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1 Tyitor 2020





#### Dear customers and friends,

As every year, at this time, Tvitec puts at your disposal the annual memory of the last fiscal exercise. A graphic analysis of the events that took place during 2019 in all of the company's areas. A period that reflects the path of growth, both in terms of income and of the rate of employment generation. Revenue reached 137 million euros, while our team now comprises 520 professionals who efficiently attend to our developing production lines.

It is worthwhile to analyze our trajectory. At Tvitec's flat glass processing plant we continue to evolve, both in terms of equipment and computer systems. We have completed one year working with the new management and production program, which has generated great advances in the information levels compared to previous stages.

In April of 2019 production began at the factory of the curved glass with remarkable success. The supply of glass to a variety of projects culminated in the full satisfaction of our partners. In fact, the commissioning of this factory has led Tvitec to be perceived by our customers as an increasingly solid and competent choice. Undoubtedly, one of our priority challenges, but not the only one. Our balance sheet in the last financial year has been very positive. We accomplish all our plans and objectives, especially a very important one: to be a reliable supplier, both in quality and service and in price.

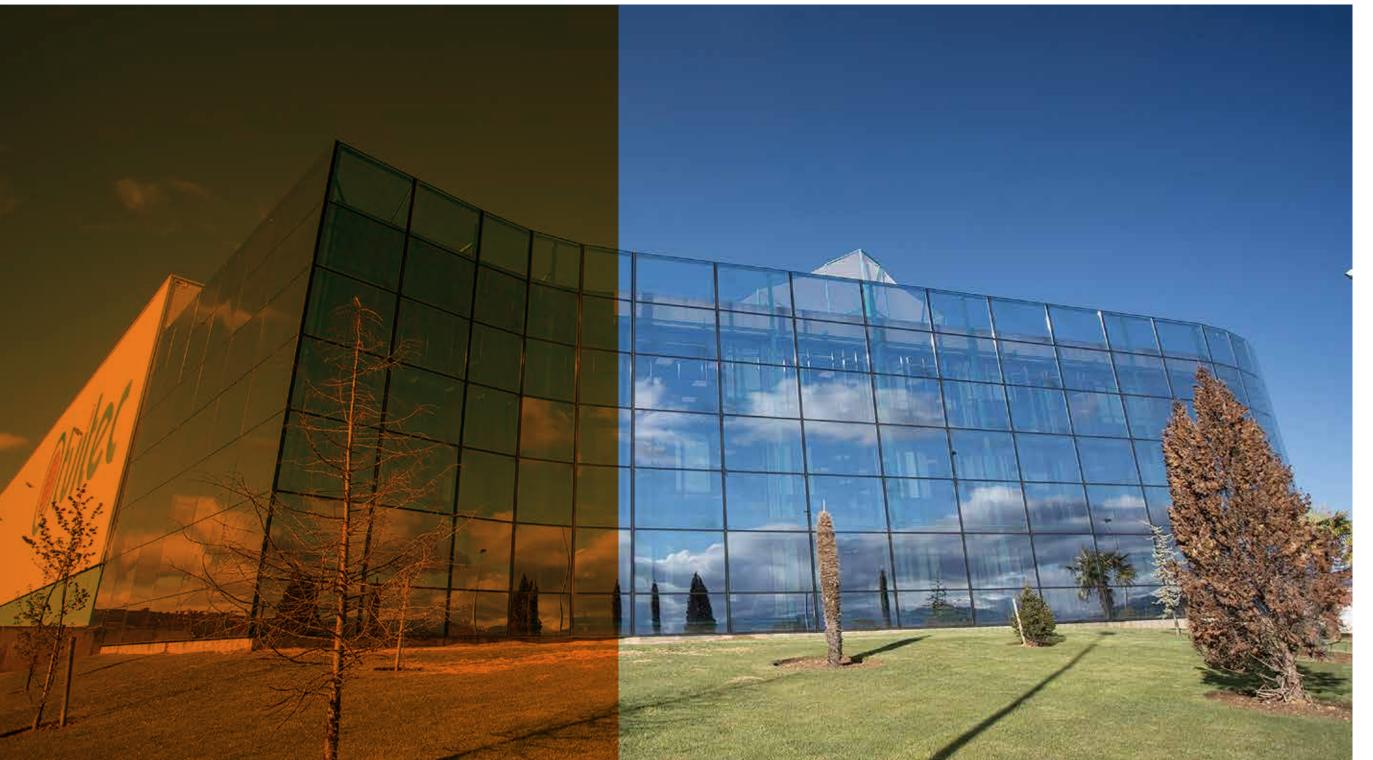
As of May, Tvitec managed to provide its products with a high level of regularity, without incurring certain delays that existed in the past. We combine on-time delivery with excellent quality, which will continue to rise in 2020 thanks to new control tools acquired by the company. These development priorities have been reinforced by a very balanced pricing policy that has placed Tvitec in a very competitive position in all the international markets in which we are active. In conclusion, our service policy, prices and deadlines have been welcomed, once again, with a high degree of satisfaction among our customers.

The large operators of the main markets are increasingly counting on our company, as they recognize the solvency of our products. Reason that fills us with pride and for which we thank you for your growing confidence.

The overall result would not have been possible without the effort of the men and women who make up our organization. A great team that has worked hard and in the right direction, that has sought progress non-stop and that has participated actively in the development of our project. After a year full of changes, it is necessary to recognize and thank the magnificent behavior of all our employees. Likewise, we need to thank, of course, the confidence that our customers have shown in the company, which has made possible the recruitment levels registered in 2019. And, finally, our gratitude also goes to the network of suppliers who have participated in the excellent evolution of this fiscal year with their support, quality and collaboration.

I would not want to say goodbye without conveying a message of enthusiasm and energy to continue evolving and improving each and every one of our areas of activity. For a constantly growing future!

T H E C O M P A N Y





Tvitec was founded in 2008 to become an international reference in the manufacture and innovation of architectural glass for buildings. Tvitec is the European leader in the processing of flat and curved glass. Both for interiors and exteriors and in the largest sizes available on the market. We have almost 200,000 sqm of industrial area in Cubillos del Sil (León-Spain), dedicated to the production of the most sophisticated glazing solutions in the building market.

Our high-performance products are present in some of the most emblematic constructions in the world.

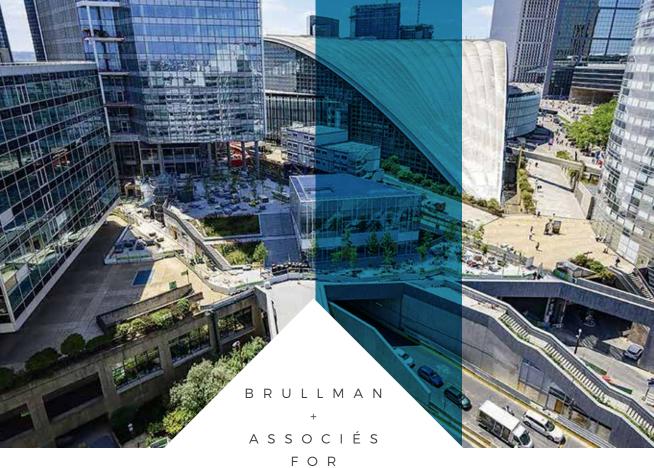






P R O J E C T S P R O J E C T S





G R O U P G O Y E R





# M A I N R E S U L T S

2 0 1 9

vitec ended 2019 with a new increase on the turnover of 123.5 million euros in 2018. With a rising turnover once again focused on the international market by 70%. In Spain, sales were almost 40 million and the company is still the absolute leader in the processing of high-performance glass.

## MARKETS

Tvitec's eco-efficient products are available on all five continents. Tvitec's brand covers buildings in more than 50 countries. It is remarkable the sustained growth and implementation in the United States and Canada, among other geographical areas. In its 11-year history, Tvitec has participated in more than 1,500 major projects.

# PROCESSING CAPACITY

Every year, Tvitec is capable of processing two million tons of glass into high-performance products due to its energy-saving, insulating, safety, acoustic and refined aesthetics.

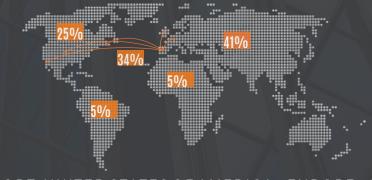
# **EMPLOYMENT**

Tvitec's different production facilities directly employ around 500 highly professional employees in the diverse processing areas. The company relies on specialized technicians to advise the customer from the very beginning of the project to the last level of execution of the glazing.

