



















## **Our Business**

### *General*

We are a vertically-integrated manufacturer, supplier and installer of architectural glass, windows and associated aluminum products for the global commercial and residential construction markets. With a focus on innovation, combined with providing highly specified products with the highest quality standards at competitive prices, we have developed a leadership position in each of our core markets. In the United States, which is our largest market, we were ranked as the second largest glass and metal fabricator in 2018 by Glass Magazine. In addition, we believe we are the leading glass transformation company in Colombia. Based on our analysis of third-party industry sources we had an estimated market share of over 45% of the Colombian market in 2017. Our customers, which include developers, general contractors or installers for hotels, office buildings, shopping centers, airports, universities, hospitals and multi-family and residential buildings, look to us as a value-added partner based on our product development capabilities, our high quality products and our unwavering commitment to exceptional service.

We have more than 30 years of experience in architectural glass and aluminum profile structure assembly, we transform a variety of glass products, including tempered safety, double thermo-acoustic and laminated glass. Our finished glass products are installed in a wide variety of buildings across a number of different applications, including floating facades, curtain walls, windows, doors, handrails, interior and bathroom spatial dividers. We also produce aluminum products such as profiles, rods, bars, plates and other hardware used in the manufacturing of windows.

Our products are manufactured in a 2.7 million square foot, state-of-the-art manufacturing complex in Barranquilla, Colombia that provides easy access to North, Central and South America, the Caribbean and the Pacific. Our products can be found on some of the most distinctive buildings in these regions, including El Dorado Airport (Bogota), 50 United Nations Plaza (New York), Trump Plaza (Panama), Icon Bay (Miami), and Salesforce Tower (San Francisco). Our track record of successfully delivering high profile projects has earned us an increasing number of opportunities across the United States, evidenced by our expanding backlog and overall revenue growth.

Our structural competitive advantage is underpinned by our low-cost manufacturing footprint, vertically integrated business model and geographic location. Our integrated facilities in Colombia and distribution and services operations in Florida provide us with a significant cost advantage in both manufacturing and distribution, and we continue to invest in these operations to expand our operational capabilities. Our lower cost manufacturing footprint allows us to offer competitive prices for our customers, while also providing innovative, high quality and high value-added products, together with consistent and reliable service. We have historically generated high margin organic growth based on our position as a value-added solutions provider for our customers.

We have a strong presence in the Florida market, which represents a substantial portion of our revenue stream and backlog. Our success in Florida has primarily been achieved through sustained organic growth, with further penetration now taking place into other highly populated areas of the United States. As part of our strategy to become a fully vertically integrated company, we have supplemented our organic growth with some recent acquisitions that have allowed us added control over our supply chain. In March 2017, we completed the acquisition of GM&P, a consulting and glazing installation business that was previously our largest installation customer. In 2016, we completed the acquisition of ESW, which gave us control over the distribution of products into the United States from our manufacturing facilities in Colombia. These acquisitions allowed for further vertical integration of our business and will act as a platform for our future expansion in the United States.

The continued diversification of the group's presence and product portfolio is a core component of our strategy. In particular, we are actively seeking to expand our presence in the United States outside of Florida. We also recently launched a residential windows offering which, we believe, will help us expand our presence in the United States and generate additional organic growth. We believe that the quality of our products, coupled with our ability to price competitively given our structural advantages on cost, will allow us to generate further growth in the future.

### *Competitive Strengths*

Our success has been grounded in our ability to offer high quality products at the most competitive prices. We are able to competitively price our products, while still achieving strong margins, due to a number of unique cost advantages. In addition to our vertically integrated business model, we benefit from structural cost advantages in manufacturing and distribution due to our geographic location. Alongside these structural advantages, we are committed to quality, product innovation and customer service. We believe these competitive strengths create a significant barrier to entry, which is underpinned and sustained by the experience of our senior management team and the loyalty of our highly motivated employees.

### *Vertical Integration*

We believe we are unique within the industry in vertically integrating the purchasing of raw materials and the manufacturing, distribution and installation of our products. By vertically integrating each of these functions, we are able to eliminate inefficiencies throughout the supply chain and generate strong margins. These efficiencies are only enhanced as our business grows and we benefit from operating leverage and economies of scale.

