



ABOUT
GLASSBEL
COMPANY



 **GLASSBEL**
INNOVATION GLASS SOLUTIONS



KEY FACTS

■ PROJECT DESIGN

■ TECHNICAL CONSULTING

■ DEVELOPMENT OF INNOVATIVE PRODUCTS

- One of the most advanced and modern glass processing facility in Europe
- More than **15** years' experience in architectural glass
- More than **10 000** completed projects in **29** countries around the world
- **24/7** Operations. Customer Service Company
- Highly **experienced team** in flat glass innovations and processing
- All glass products up to **10'6" X 24'6"** (3.2m x 7.5m)
- Customized packing and logistics solutions. Delivery **by sea, by air, by land**
- **R&D**, developing design and engineering under one roof
- Implemented and certified top **Quality Management System**



PRODUCTION CAPABILITIES

- Water jet cutting line
- Glass and laminated glass cutting line

- Edge treatment line
Polishing, grinding, bevelling

- Lamination line

- Digital printing line

- **Glass and laminated glass cutting line**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
- **Edge treatment lines**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
Grinding, polishing, beveling
- **Tempering and heat strengthening**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
- **HST**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
- **Water jet cutting line**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
Holes and shapes, grinding and polishing for any shape
- **Lamination line**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
Autoclave and vacuum bags: the best adhesion for complex composition with unlimited thickness and excellent quality
- **Ceramic roller painting and silk printing line**
Dimensions: up to 8'6" X 16'8" (2.6m X 5.1m)
- **Digital printing line**
Dimensions: up to 10'6" X 19'6" (3.2m X 6.0m)
Digital printing using ceramic inks. Photographic quality, high resolution 720 dpi
- **Insulated Glass Units assembling line**
Dimensions: up to 10'6" X 24'6" (3.2m X 7.5m)
Double and triple glazing units with thicknesses of up to 2,2 inches (56 mm), weights of up to 6,4 kg/inch (250 kg/linear meter) and any geometric shape.

SPECIALTY PRODUCTS AND SOLUTIONS

SELF-ENGINEERED PRODUCTS



Glass-SPIDER FIXING

Special solution of point fixing glasses.



Glass-SUN

Façade glass panels with integrated PV modules.



Glass-HEAT

Glass product with the function of electrical heating, completed with control system including precipitation and temperature sensors.



Glass-HEAT&SUN

Glass-HEAT&SUN is a product combined two GLASSBEL developments: Glass-HEAT (IGUs with electrical heating) and Glass-SUN (Glass panels with integrated PV modules).

PRODUCTS WITH SPECIAL REQUIREMENTS



Glass-HURRICANE

Super strong hurricane resistant glass.



Glass-BULLETPROOF

The highest degree of protection from firearms together with neutral appearance



Glass-FIRE

Monolithic or laminated glass with transparent interlayers preventing the spread of fire and the transfer of radiated heat.



Glass-SECURITY

Manual attack resistant safety glass is a protective laminated glass, which can withstand physical attacks from hand held objects like an axe.

PRODUCTS FOR SOLAR CONTROL



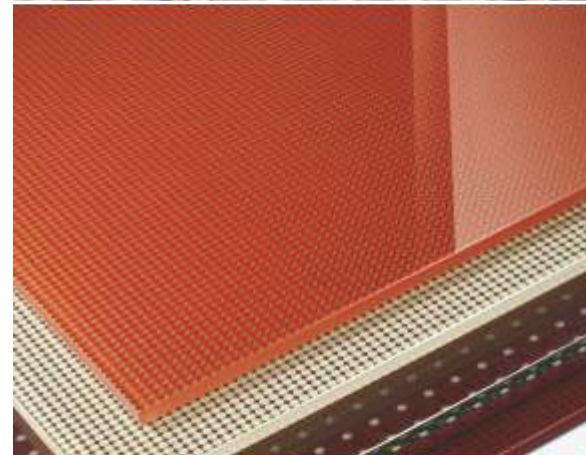
Glass-PRINT solar

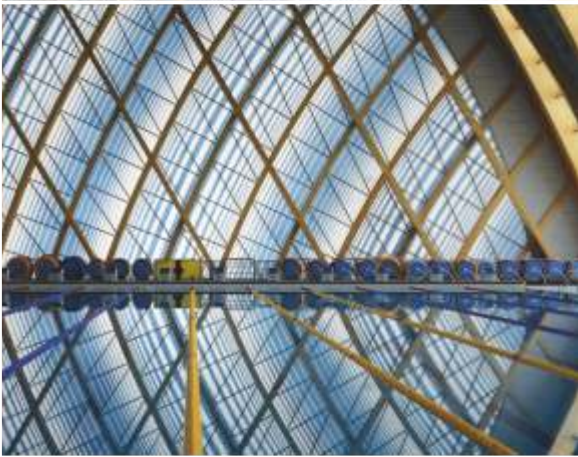
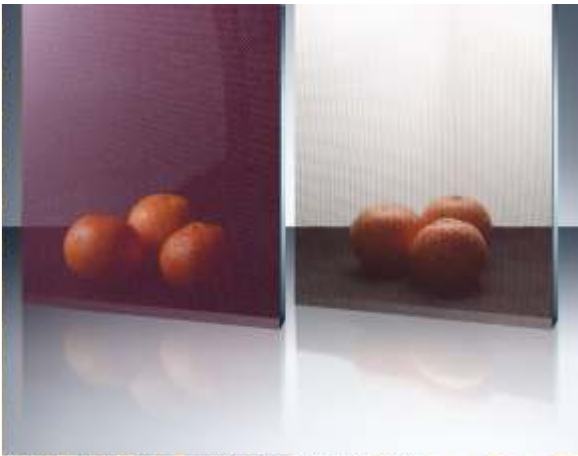
digital in-glass printing with controlled density of pattern for solar shading improvement



Glass-MESH

Laminated glass with a special metalized fabric providing any color and design to the outside with visibility and a natural appearance to the inside.