# **GLASS PROJECTS** 2010-2019 1.500 PROJECTS 2010 2013 2016 2017 2018 2019

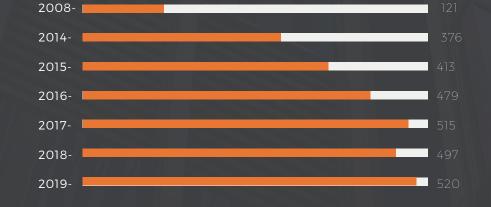
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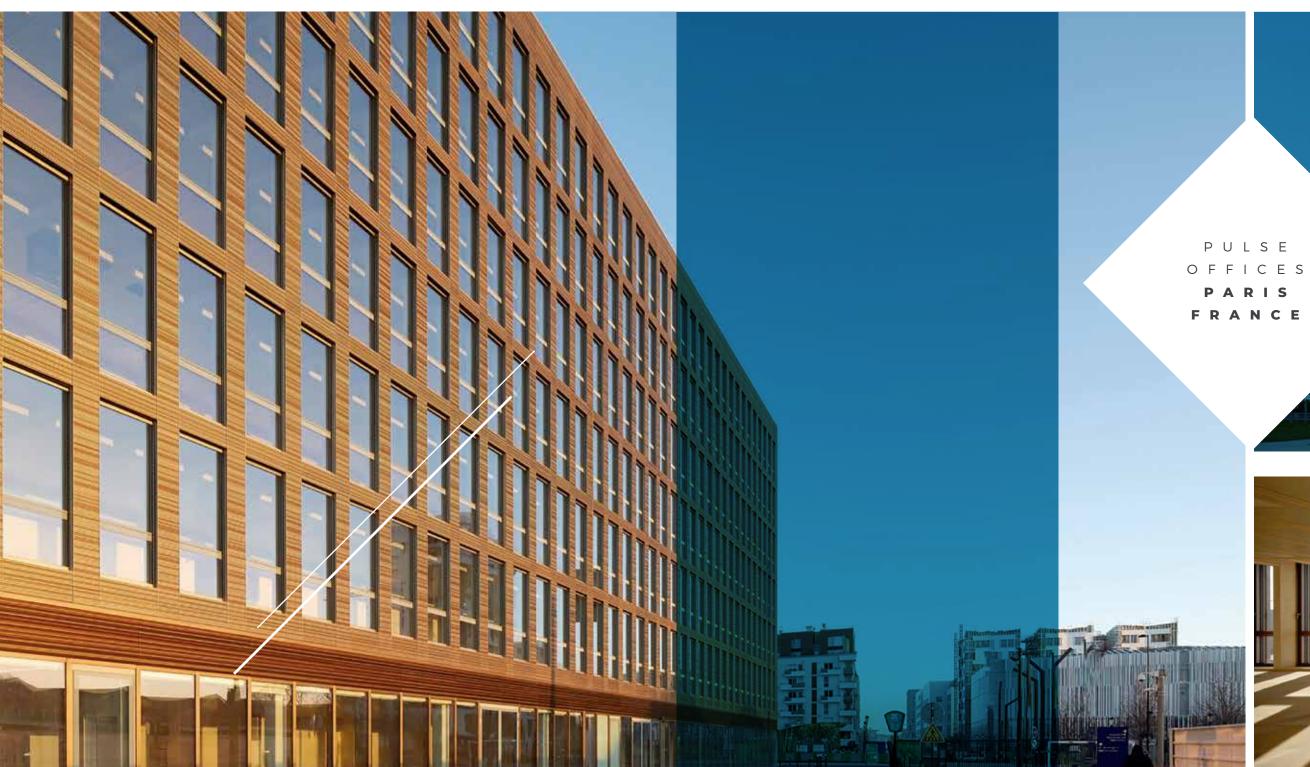










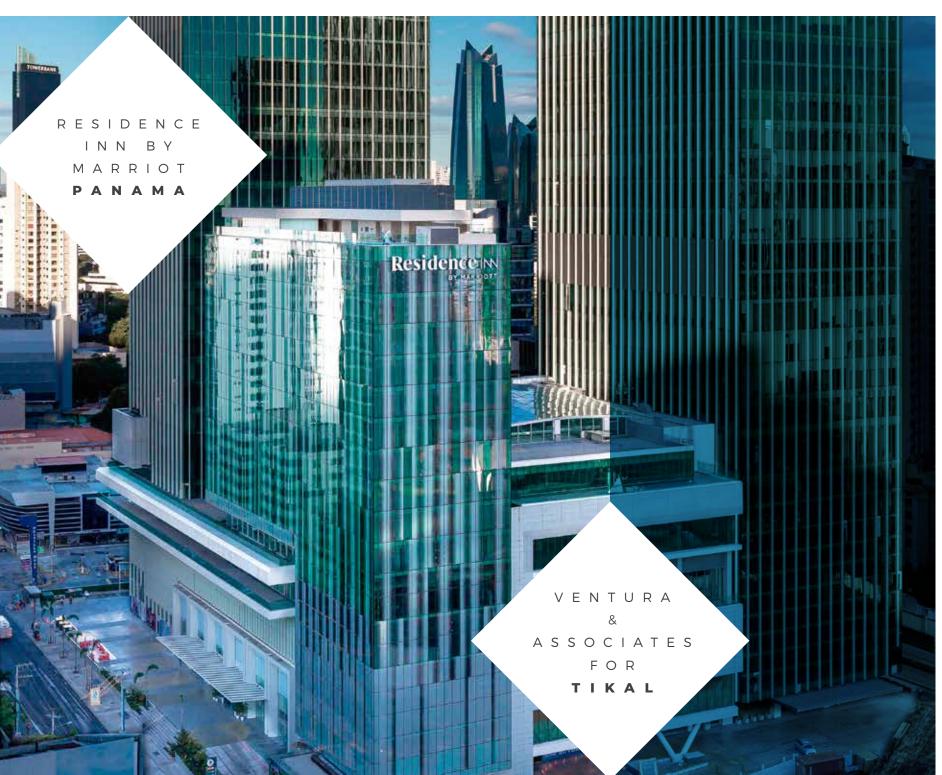












P R O J E C T S

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CABARAS BARAS
(LEON), 18.000 M.

CHRILLOS BILLET
(LEON), 17.7250 M.

(LEON), 17.7250 M.

(ALICANTE), 5.000 M.

(ALICANTE), 5.000 M.

(ALICANTE), 5.000 M.

SAO PAULO (BRAZIL).

The international expansion of Tvitec's high performance glass continues unstoppable. Our solutions of double and triple glazing with smart, selective and solar control coatings laminated and tempered safety glasses as well as screen printed — are present in emblematic construction projects in more than 50 countries on five continents.

Eight factories combine Tvitec's great manufacture potential of high-performance glass and building façades in order to offer our customers, the best quality and competitiveness ratio of the market.

> THESE ARE THE COUNTRIES WHERE IT IS POSSIBLE TO FIND SPECIAL GLASS PRODUCTS FROM TVITEC

# **EUROPA**

Spain, United Kingdom, France, Italv. Germany. Sweden. Austria, Holland, Denmark, Romania, Norway, Switzerland, Ireland, Belgium, Poland, Ukraine, Portugal



CABAÑAS RARAS (LEÓN), 18.000 M.

CUBILLOS DEL SIL (LEÓN), 117.000 M.

OPORTO (PORTUGAL), 15.000 M.

LAS PALMAS (CANARY ISLANDS) 6.226.

# **AMERICA**

USA. Canada. Brazil. Mexico. Chile, Paraguay, Colombia, Dominican Republic, Panama, Argentina, Cuba, Bahamas, Guatemala, Cavman Islands.



# **AFRICA**

Morocco, Algeria, Angola, Mauritania, Gabon



# ASIA / MIDDLE **EAST**

Qatar, Saudi Arabia, Lebanon, Dubai, Azerbaijan, Abu Dhabi, Israel, Lebanon, Egypt, Hong Kong.

**OCEANIA** Australia, Philippines

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MANUFACTURING FACILITIES MANUFACTURING FACILITIES





# HIGH TECHNOLOGY EQUIPMENT

Tvitec offers its clients the most advanced technology in the market for the processing of building high performance glass. In its factories Tvitec has fully automated equipment to complete the processes in all its production lines.

Tvitec innovates in the development of the machinery along with the main manufacturers of the sector to carry out large volume projects with agility and within the deadlines to provide high quality results in the final product.

11 SILK-SCREEN PRINTING 1 1 Digital Line. 12 x 3.21 m. 2 Conventional Lines. 5 x 2.8 M – 6 x 3.21 m 1 Roller for opacified. 6 x 3.21 m. TEMPERING FURNACES 4 Tempering furnaces. 4.8 x 2.8 M - 6 x 12 m 3.21 m 1 Double Chamber furnace. 6 X 3.21 M. 2 HST (Heat Soak Test)  $\bigcirc \bigcirc \bigcirc$ LAMINATING LINES 3 glass laminating lines. 4.2 x 2.6 m - 10 x 3.21 m. 1 Vacuum cage. 6 x 2.15 m 3 Autoclaves. 4.5 x 3.3 m - 14 x 3.3 m.

DOUBLE-GLAZING.

INSULATING GLASS.

7 double-glazed lines.

Up to 12 x 3.21 m.

PLANT OF VILLENA (ALICANTE)

2 monolithic tables. 6 x 3.21 m

1 Mixed monolithic-laminate 6 x 3.21 m | 4.6 x 3.21 m

2 Laminate tables. 3.8 x 3.21 m.

MANUFACTURE

Bilateral 4.5 x 2.5 m. | KSR sander 5 x 2.5 m. | CNC 2.9 X 2.1 m.

2 Rectilinear 3 x 3 - 6 x 3.21 / Water Jet machine 6 x 3.21 m.

Vertical Arrester / Drill 4.5 x 2.5 m.

SILK-SCREEN-PRINTING

Roller painted line.