This business model also allows us to maintain strict quality control, from the sourcing of input materials to the installation of our finished products. Our vertically integrated business model therefore enables us to provide consistent high quality products to our end-customers. Ownership of the entire production process also reduces our dependence on third parties, allowing us to respond more quickly to our customers' needs and reducing lead-times for new or customized products.

### *Cost of Production Advantages*

We enjoy significant cost advantages because of our location in Colombia that we would not be able to realize if our production facility was located in the United States. We believe we are able to offer competitive prices, in part, as a result of our low labor and energy costs relative to those in the United States while maintaining efficient transportation costs into the markets we serve. Employees at our manufacturing facilities in Colombia earn above the local minimum wage, yet these wages are typically less than one quarter of the cost of a comparable employee located within the United States. In 2018, we completed a solar panel project with the capacity to generate approximately five megawatts of eco-friendly energy on-site at our manufacturing facilities. This investment has allowed us to reduce energy costs, while also having a positive tax effect due to our ability to deduct the investment from our taxable income in compliance with applicable Colombian tax regulations.

*Low-Cost Distribution*

Our principal manufacturing facility is located in Barranquilla, Colombia, which is strategically located near three of the country's major ports: Barranquilla, Cartagena and Santa Marta. These ports provide us with maritime access to all major global markets. The Barranquilla port is just 16 kilometers away from our production facility. From there, our products can be shipped to Miami in three days and New York in four days. In addition, for short lead-time projects, our products can be transported by air from Barranquilla to Houston or Miami within a few hours.

As a result of the significant trade imbalance between Colombia and the United States for goods transported in container ships, we are able to transport our products to the United States in containers that would otherwise return empty to the United States. We are therefore able to distribute our products to the eastern, southern and western regions of the United States at very attractive rates, which are often lower than a comparable domestic land shipment within the United States. Demand for high-specification architectural glass is typically highest in large coastal cities, which we are able to ship to directly, while most of our competitors must utilize relatively expensive land transportation services to deliver finished goods to these sites by land.

*Commitment to Quality and Innovation*

Our commitment to quality is evidenced by our significant recent investments in machinery and equipment. Since 2012, we have invested over \$270 million in the latest technologies to enhance the efficiency and accuracy of our production lines, and ultimately to improve the quality of the products that we deliver to our customers. We believe these significant investments position us to meet our growth objectives over the next several years. We operate state-of-the-art glass making equipment, glass laminating lines, aluminum presses and high-volume insulating equipment which facilitate more precise manufacturing, enabling us to offer a broader selection of and higher quality products and remain agile in responding to customer demands, while generating less raw material waste.

We believe our investments in technology within recent years have positioned us well for continued growth, improved profitability and enhanced cash generation in the years ahead. Recent examples of our investments include:

our acquisition of three aluminum extrusion presses that together added more than 1,000 tons of production capacity per month, alongside associated investments in new aluminum paint lines and foundries;

our purchase of equipment used to produce soft-coated, low emissivity glass;

our completion of our solar panel project that generates approximately five megawatts of eco-friendly energy at our manufacturing facilities. We estimate these investments will continue to reduce our energy costs, with a total cost reduction target of approximately 6%-8%;

our purchase of glass-laminating and tempering furnaces that use state-of the-art technology to produce curved glass in a broad range of easily modifiable curvatures (“TecnoBend”). TecnoBend uses a flexible mold to produce customized shapes for architectural structures; and

our investment in a jumbo tempering oven capable of producing extra-large slabs of laminated glass. These products are sought after in high-specification designs, allowing us to supply these high profile projects. For example, our extra-large glass slabs were recently installed in the El Dorado Airport, located in Bogotá, Colombia.

Our quality assurance department maintains rigorous oversight over the production process to ensure the consistent production of high quality products. In addition, we adhere to quality standards that meet all guidelines and requirements for the Insulating Glass Certification Council (IGCC) and Safety Glazing Certification Council (SGCC) certification programs.