GLASS-DESIGN PRODUCT LINE



Glass - PRINT

Glass with full color photographic quality imaging made from digital printing technology.



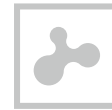
Glass-MET

Glass units with expanded mesh inside for solar control and indescribable appearance.



Glass - PAINT

Tempered glass with ceramic roller painting.



Glass - SHAPE

Water jet cutting technology allows us to cut glass of any thickness to any shape and also make cutouts for holes or fittings.



Glass - COLOR

Laminated glass with coloured films allows you to create colourful designs for your interior.



Glass-CURVE

Curved glazing that creates a unique appearance to modern interiors.



Glass - DECOR

Laminated glass with natural stone, textile or other decorative components.



Glass-SMART

Laminated glass with a switchable transparency technology.



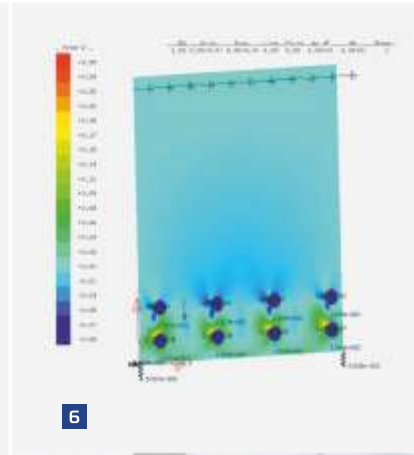
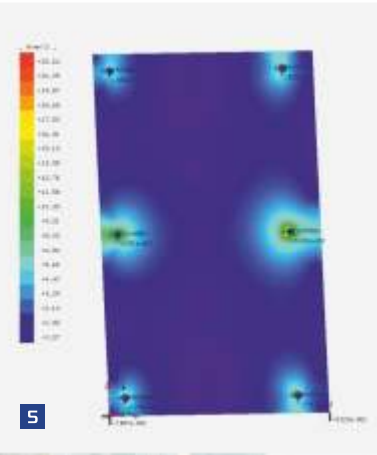
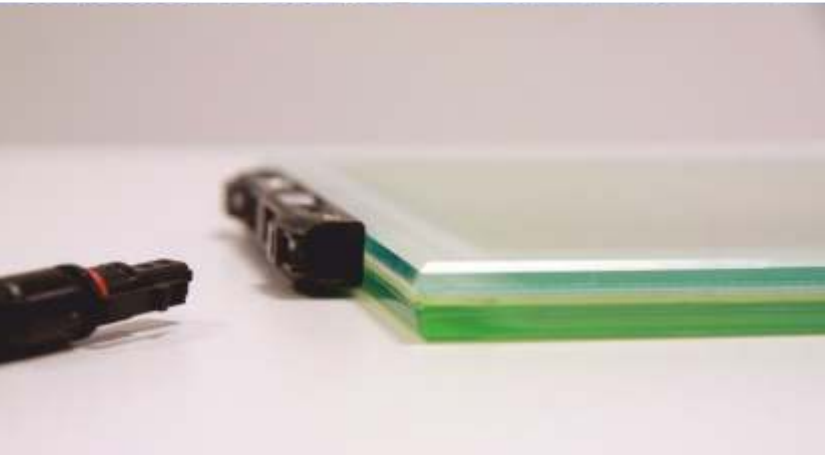
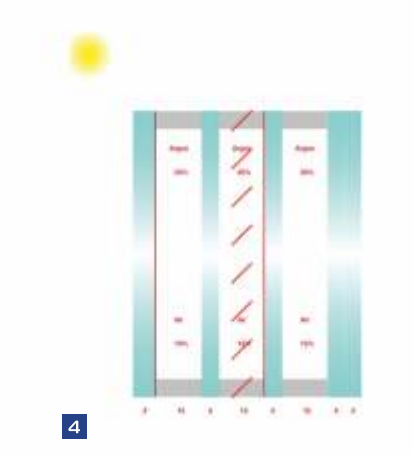
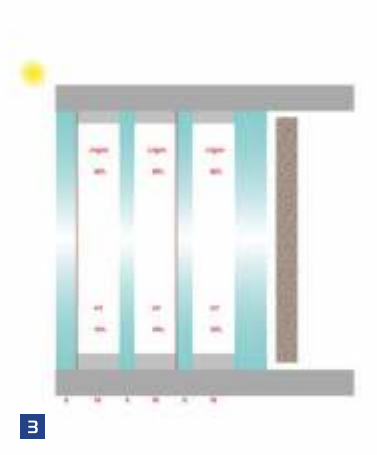
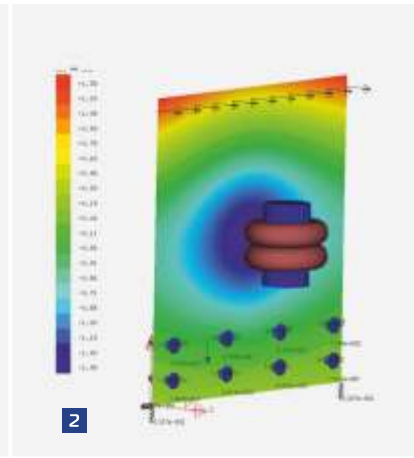
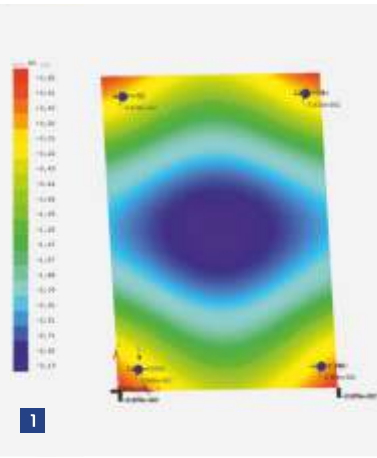
Glass - SILK

Glass with a ceramic pattern which is made using silk-screen printing technology.



Glass - MESH

Laminated glass with a special metalized fabric providing any color and design to the outside with visibility and a natural appearance to the inside.