TEMPERED

1 Tempering Furnace. 6 x 2.8 m.

LAMINATION

Laminating line 6 x 2.6 | 1 autoclave 6 x 2.6 m.

DOUBLE GLAZING

3 Lines. 3.5 x 2.5 – 5 x 3 – 6 x 2.7 m

MATT FINISH

1 Sand Blaster. 2.8 x 1.2 m - 2.8 x 2.4 m.

#### **TVITEC CURVED GLASS.** PONFERRADA

CUT

1 monolithic table. 6 x 3.21 m.

1 Laminated Table. 6 x 3.21 m

MANUFACTURE

2 Bilaterals 2.5X3 - 6.2 x 2.8 m

Water jet machine

1 Drill Machine. 6 x 3.21 m

1 Rectilinear

FLAT GLASS

SILK-SCREEN PRINTING

1 Roller line. 4 x 2.8 m.

2 Furnaces. 3 x 1.5 - 4.5 X 2.8 M.

1 Double Chamber Gravitational furnace 12 x 3.21 m.

1 Triple Chamber Gravitational Furnace 4.5 x 2.8 M.

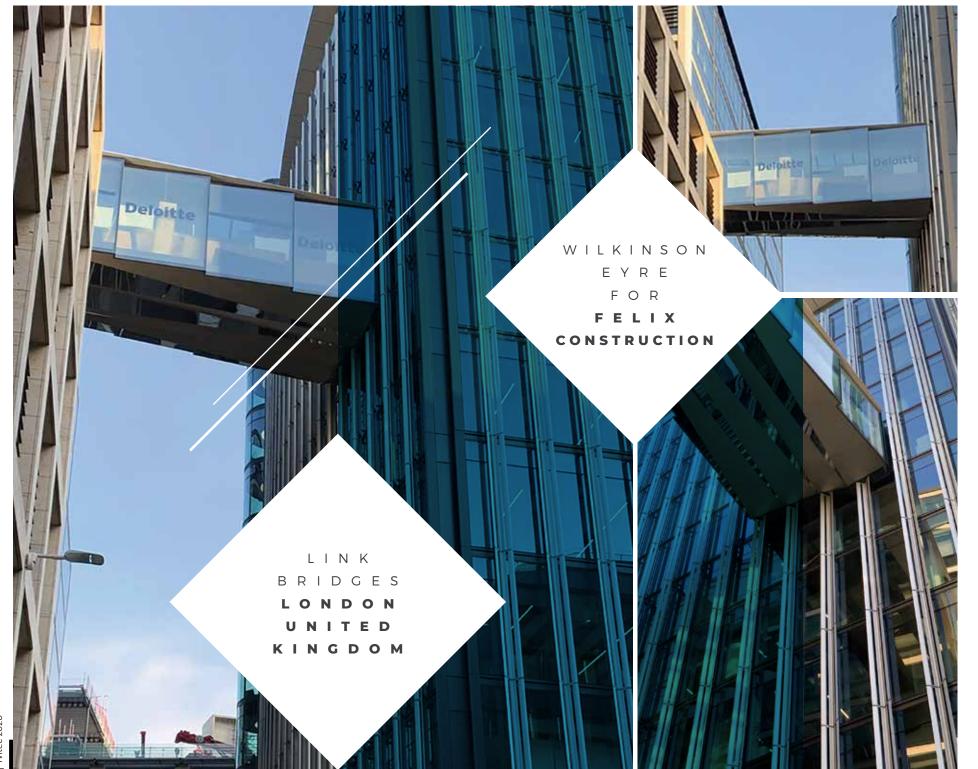
2 Convection Furnaces. Cross and Length Bending up to 6 x 3.21 m.

LAMINATED AND HST FURNACES (Curved and Flat glass)

> 1 Double Chamber Laminated furnace 12\*3.21 m.

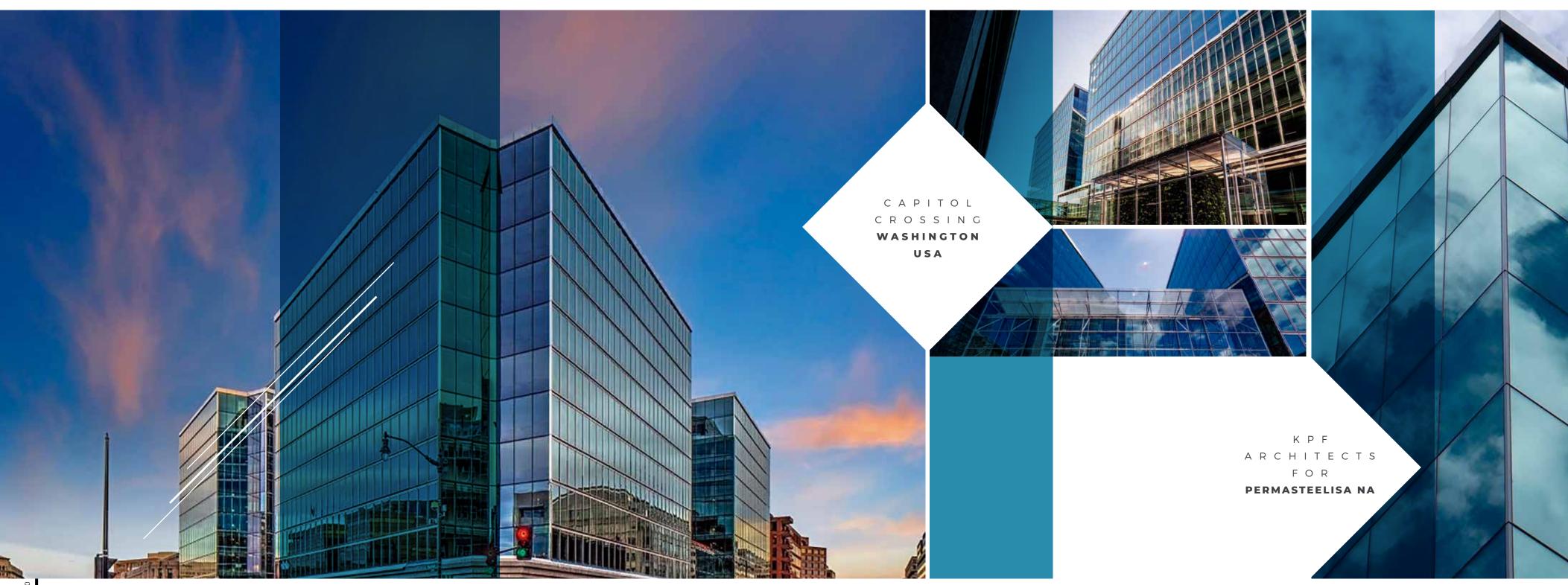
1 Double Chamber HST furnace 12\*3.21 m.

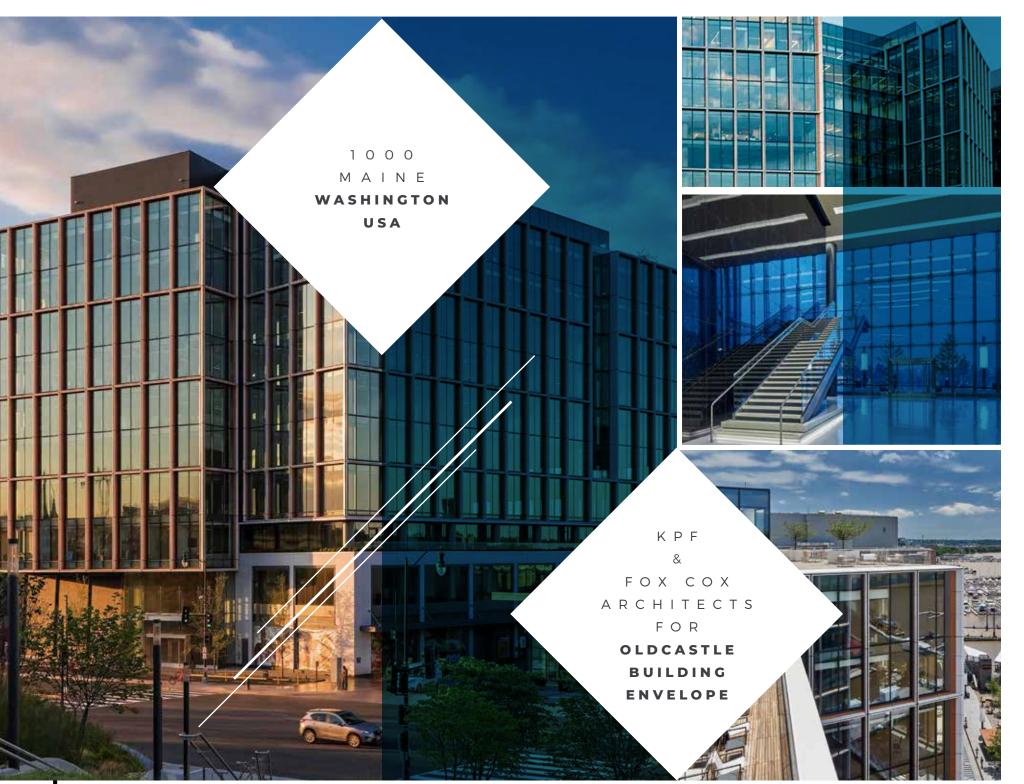






P R O J E C T S P R O J E C T S







PRODUCTS PRODUCTS





LAMINATED

SAFETY

GLASS

LAMISTAR®

R O D U C T S

The laminated glass LAMISTAR®, is formed by two or more glass panes joined by one or more interlayers.