Finally, our commitment to quality also extends to our partnerships and alliances. Most notably, for certain products we offer Kuraray Sentryglass®. These laminated glass interlayers are five times stronger than conventional laminating materials.

On September 20, 2018, we entered an agreement with Schüco USA LLLP (“Schüco”), a division of the Schüco International KG, a worldwide leader of architectural systems headquartered in Germany, with more than 60 years of experience and a presence in over 80 countries. Schüco is known for its expertise in the innovative design of building envelopes, windows, doors and facade systems, for the construction industry. This agreement enables Tecnoglass to manufacture and sell Schüco’s architectural systems to customers in North, Central and South America, alongside our existing ESWindows products. Additionally, Tecnoglass will extrude and paint aluminum profile designs as part of Schüco’s global supply chain primarily for products sold in the United States. This agreement also allows Tecnoglass to expand its portfolio and offer more solutions to its clients with high-end, renowned designs.

### *Superior Customer Service*

In addition to manufacturing high quality products at competitive prices, our customer value proposition is supplemented by short lead-times, on-time delivery and after-sale support. Through the coordinated efforts of our sales teams, product specialists and field service teams, we deliver high quality service to our customers, from the initial order to the delivery and installation of our products. We believe our ability to accompany our clients throughout every phase of their projects’ engineering, consulting, manufacturing and installation services along with our ability to coordinate these efforts as a one-stop-shop is a key differentiator from our competition.

### *High Barriers to Entry*

The ability of new competitors to enter the markets that we serve is limited due to the technical certifications required on high specification building projects, such as IGCC, IqNet Icontec 14001 and ISO9001. We attribute our success, in large part, to our ability to produce a broad range of sophisticated products, as well as our reputation for delivering high quality, made-to-order architectural glass on time. Our employees have extensive training, knowledge and experience at manufacturing high specification products. We believe the vertically-integrated nature of our operations means that there are high barriers to successfully entering our markets and competing with us on price, quality and agility. In addition, the equipment needed to operate in the glass and window industry is expensive, therefore requiring significant upfront capital investment.

### *Loyal and Highly Motivated Employees*

Capitalizing on our various competitive advantages also requires a skilled and dedicated workforce. We actively encourage and facilitate the development of our employees through rolling training programs, with multiple training sessions held every week. These programs increase the skills of our employees and are designed to allow our employees to keep pace with the new technologies being installed at our manufacturing facilities. We are committed to developing our employees and remaining at the forefront of technology in our industry. These investments have also helped us manage workplace injuries, with our rate of one accident per 24 workers per year, being substantially lower than the average of one accident per 12 workers per year for manufacturing companies in Colombia.

We value our employees and invest in them and their communities. For several decades, we have committed resources to improving the quality of life of our local communities. Our local foundation, “Fundación Tecnoglass,” provides local communities with assistance purchasing or improving homes and facilitating higher education scholarships. During 2018, over 160 families benefited from these initiatives. Fundación Tecnoglass provides funding for different local schools looking to improve social transformation and community development. Vive Bailando, a program recently developed in the Las Flores neighborhood (local community near Tecnoglass’ headquarters) has positively impacted more than 100 families in less than a year. Additionally, we donate our recyclable glass to the foundation, which sells it to local recycling cooperatives and uses the proceeds to fund scholarships for Company employees. We believe these initiatives have allowed us to maintain a strong relationship with our employees, which in turn has ensured a skilled, motivated and loyal workforce with low levels of turnover. We have remained union-free since our incorporation in 1984.

### *Strategy*

We have identified the following strategic priorities that we believe are important in advancing our business:

*Further Geographic Penetration in the United States*

We have successfully established a leading reputation in the Florida construction market by providing high value, impact-resistant architectural glass products. Our products have become widely regarded in Florida for their quality and are certified in compliance with all U.S. regulations.

