BETTER HOME

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East Riding of Yorkshire
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SGG508/02/22