A laminated glass is a safety glass, because in case of breakage of one of the glass panels, the entire makeup will retain its structure, thus avoiding detachment of shards and maintaining structural integrity until it can be replaced. Different possibilities: Laminated with colorless, colorful, acoustic or structured polyvinyl butyral (PVB), and with ionoplast interlayers. A laminated glass also improves the filtering out of ultraviolet radiation by preventing the passage of harmful UV rays by 99%. This helps to reduce photodegradation (of furniture, curtains, carpentry), glare and improves comfort inside the room, reducing the passage of heat through the windows, maintaining

its transparency.



#### SERVICES

- It improves comfort by reducing UV radiation and corrects temperature differences between sunny and shady areas on the windows.
- It improves visibility by avoiding glare.
- High light transmission with colorless interlayers.
- Great variety in the range of colors to achieve a certain aesthetic result.
- Laminated safety glass.



General and safety glazing.

Office and accommodation buildings.

Shop windows, concessionaires, commercial premises.

Elements such as windows, handrails,

skylights, glass partitions or showcases.



## PRESTACIONES

- Glasses with the necessary properties to withstand the impact of intentional attacks\* in accordance with the UNE EN 356 standard.
- Glasses exposed to receive the impact of a person tested according to the safety of use by virtue of UNE EN 12600\*\*.
- Anti-bullet resistance pursuant to UNE EN 1063.
- \* Services against aggression resulting from attacks by throwing an object, vandalism or personal aggression.
- \*\* The Technical Building Code, in its safety document for usage, SUA 2, stipulates a performance classification of X(Y)Z according to the UNE 12600 standard for fragile elements and areas at risk of impact.

#### LAMINATED GLASS WITH PVB. SAFETY CLASSIFICATIONS

Safety category	EN 12600	Lamistar® 33.1 y 44.1 : 2(B)2		Other laminate	ed glass: 1(B)1	
Anti-aggression resistance	EN 356	Lamistar® 5.5/2: P2A	6.6/4: P4A	4.4/6: P5A	8.8/6: P6A	10.10.3/6: P7B
Anti-bullet resistance	EN 1063	Lamistar® 19 mm: BR1 S, 24 mm: BR2 S , 29 mm BR3 S , 43 mm BR4 S , 46 mm BR5 S, 62 mm BR6 S				

The choice of glass and its correct solution can be decisive to guarantee the durability and success of a project. The product range mentioned below is based on glass subjected to heat treatment that augments its thermal and structural integrity. Heat strengthened, tempered or tempered with follow-up treatment of HST.



#### TYPES

Duritec® HS is heat-strengthened glass, twice as strong as annealed glass. They undergo a heating and cooling process that increases their thermal and structural integrity. It is not considered a safety product, but it has an additional resistance to annealing. It complies with the requirements of the EN 1863 standard. Intended for applications which do not necessarily require the use of safety glass. Duritec® tempered glass, four times stronger than annealed glass, and which, in the event of breakage\*, breaks down into small, non-cutting fragments.

This makes it a transformation known as "safety glass" according to the requirements of the UNE EN 12150 standard.

\* To reduce the risk of spontaneous breakage of tempered glass, it is recommended to carry out the Heat Soak Test (HST), regulated by the UNE EN 14179 standard.



## SAFETY GLASS

Duritec® are safety glasses with the properties necessary to withstand the impact of a person's intentional attacks pursuant to the UNE EN 12600 standard.

#### SAFETY CLASSIFICATION

UNE EN 12600 | Duritec® Screen printing 50%:1(C)3 | Other glasses\* Duritec®:1(C)1

\* minimum thickness 4 mm

Duritec® and Duritec® HS can be combined with more glass panes. Once it is transformed into laminated glass, it becomes "safety glass". More information on the Lamistar® data sheet.



Large glazing or high traffic locations. General and safety glazing (only Duritec®).

Sliding doors.

Building entrances.

Partition walls and internal divisions.

Other uses requiring greater strength and safety.

RESISTANCE

DURITEC® ANDDURITEC® H S ®



The screen-printed glass offers designers a wide range of possibilities. It improves functionality and aesthetics. It stimulates creativity with drawings, patterns and colors, generating unique solutions which maintain the ability to

Services: It decreases the entry of light and solar energy too and thus reduces the solar factor (g). More privacy. Possibility to integrate it into a laminated glass, or

> FULL-COLOR DESIGNS SCREEN-PRINTED

> > GLASS

There is also the possibility of making them

Applicable to achieve an opacified glass with a 100%

It is the perfect solution for the reproduction of images.

Designed to place the design on the outside face of the glazing, capable of resisting the inclement weather. DUAL

Achieve the overlap of two points, one with the desired

To ensure an efficient fusion between the enamel and the glass surface, it must be heat treated, whether be

If tempered, it will confer it the maximum safety category according to UNE EN 12600 of 1(C)1. For

50% and of 1(C)3, for a larger surface area.

Acoustic glazing protects inhabited spaces against annoying outside noise. Nowadays, this is one of the main priorities of architects and designers.

Akustex® improves comfort in spaces thanks to its sound attenuation capabilities. Acoustic insulating glass blends transparency with noise mitigation. The process for achieving acoustic glazing is simple:

- Either through two glasses of different thickness (asymmetry).
- Or, the most effective way, with a laminated glass made up of glasses joined by a colorless-and-acoustic type polyvinyl butyral (PVB) film.

Akustex® laminated safety glass has the added advantage of being a safety glass. And as a laminated glass, it stops almost 100% of the sun's ultraviolet (UV) radiation.



# SERVICES

- It is in turn a Lamistar® safety glass
- It improves the acoustic comfort by reducing sound transmission through the glazing.
- It blocks the UV radiation and avoids the discoloration of goods, curtains, woods and furniture.
- It also improves thermal comfort, when assembled in insulating glass units. Its properties can be combined with those of the Neutralux and Solarlux products.
- It complies with the soundproofing requirement of the Technical Building Code (CTE, for its Spanish initials) in its section DB-HR [Basic Document on Protection against Noise; H attachment



- General insulation and with acoustic barrier.
- Residential or hospital areas.
- Cultural, administrative or educational areas.
- Urban or high-traffic noise environments or airports

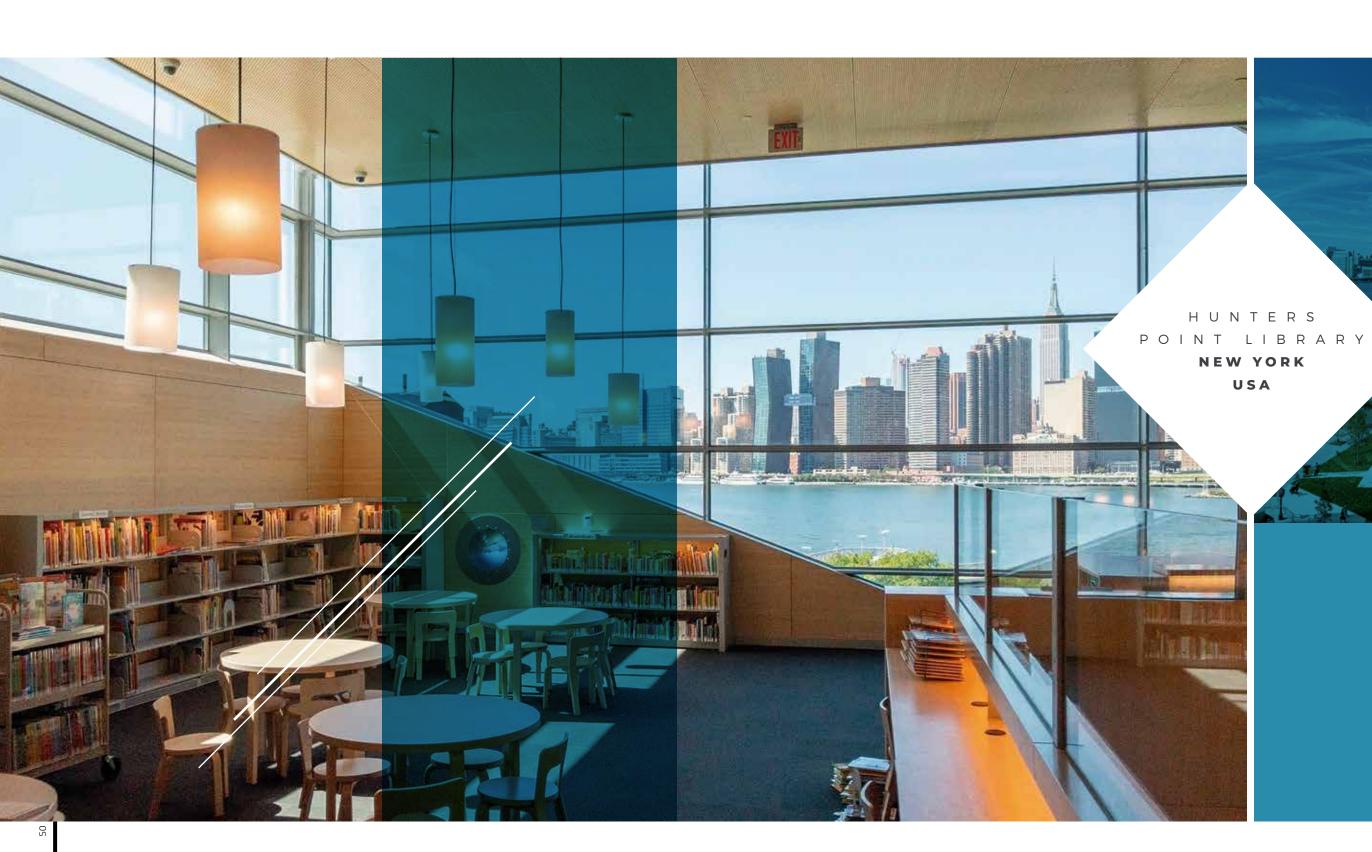
REFERENCE SOUND	ABSORPTIONS					
COMPOSITION (DGU)		4/C8/4	6 / C 16 Ar / 44.2 (ac)	44.2 / C 18 Ar / 44.2 (ac)	64.1(ac) / C 18 / 66.1 (ac)	66.1 (ac)/ C18 Ar / 88.1 (ac)
Acoustic performance	dD(A)	28	42	45	48	52
Pink noise insulation	Rw + C (dB)	0	-3	-2	-1	-1
Traffic noise insulation	Rw + Ctr (dB)	-2	-7	-8	-6	-5