1. Point fixed glazing deflection calculation
2. Pendulum impact calculation

3 and 4. Photometric and U-value calculation

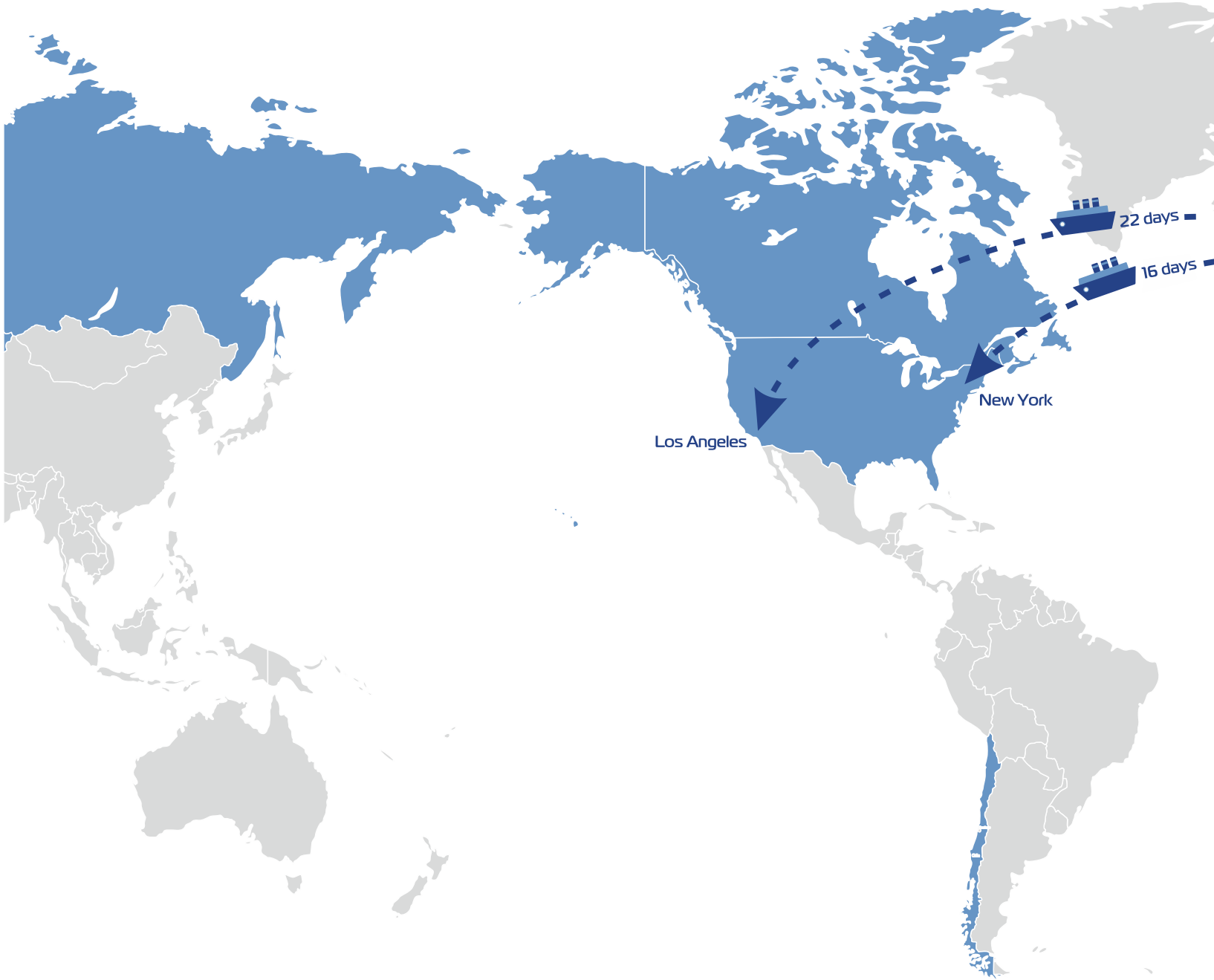
5. Point fixed glazing stress calculation;
6. Barrier glazing structural calculation;

Other services are available upon request.
Please, contact us: solutions@glassbel.com

R&D SERVICES

GLASSBEL is always focusing on client's requirements therefore own R&D department is necessity. Demanding Clients dictate wide range of services available by GLASSBEL R&D department:

- **Photometric calculations for any buildup possible**
including special products with metallic mesh or digitally printed glass
- **U-value calculation for insulated glass**
if necessary for hole sandwich of spandrel zone (insulated glass with insulation foam)
- **Thermal stress analysis for any situation**
recommendations on edge treatment and heat treatment necessary
- **Sealing depth calculations**
with recommendations on U-profile arrangement and profile type
- **Recommendations on buildup according acoustic performance requirements**
- **Structural calculations for single, laminated or insulated glass for any structure:**
 - barrier glazing
 - balustrade
 - walk on glass
 - glass beam, column or fin
 - point fixed glazing
 - pendulum impact calculation
- **New product development**
GLASSBEL is committed to realize any idea which Client wants to implement in their project. This ambitious commitment leads to many new top end products developed and realized worldwide. Indoor testing drives product development forward and gives great confidence on what GLASSBEL is capable of.