In recent years, we have begun to successfully grow our geographic presence in the United States outside of Florida, particularly into markets along the east coast. Sales from Florida, where we have a significant presence comprised 84% of United States revenue in the year ended December 31, 2018. Coastal markets are particularly attractive to us, as they can be directly accessed by ship, resulting in transportation costs from our manufacturing facilities that are similar to our transportation costs to Florida. These regions are also affected by hurricanes, significant temperature fluctuations and other extreme forms of weather that foster demand for our products. We are actively expanding our sales presence in these markets and have already successfully completed several projects in large U.S. markets such as New York, Boston, Washington D.C. and Baltimore as well as cities along the U.S. Gulf Coast, such as Houston.



We intend to continue growing the business organically outside of Florida. As we explore growth opportunities in new U.S. markets, we intend to leverage the strong reputation we have developed with national commercial construction contractors, architects and designers for providing high quality products at the most competitive prices.

*Penetrate the U.S. Residential Market*

In April 2017 we launched “ES Windows: Elite Collection” and “ES Windows: Prestige Collection” to target the U.S. residential new and replacement sectors. We have received positive interest for the new products to date and positive reactions from our customers. Although residential sales represent a relatively small portion of our sales today, we believe it will be a significant source of growth for us in the future. Our U.S. residential market sales represent 10% of our total sales for the year ended December 31, 2018. The U.S. residential housing construction market exceeded \$544 billion in spending during the twelve months ended November 30, 2018 according to the United States Census Bureau. Deutsche Bank published a research report estimating that new residential housing starts in the United States will grow at an annual rate of 5% in each of 2019 and 2020. We believe that our core strengths that have facilitated our success to date, namely the quality of our products and the structural cost advantages that allows us to price our products competitively, will similarly contribute to our success in residential window sales.

*Continued Investment in Technology to Meet Evolving Demands*

We have a track record of developing innovative new products, and we intend to continue our focus on new product opportunities in the future. We are constantly identifying shifts in global trends and customer needs, and designing new products to meet those changes in demand. In order to continue this success, it is critical that we invest in the latest technologies available in our industry. For example, with the installation of our soft-coating facility, we are now able to manufacture low emissivity glass that is energy efficient and will allow us to meet growing demand for “green” products.

Our recent investment in new tempering equipment, which uses air cushion technology to offer greater transparency and less distortion, further boosts the quality of our products. Further investments are planned to expand our offering of value-added glass products, such as soft-coated, low-emissivity window panes that minimize the effects of solar heat. We are committed to investing in technology and remaining at the forefront of the industry.

We operate state-of-the-art architectural glass making equipment, glass laminating lines, aluminum presses and high-volume insulating equipment, which facilitate more precise manufacturing and generate less raw material waste. We will seek to leverage this platform of cutting-edge equipment to adapt our products to evolving demands in both current and new markets. We expect that our focus on innovation, which is founded upon our investments in technology, will position us well to take advantage of new opportunities.

*Rigorous Adherence to Quality Standards*

Maintaining the high quality standards for which we have become known is essential to the execution of our strategy. All of our internal processes are continually and independently supervised by Tecnoglass' Quality Assurance department. The Quality Assurance department maintains rigorous oversight of optimization indicators covering energy, water, recyclable waste and other facets of the production process. Constant monitoring of these indicators is integral to ensuring that we consistently produce high quality products. Between 5% and 10% of our production is randomly selected to verify compliance with a variety of quality standards, such as water leaks, functionality, manufacturing and accessories, according to ASTM International (ASTM) and American Architectural Manufacturers Association (AAMA) rules.

These measures allow us to effectively detect issues and take specific actions to mitigate their reoccurrence. As we grow and our use of technology evolves, our Quality Assurance team must also evolve its tests, controls and remedies. We believe this rigorous adherence to quality control will ensure that we will continue to provide the highest quality products and, ultimately, promote customer satisfaction.

## ***Products***

We manufacture and sell the following products:

*Low-e Glass* – Low emissivity glass manufactured by depositing metal particles on the surface of the glass inside a vacuum chamber. This product offers excellent thermal insulation designed to improve energy efficiency of buildings.

*Laminated/Thermo-Laminated Glass* - produced by bonding two glass sheets with an intermediate film in-between. As a safety feature, this product fractures into small pieces if it breaks.