All measurements in mm. Ar= argon. Direct airborne acoustic insulation index, Rw (dB) and spectral adaptation terms C (pink) and Ctr (traffic), Ac = acoustic PVB

ACOUSTIC LAMINATED GLASS

AKUSTEX®

P R O J E C T S P R O J E C T S

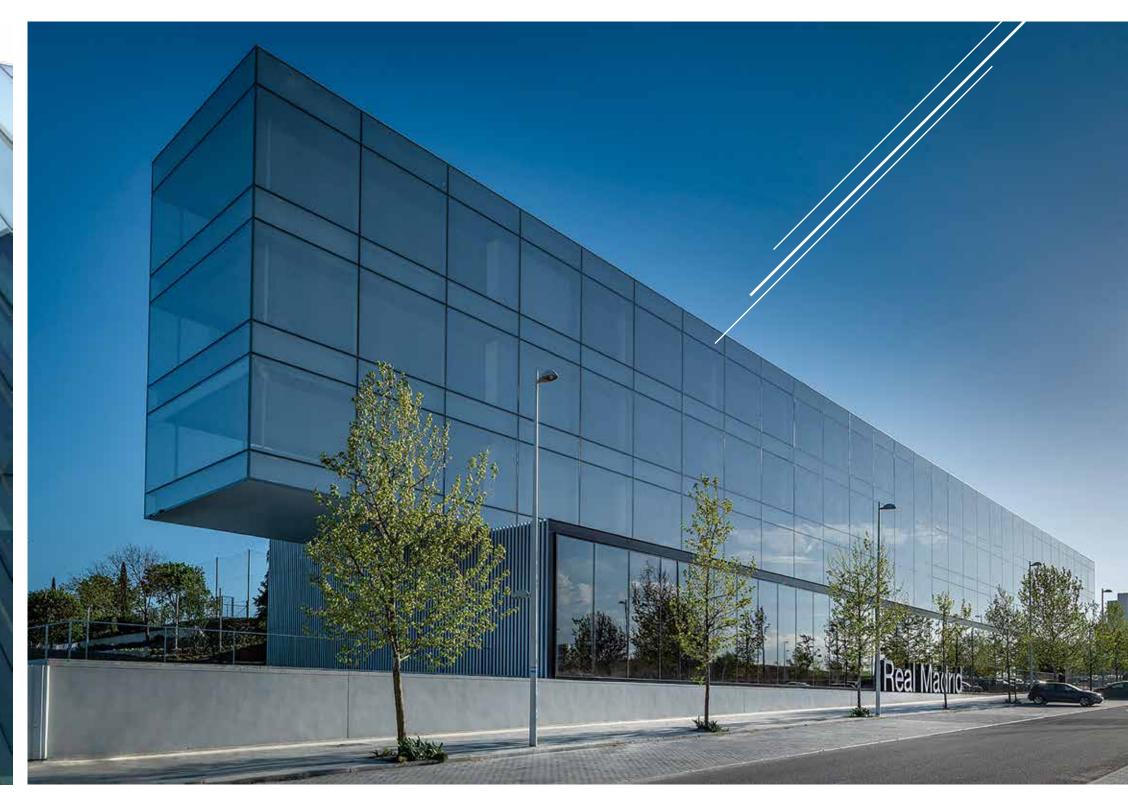


STEVEN
HOLL
ARCHITECTS
FOR
CHERRY
HILL
GLASS



SPECIAL PRODUCTS SPECIAL PRODUCTS





2,

SPECIAL PRODUCTS SPECIAL PRODUCTS















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SPECIAL PRODUCTS SPECIAL PRODUCTS



The boundaries between the interior and exterior of buildings disappear thanks to the curved glass. Curved glass becomes an essential element in today's new buildings. Tvitec removes the limitations when it comes to building with shapes. It is an innovative product which enables glass used in construction to using state-of-the-art technology. We provide comprehensive solutions. It is possible to build with a wide range of combinations and geometric solutions. CURVYIS At the same time, smart layer BEAUTIFUL treatment can be incorporated. CURVED

GLASS

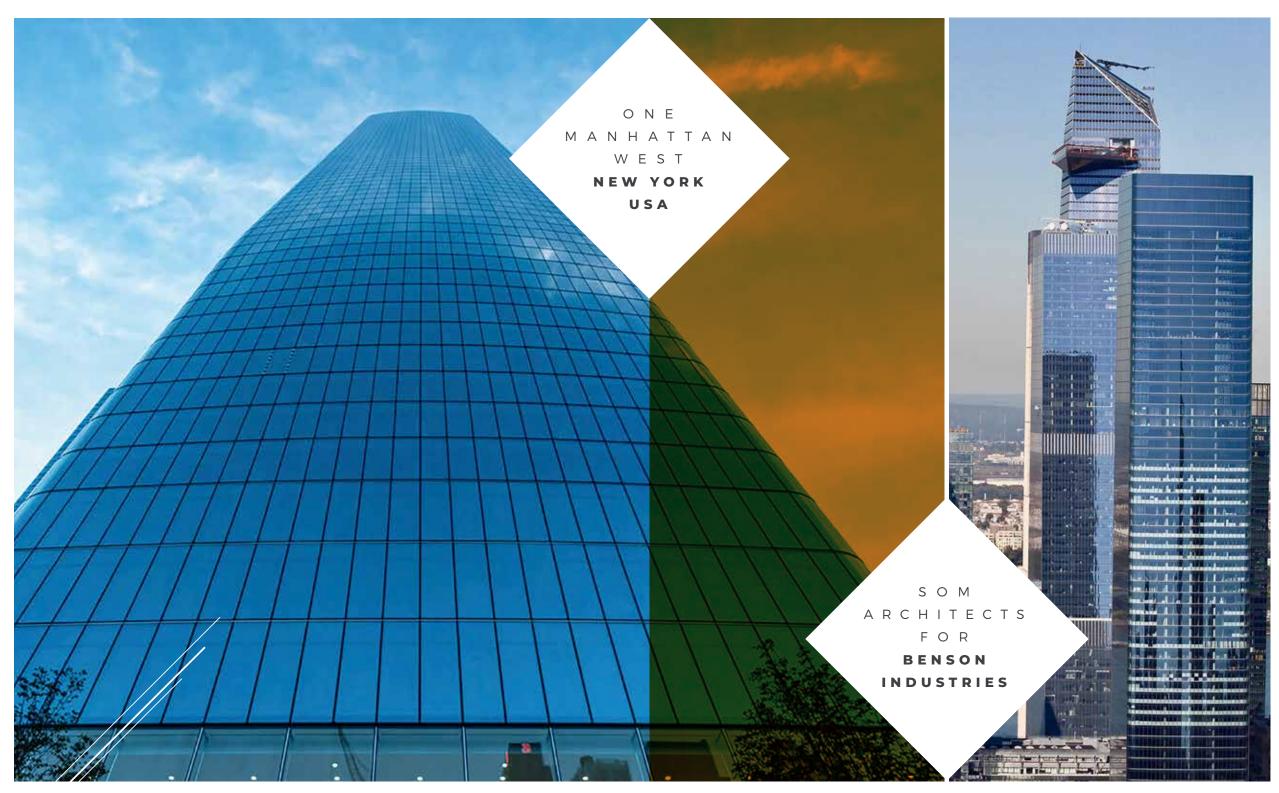
- Ability to manufacture insulating, safety laminated, acoustic and screen-printed glass products.
- With finishes that include the possibility of incorporating selective or solar control coatings.
- Possibility to reach up to 12 meters in length and radii as
- Our automated processes speed up project