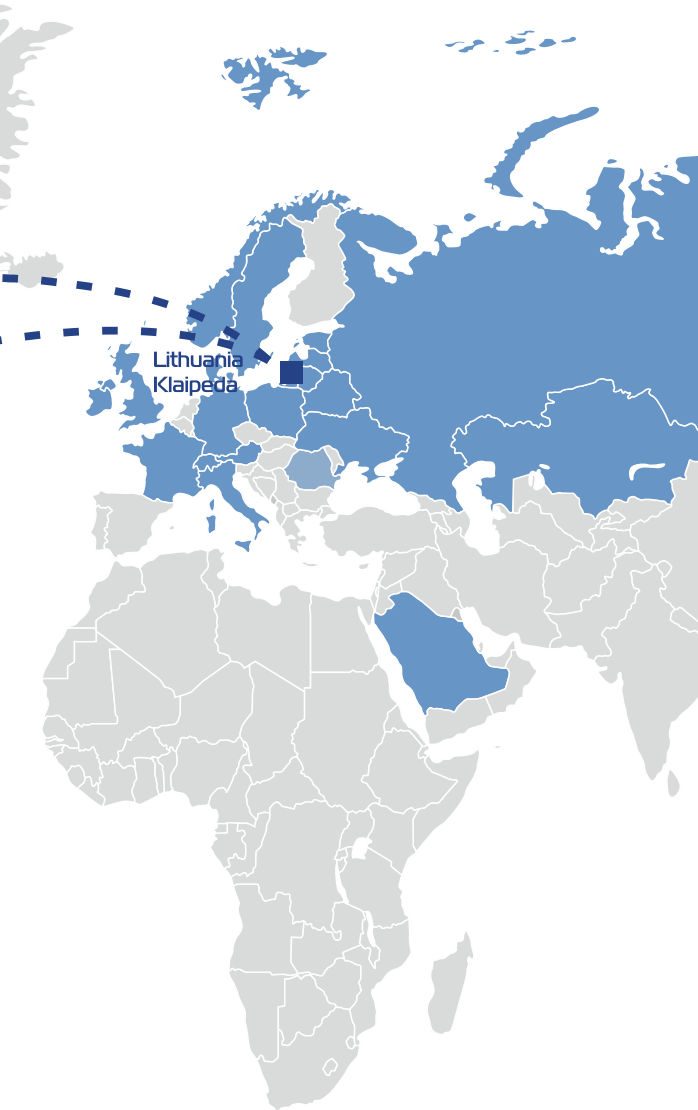


Los Angeles

New York

22 days

16 days



PROJECTS AROUND THE WORLD

- USA
- Canada
- United Kingdom
- Sweden
- Denmark
- Germany
- Switzerland
- Ireland
- Iceland
- Austria
- Saudi Arabia
- United Arab Emirates
- Qatar
- Norway
- France
- Italy
- Czech Republic
- Lithuania
- Latvia
- Estonia
- Poland
- Romania
- Georgia
- Republic of Belarus
- Russian Federation
- Ukraine
- Kazakhstan
- Chili

Absolute innovation





GENERATING OUTSIDE FOR HEATING INSIDE FACADE ELEMENT SOLUTION BY GLASSBEL

STRUCTURAL TRIPLE GLAZING:

- ✓ **Outside glass with laminated PV cells**
Outside glass generates electricity for whole year.
- ✓ **Inner glass with heated lower zone**
Inside glass switches on in winter time.

Full interior climate control for comfort.
Generated power compensates conditioning electricity consumption.

REVOLUTIONARY SOLUTION BY GLASSBEL

No GAS

No pipelines

No heating batteries

Only glass and PV solution!

- ✓ Generating enough to heat building interior
- ✓ High cost effective for investment return
- ✓ Environment friendly
- ✓ 100% recycling

- ✓ 600 m² of facade (464 m² of second skin facade)
- ✓ 90 pcs. of glass panels
- ✓ 75 pcs. Of PV modules
- ✓ Max size: 73x141 inches (1867x3592 mm)
- ✓ Min size: 28x140 inches (734x3571 mm)
- ✓ 4614 cells
- ✓ 112 m² covered with cells
- ✓ 1180 kWh/m²
- ✓ 890 kW peak generated per year (with 0,75 perf. Ratio)
- ✓ 112 m² of cells should produce ~100MW energy per year

Standard facades solutions



UK | Manchester | One St. Peter's Square 4 640 m²

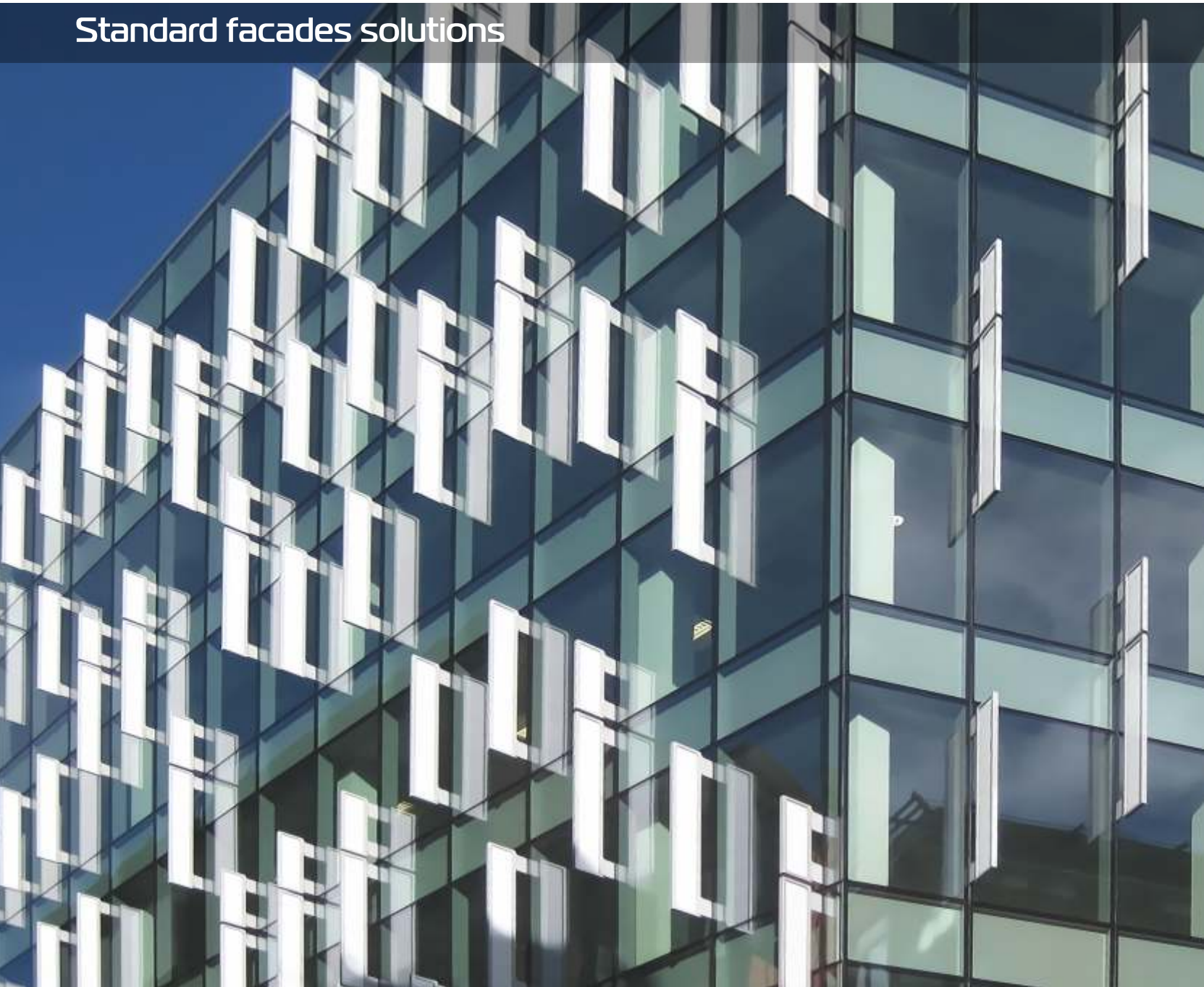
- 0.15mm tempering roller wave;
- Usage of Saint Gobain triple silver coating from Xtreme range
- Smooth gradient frit over all units;
- Super large sizes