*Thermo-Acoustic Glass* - manufactured with two or more glass sheets separated by an aluminum or micro-perforated steel profile. This product has a double-seal system that ensures the unit's tightness, buffering noise and improving thermal control. This product serves as an excellent noise barrier, which is used especially in zones close to airports, traffic or wherever there are unpleasant sounds.

*Tempered Glass* - glass subject to a tempering process through elevated temperatures resulting in greater superficial elasticity and resistance than conventional glass.

*Silk-Screened Glass* - special paint is applied to glass using automatic machinery and numerical control, which ensures paint homogeneity and an excellent finish.

*Curved Glass* - produced by bending a flat glass sheet over a mold, using an automated heat process, which maintains the glass' physical properties.

*Digital Print Glass* - digital printing allows any kind of appearance required by the client, offering versatility to projects.

*Aluminum products* - sold through our Alutions brand include bars, plates, profiles, rods and tubes used primarily in the manufacture of architectural glass settings including windows, doors, spatial separators and similar products.

*Curtain Wall / Floating facades* - a non-structural window screen suspended outside a building and are available in many technical specifications for high performance required in high-rise buildings, resistant to strong winds and ensuring high quality standards.

*Stick facade systems* – are glass and aluminum facade elements fixed to the structure of the building and the glass and spandrel are inserted in the grid on site available in many combinations to define colors, thickness, glass types and finishes, and types of ventilation and design complements.

*Windows and Doors* - line of window and door products defined by the different types of glass finish, such as normal, impact resistant, hurricane-proof, safety, soundproof and thermal. Additionally, they are available in numerous structures, including fixed body, sliding windows, casement windows, hung windows, sliding doors and swinging doors.

*Interior dividers and Commercial display windows* - commercial and interior display windows with a broad range of profiles, colors and crystal finishes, as well as bathroom stall dividers, office cubicle separators and closets Products combine functionality, aesthetics and elegance and are available in a broad range of structures and materials.

*Hurricane-proof windows* - combine heavy-duty aluminum or vinyl frames with special laminated glass to provide protection from hurricane-force winds up to 180 mph and wind-borne debris by maintaining their structural integrity and preventing penetration by impacting objects.

*Other* – awnings, structures, automatic doors and other components of architectural systems.

### ***Brands and Trademarks***

Our main brands are Tecnoglass, ESWindows and Alutions. Our registered trademarks include “Alutions by Tecnoglass”, “ECOMAX by ESWINDOWS”, “Tecnobend”, “Tecnoair”, “ESWINDOWS Interiors”, “ESW Windows and Walls”, “Solartec by Tecnoglass”, “Prestige by ESWINDOWS”, “Eli by ESWINDOWS”, “Alessia by ESWINDOWS”.

### ***Sales, Marketing and Customer Service***

#### *Sales and Marketing*

Our sales strategy primarily focuses on attracting and retaining customers by consistently providing exceptional customer service, leading product quality, and competitive pricing. Our customers also value our shorter lead times, knowledge of building code requirements and technical expertise, which collectively generate significant customer loyalty. Our products are marketed using a combination of internal sales representatives, independent sales representatives and directly to distributors. Our internal sales representatives receive a portion of their performance-based compensation based on sales and profitability metrics. We primarily market our products based on product quality, outstanding service, shorter lead times and on-time delivery.

We employ a highly efficient number of in-house sales employees. Some of our sales and marketing efforts are handled by area sales representatives who work on a commission basis.

We do not rely on significant traditional advertising expenditures to drive net sales. We have established and maintain credibility primarily through the strength of our products, our customer service and quality assurance, the speed at which we deliver finished products and the attractiveness of our pricing. Our advertising expenditures consist primarily of maintaining our subsidiaries’ websites.

#### *Customer Service*

We believe that our ability to provide customers outstanding service quality serves as a strong competitive differentiator. Our customer relationships are established and maintained through the coordinated efforts of our sales and production teams. We employ a highly responsive and efficient team of professionals devoted to addressing customer support with the goal of resolving any issue in a timely manner. In order to promote customer loyalty and employee development, we developed an employee training program with the primary objectives of educating our staff to be aware of client and supplier needs and familiarizing them with our strategic goals in order to improve the competitiveness, productivity and quality of all products offered.