**CURVED ANNEALED GLASS** 

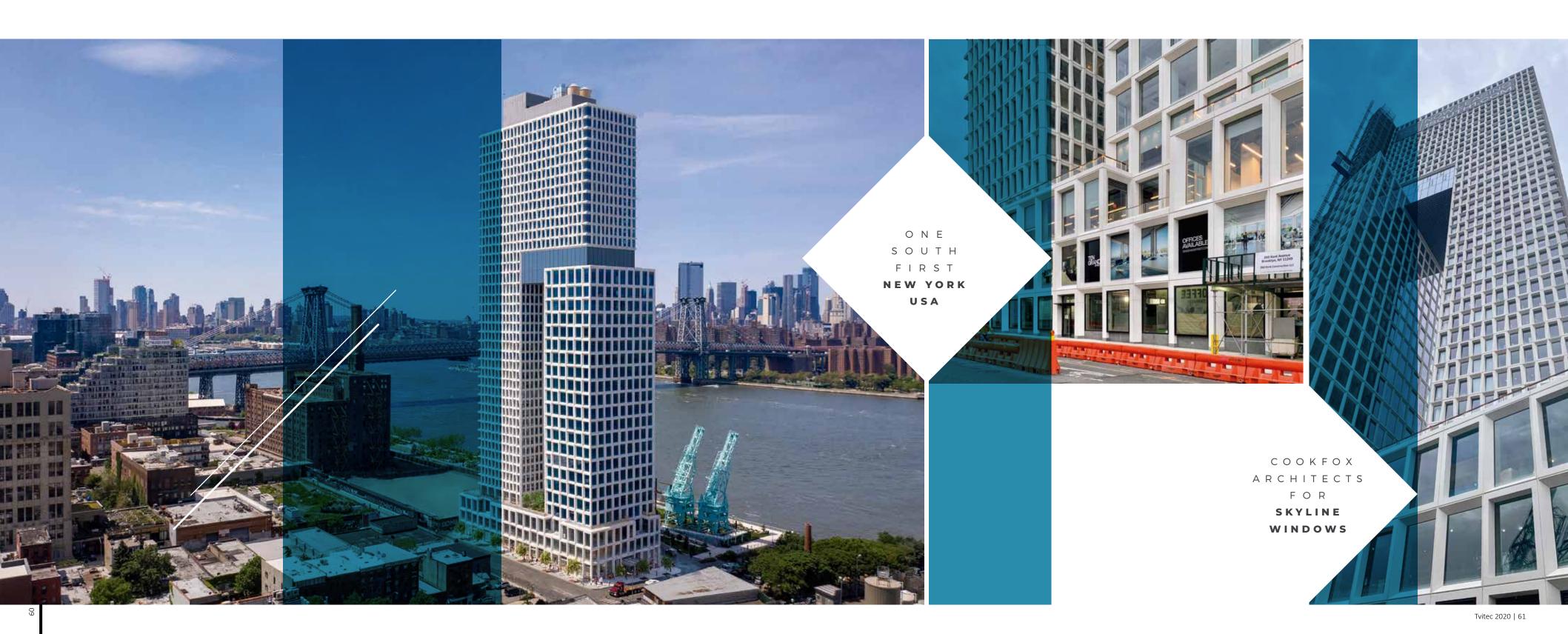
Of a very high optical quality, ideal for complex shapes. TEMPERED GLASS | HEAT-STRENGTHENED GLASS

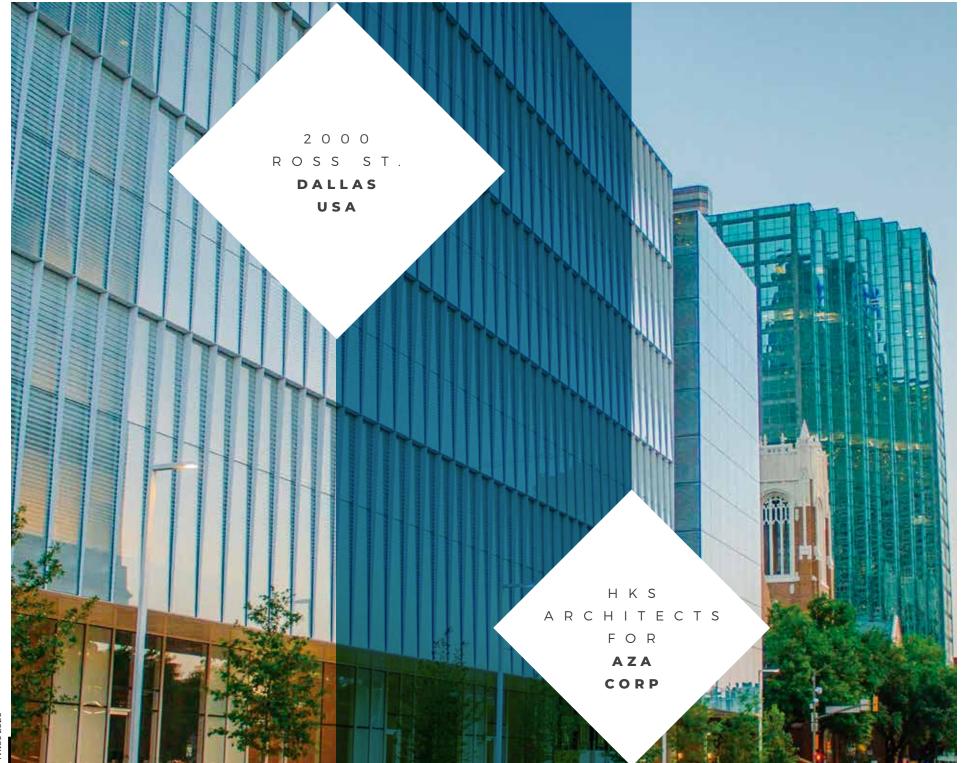
With a state-of-the-art optical quality, accurate in terms of finishes and if tempered, it would become safety glass.

In the world of curved glass, you have to think ahead and find the best solution for each project. Therefore, we have a technical department that will help you finish your project successfully.