Outer pane: Laminated and Silk printed with gradient frit and Solar control glass 66.4; Spacer: 16mm with Shuco pockets; Inner pane: Laminated



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Standard facades solutions



UK | Liverpool | St Paul's Square N°4 5 000 m²

- Very flat tempered glass with roller wave 0.15mm/300mm;
- Four stepped edges units

Outer pane: Tempered 10 mm SunGuard HS 70/41; Spacer: 16mm Argon; Inner pane: Laminated: 66.2 Float



Standard facades solutions



UK | Manchester | E2 Media City 2 792 m²

- First project in Manchester City;
- Extra tempering quality;
- Super Neutral Coating in facade;
- Customized quality tolerances

Outer pane: Laminated and Heat strenghtned: 88.4; Spacer: 20mm with Shuco pockets; Inner Pane: Laminated and Heat Strengthened 66.4



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with Low-e coating and application of Kingspan Foil insulation

Standard facades solutions



Ireland | Dublin | DAA HOB 3 300 m²

Outer pane: Heat Strengthened 8mm SNX 50/23 HT; Spacer: 20 mm, U-profile; Inner pane: Laminated 44.2



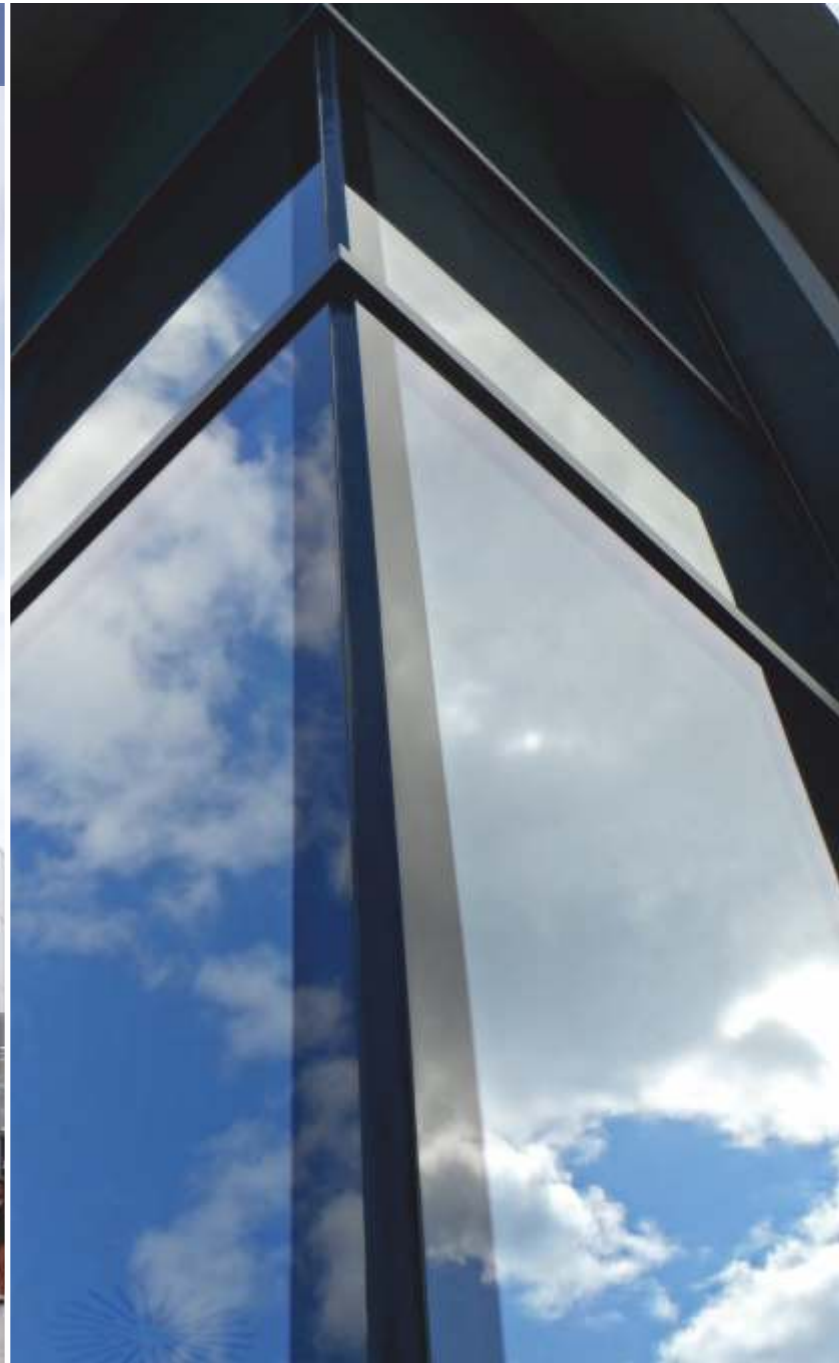
Hi-end projects



UK | London | Foster & Partners Architectural Offices 1 200 m²

- Excellent optical quality of tempered glass;
- Extra large units
- Complex shaped units with 3 mm step;