### **Working Capital Requirements**

During the year ended December 31, 2018, \$5.0 million was used in operating activities, related to the working capital required to support an 18% growth in sales. The main use of cash from operating activities in 2018 was inventory purchases, which used \$28.1 million as the Company's inventories grew to address an increased level of activity for project deliveries during the first quarter of 2019. While it is expected that the Company will have working capital needs as it undergoes continued growth, management continues to seek ways of optimizing the collection of its receivables and its inventory procurement. The growth in sales during 2018 required a use \$23.7 million in trade account receivables albeit with a lower days sales outstanding ratio given continued efforts on the collection front and the growth in the residential market which carries a shorter cash cycle. On a similar note, also related to the increase in sales and procurement of inventories, trade accounts payable were the primary source of operating cash flows during 2018, generating \$34.6 million.

## Customers

Our customers include architects, building owners, general contractors and glazing subcontractors in the commercial construction market. We have over 1,000 customers. Of our 100 most representative customers, which represent over 80% of our sales, about 70% are located in North America, 1% in Central America and the Caribbean, and 29% in South America. Only one customer, GM&P, accounted for more than 10% or more of our net sales during 2016 with 26%. On March 1, 2017 we entered into and consummated a purchase agreement with Giovanni Monti, the owner of 100% of the outstanding shares of GM&P. With the acquisition of GM&P, we have reduced our customer risk concentration, as no single customer accounted for more than 10% of our revenues during the years ended December 31, 2018 and 2017.

## Backlog

We had a combined backlog of \$515 million as of December 31, 2018, \$499 million as of December 31, 2017 and \$396 million as of December 31, 2016. We do not believe that backlog is indicative of our future results of operations or prospects. Although we seek commitments from customers well in advance of shipment dates, actual confirmed orders are typically not received until close to the required shipment dates.

## Materials and Suppliers

Our primary manufacturing materials include glass, ionoplast, polyvinyl butyral, and aluminum and vinyl extrusions. Although in some instances we have agreements with our suppliers, these agreements are generally terminable by us or the supplier counterparties on limited notice. Typically, all of our materials are readily available from a number of sources, and no supplier delays or shortages are anticipated.

We source raw materials and glass necessary to manufacture our products from a variety of domestic and foreign suppliers. During the year ended December 31, 2018 three suppliers individually accounted for more than 10% of total raw material purchases, which in aggregate represented 37% of raw material purchases, including Vidrio Andino SAS, from which we purchased \$14.8 million, representing 12% of our raw material purchases, and with whom we entered into a joint venture agreement in January 2019 further described in the “Overview” section of Item 1. Business on this annual report. During the year ended December 31, 2017 two suppliers individually accounted for more than 10% of total raw material purchases, which in aggregate represented 30% of raw material purchases. For the year ended December 31, 2016, three suppliers individually accounted for more than 10% of total raw material purchases, which in aggregate represented 38% of raw material purchases.

## **Warranties**

We offer product warranties, which we believe are competitive for the markets in which our products are sold. The nature and extent of these warranties depend upon the product. Our standard warranties are generally from five to ten years for architectural glass, curtain wall, laminated and tempered glass, window and door products. Warranties are not priced or sold separately and do not provide the customer with services or coverages in addition to the assurance that the product complies with original agreed-upon specifications. In the event of a claim against a product for which we have received a warranty from the supplier, we transfer the claim back to the supplier. We evaluated historical information regarding claims for replacements under warranties and concluded that the costs that we have incurred in relation to these warranties have not been material.

## **Certifications**

Among our many designations and certifications, Tecnoglass has earned the Miami-Dade County Notice of Acceptance (“NOA”), one of the most demanding certificates in the industry and a requirement to market hurricane-resistant glass in Florida. Tecnoglass’ products comply with Miami-Dade county’s safety code standards as its laminated anti-hurricane glass resists impact, pressure, water and wind. Tecnoglass is also the only company in Latin America authorized by PPG Industries and Guardian Industries to manufacture floating glass facades.

































































































































































































































































































































































