PROJECTS PROJECTS

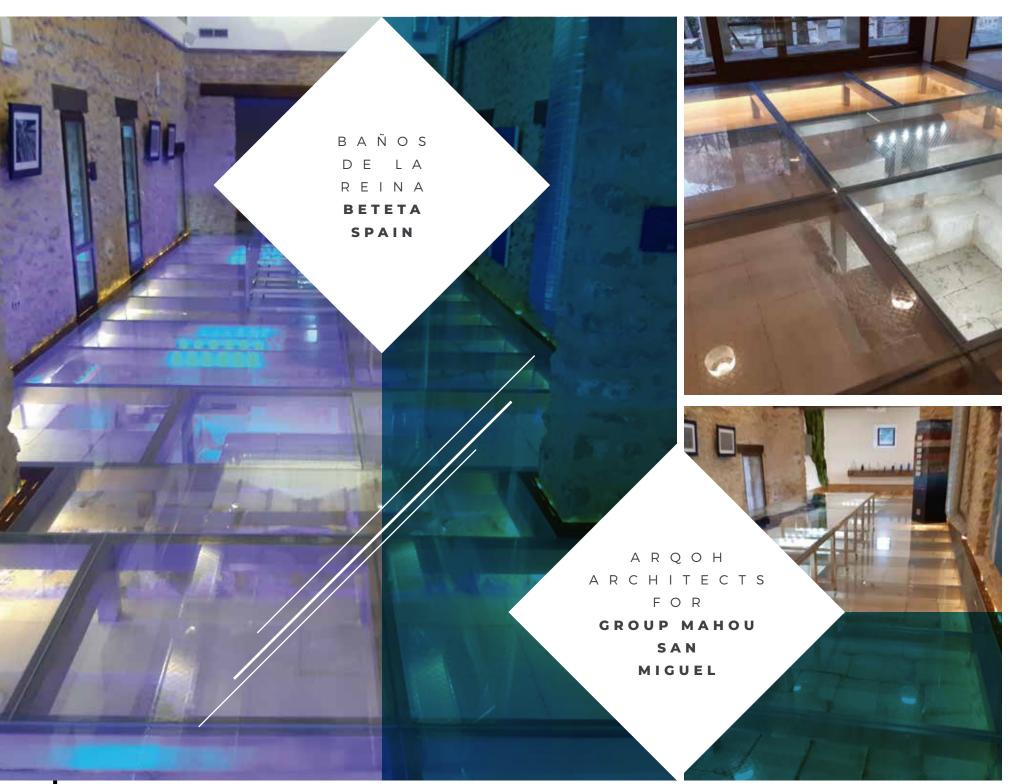






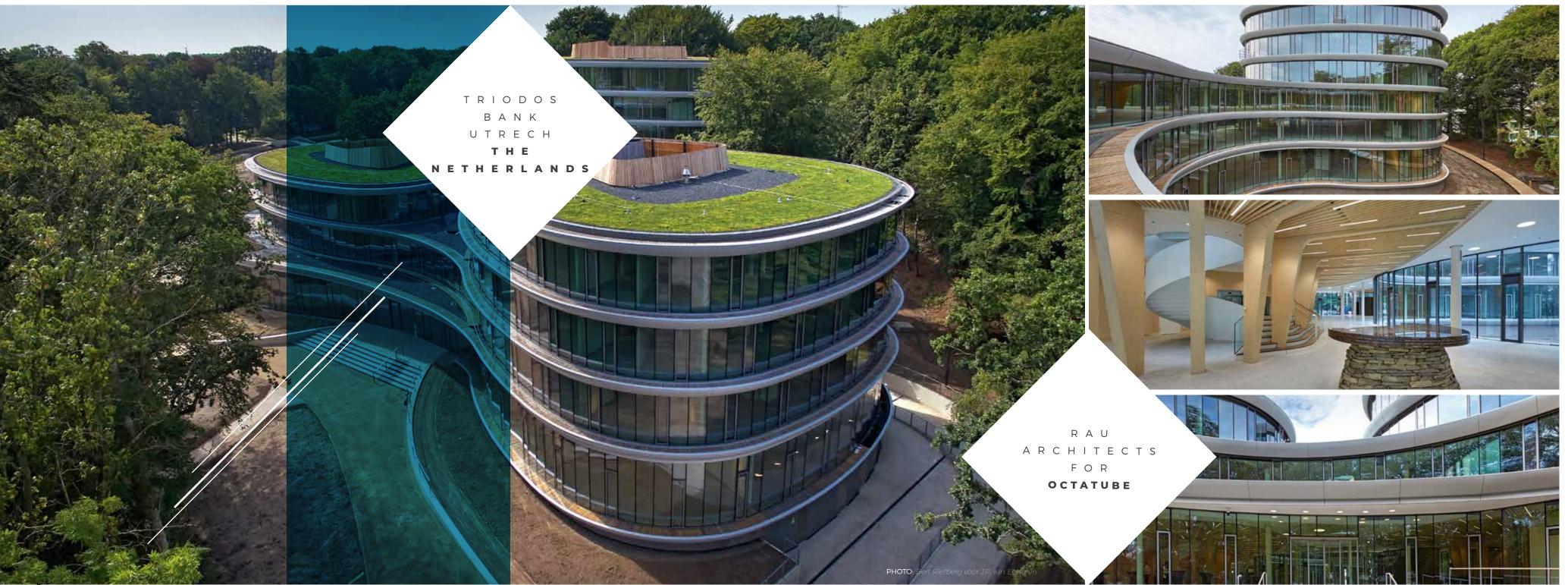


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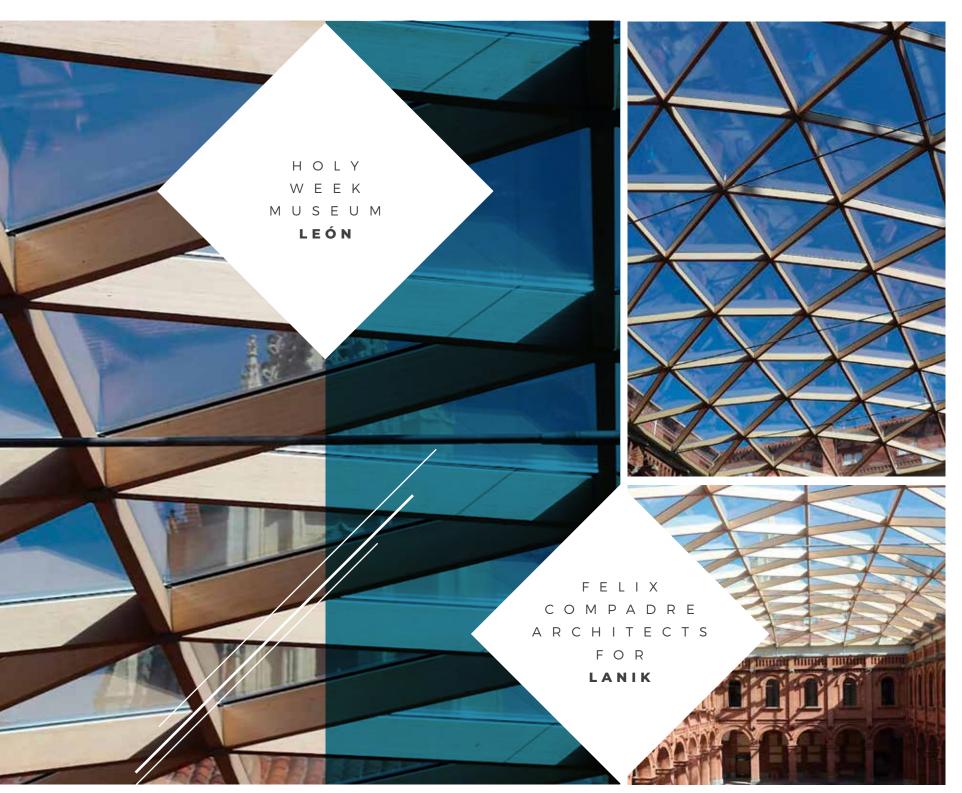