Outer pane: ESG-H12 mm; Spacer: 16 mm; Inner pane: Laminated 6 mm Float_L1,52 SentryGlas Plus_ 6 mm Float



Hi-end projects



UK | London | Lacon House 465 m²

- Extraordinary light transmission of glass;
- Usage of Raico profiles;
- Big dimensions of 9 ft 10 7/64 inch by 9 ft 10 7/64 inch

Outer pane: Fully tempered 10mm Low iron; Spacer: 20mm, Raico profile; Inner pane: Laminated and heat strengthened 66.4



UK | London | Swan 800 m²

- Super transparency

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Hi-end projects



Ireland | Dublin | South King Street 3, ZARA (Shopping complex) 1 300 m²

- Reglazing;
- Dynamic stepped facade

Outer pane: Laminated Heat Strengthened 5mm Eurofloat, /1,52 PVB Clear / 6mm Sun-Guard HP Neutral 60/40 #4; Spacer: 16mm Chromatech ULTRA Black,



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DC3362HD, Ar, U-profile; Inner pane: Laminated Heat Strengthened 55.4

Hi-end projects



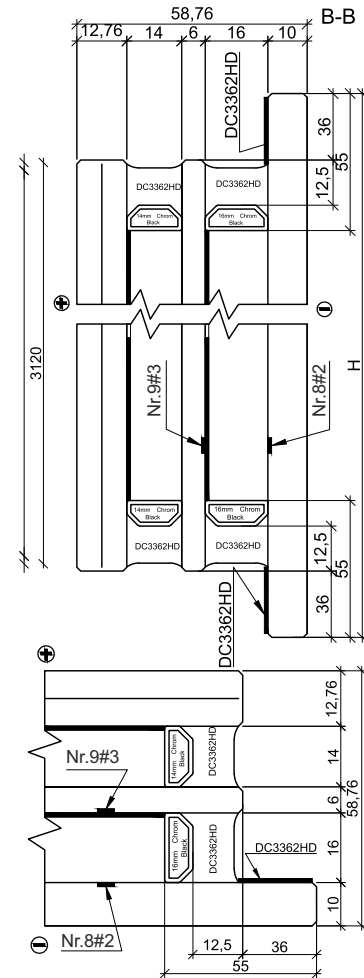
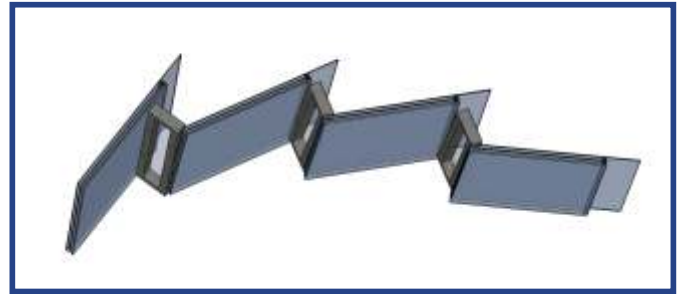
Latvia | Riga | Z-Towers 4 640 m²

- Silk printing on the step;
- Stepped edge on the outer pane up to 400mm;
- Total IGU thickness of 60mm ensures high level of acoustic insulation

Outer pane: Fully tempered: 10 mm Float Extra Clear Plus Glass-SILK, Spacer: 16 mm Argon ; Fully tempered 6 mm Sun-Guard HS SN 62/34 HT;



TECHNICAL DATA



Hi-end projects



Denmark | Helsingør | Danish Maritime Museum 1 119 m²

- Extra tempering flatness;
- Jumbo size IGUs;
- Won RIBA award in 2014;
- Glass fins, point fixed glass

Outer pane: 10mm HSSN 70/4IHT; Spacer: 15 mm, Argon; Inner pane: Laminated and tempered 66.4



Hi-end projects



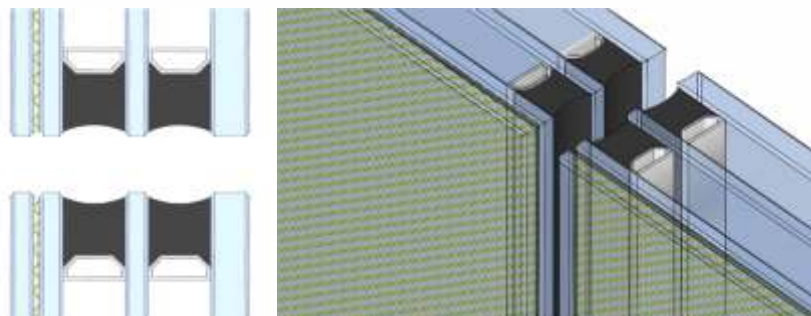
Iceland | Keflavik | Keflavik International Airport 850 m²

- Outstanding lamination quality of Sefar mesh ensured by usage of vacuum bags;
- Combination of two Sefar meshes: Aluminium and Copper

Outer pane: Laminated 55.4 with Sefar Mesh Alumium_260/55 and SGP foil; Spacer: 16mm, Argon; Inner pane: Tempered Solar Control