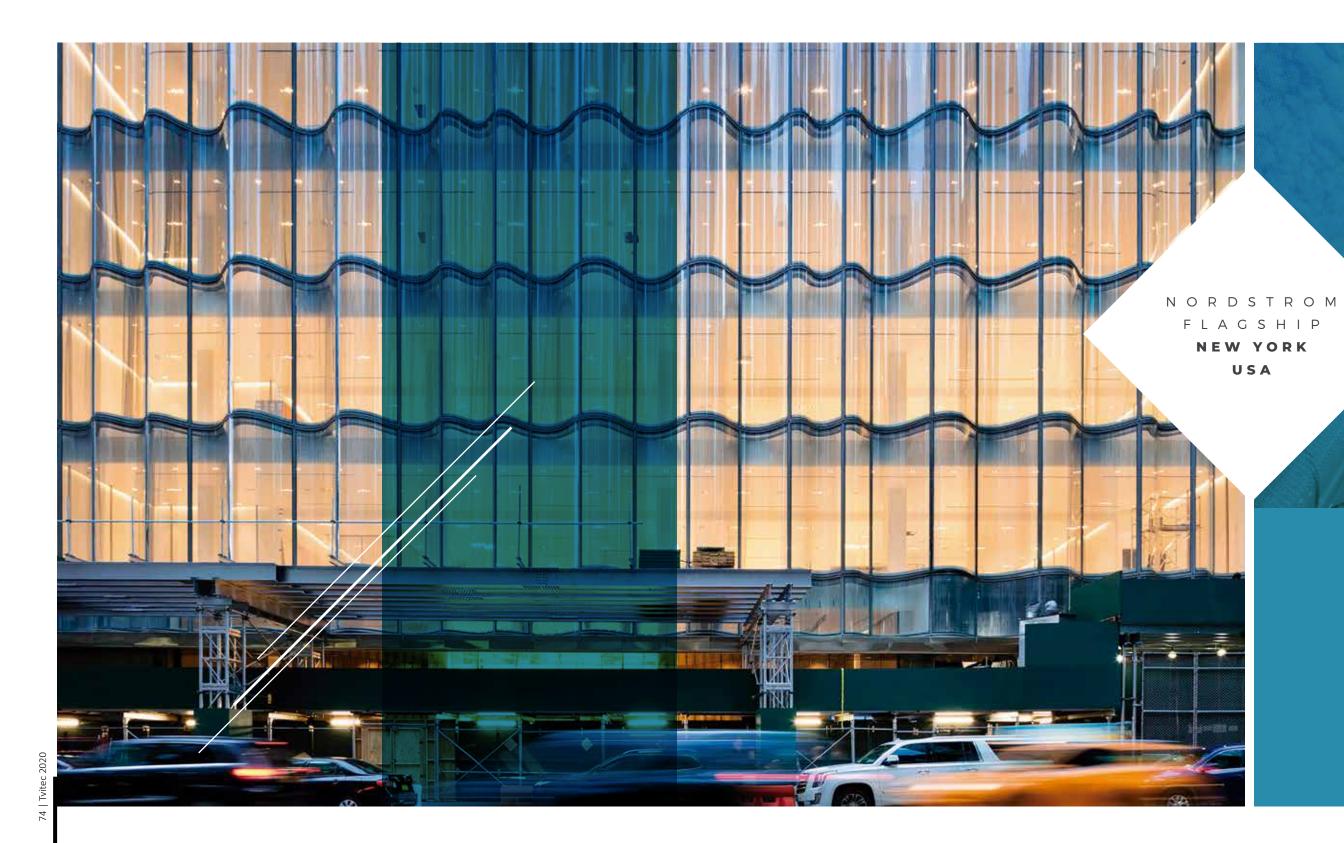


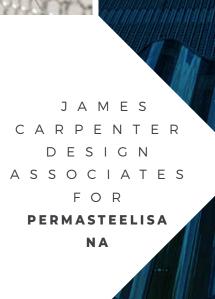


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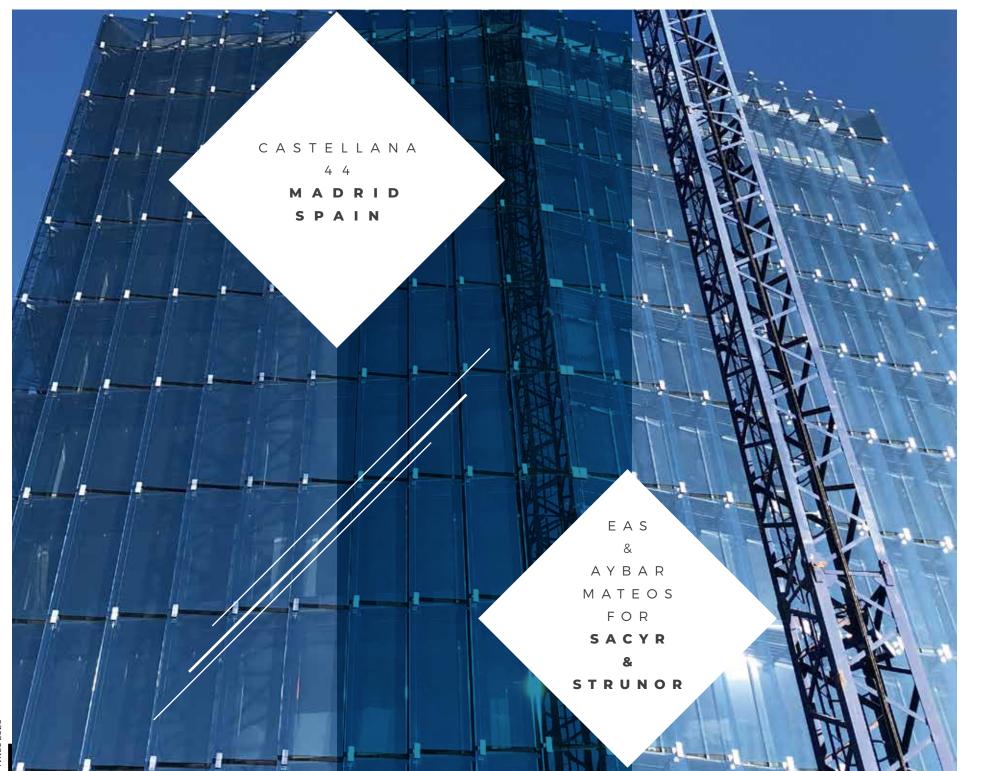


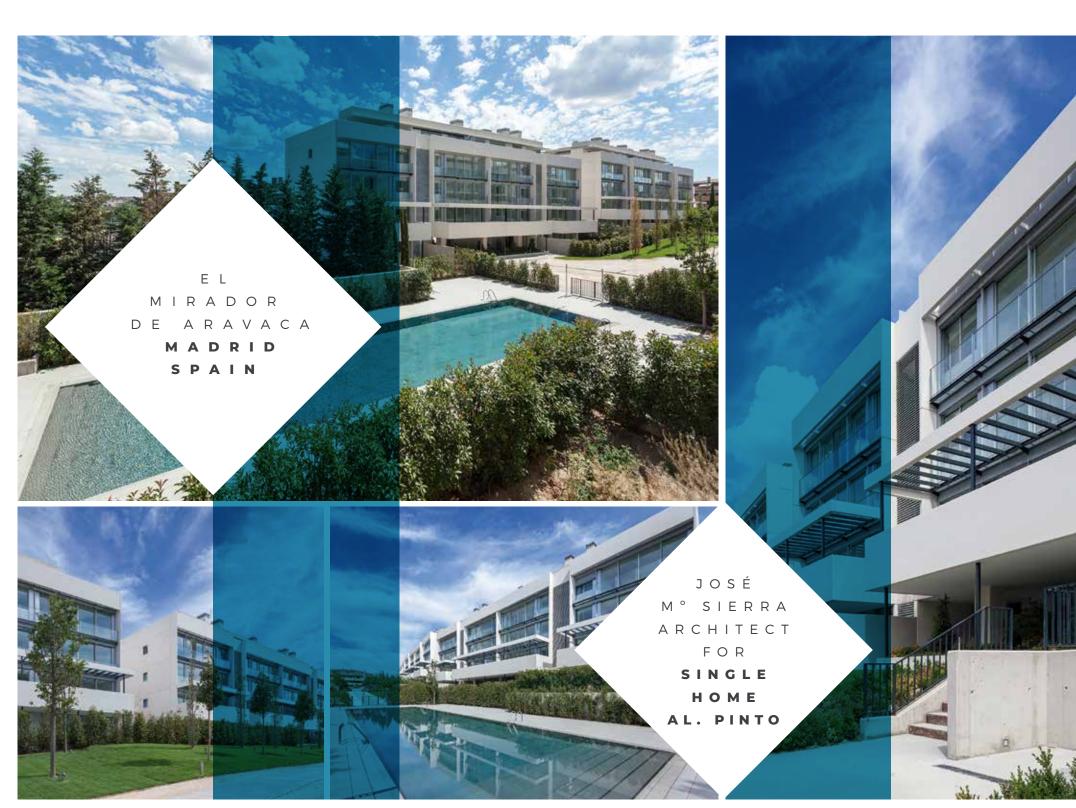












INTERIORS

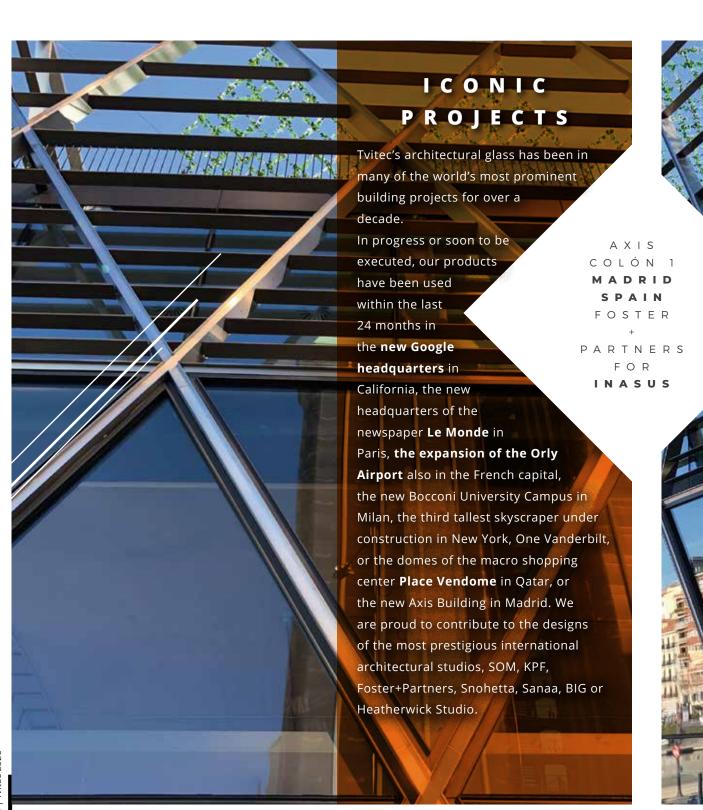


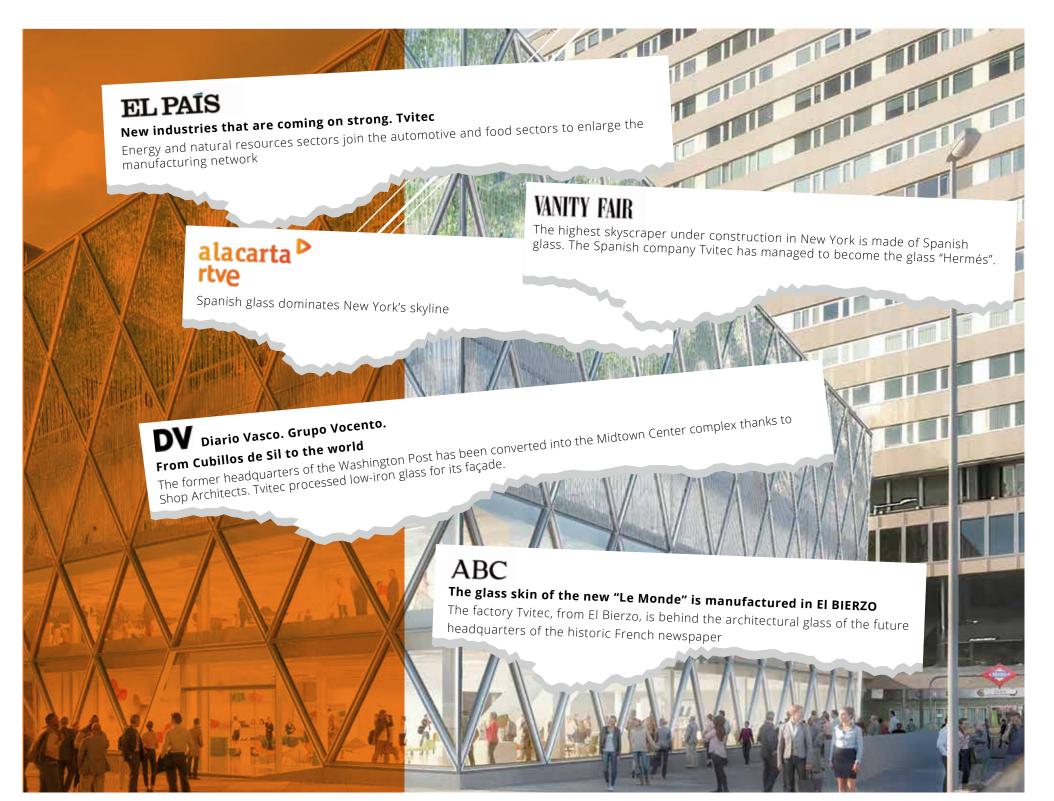
INTERIORS



INTERIORS

















P R O J E C T S P R O J E C T S