TECHNICAL DATA



Specialty projects

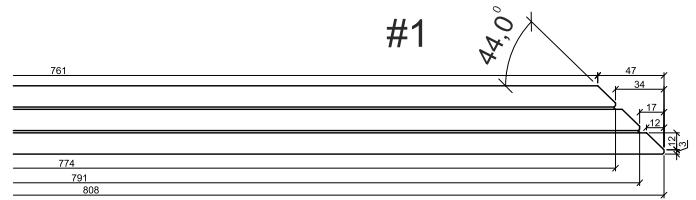
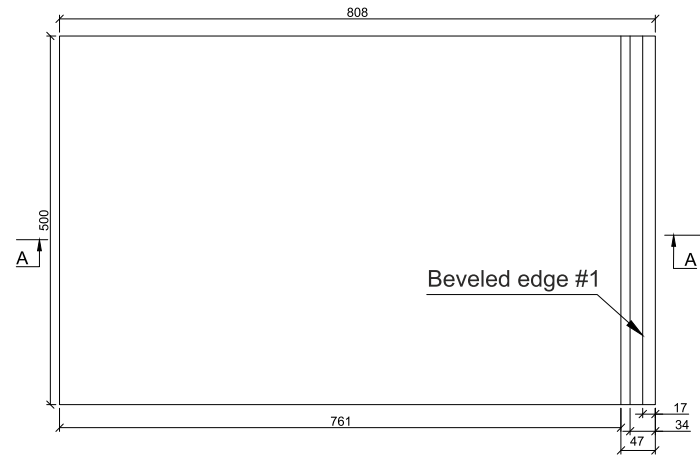
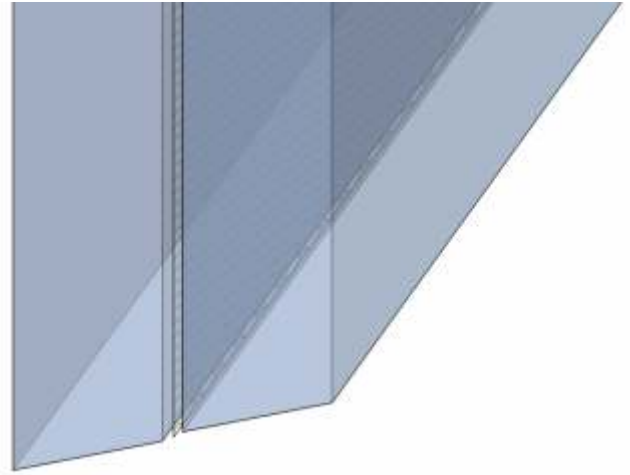


Ireland | Dun Laoghaire | New Public Library 1 589 m²

- Extra quality of bevelled edges;
- High requirements for tempering;
- Double sided Sefar Mesh used;
- Won RIBA award of Internation Excellence in 2016

Laminated and fully tempered glass with Sefar Gold Mesh coated both sides and SGP interlayer

TECHNICAL DATA



#2

Specialty projects



Republic of Belarus | Minsk | Belarusian Potash Company office 2 780 m²

- Complex shapes;
- High energy performance;
- Unique desing solution using Sefar mesh with customized printed red color

Outer pane: Laminated Fully tempered with HST 8 mm Low-iron/1.52 Sentry Glas_SEFAR AI 260/55 (Pantone 71 C)_1.52 Sentry Glas/ESG-H 6 mm SunGuard HS SN 70/37 HT;



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Spacer: 18 mm Thermix Argon; Inner pane: Fully tempered with HST 8mm Low E T

Specialty projects



Arab Emirates | Dubai | Dubai Opera House 9 500 m²

- Extra glass transparency;
- More than 580 different shapes;
- True waste glass coefficient calculation;
- First projects with both sided coated Antireflective glass in Architecture and Facades

Outer pane: Laminated and Heat strengthened low iron glass with Solar Control coating 88.4; Spacer: 18mm spacer and U-profiles; Inner pane:



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Heat Strengthened 8mm Antireflective Both sides coated

Specialty projects

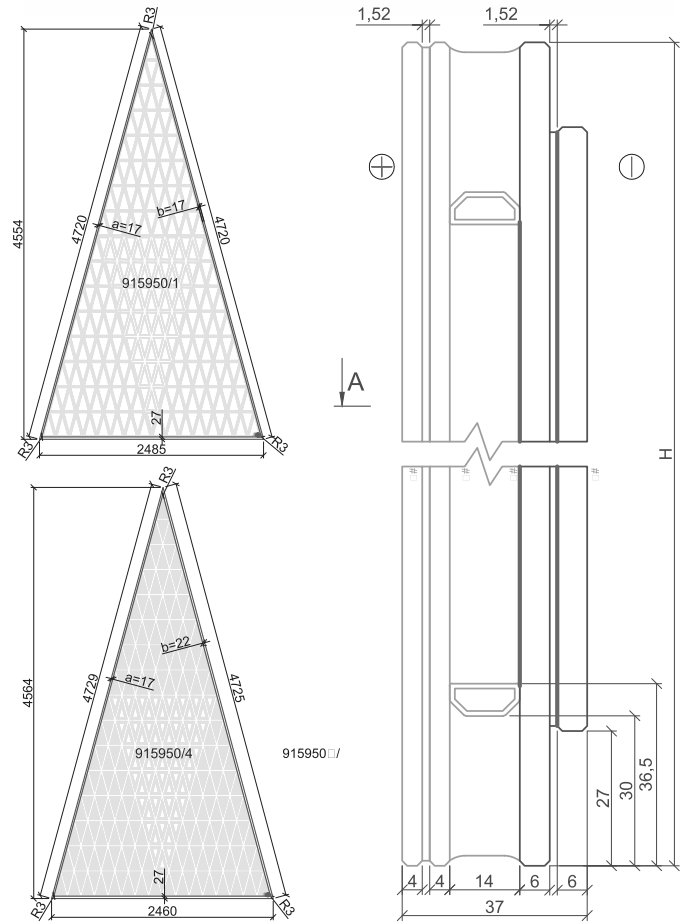
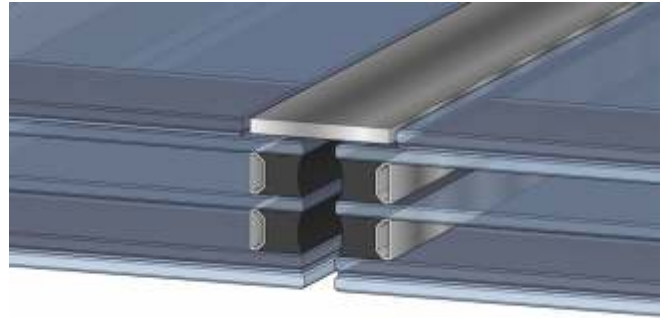


Saudi Arabia | Riyadh | Skywalks in KAFCO 47 477 m²

- More than 7000 triangular shaped units;
- SGP laminated;
True shape glass optimization;
- Solar control glass from AGC range;
- Customized packing solution;
Delivery by air

Outer pane: Laminated and heat strengthened 6 mm Silk Printed glass with Solar Control Glass; Spacer: 12 mm Argon; Inner pane: 8 mm Float

TECHNICAL DATA



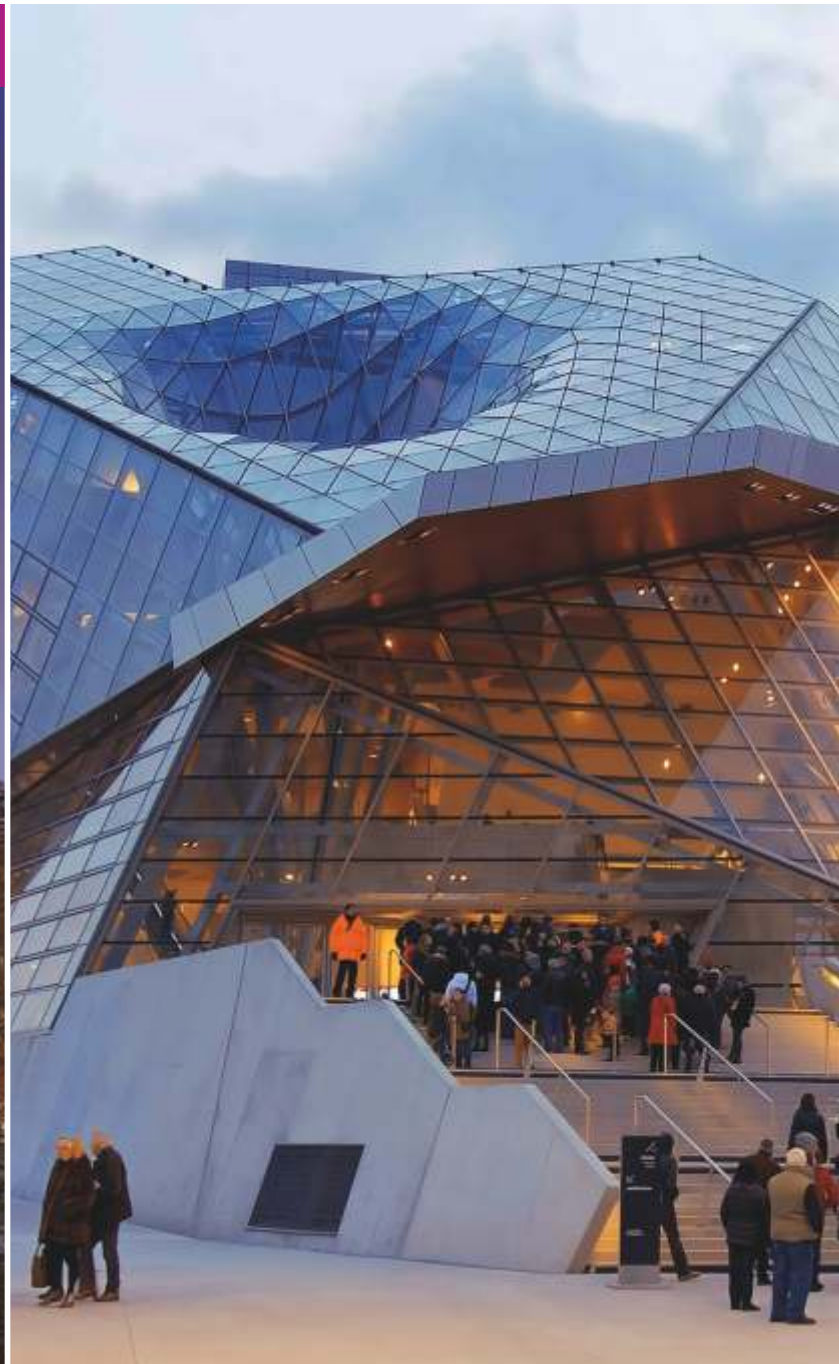
Specialty projects



France | Leon | Musee Des Confluences 150 m²

- Non-standart complex shaped units;
- Famous architect Jean Nouvel;
- Heatable glass with fully automatic Control system

Laminated fully tempered glass with HST 15mm Low Iron/1,52 PVB/6mm heatable/1,52 PVB/19mm Low Iron/1,52 PVB/19mm Low Iron



Specialty projects



Chile | Santiago | Bahai Temple 350 m²

- Gradientally printed shaped glass;
- 112 different shapes;
- Extra transparency due to low iron substrate

Laminated and heat strengthened glass with digital print 10.10.4.



New project



New York region | Private Residence 580 m²

- Used all coatings on Low iron substrate to ensure maximum Light transmission;
- Extra large dimensions of 9 ft 10 7/64 inch by 9 ft 10 7/64 inch and outstanding tempering quality

Outer pane: Tempered 6mm Low iron; Spacer: 14mm Aluminium, Grey silicone and grey butyle; Inner pane: Laminated and Heat strengthened 66.4



with SGP interlayer

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