

Innovate to stay ahead in the glass processing sector

SPOT ON | GLASS PROCESSING & FINISHING | NOVEMBER 2019

MARKET TRENDS (pg.2)

The origin and evolution of current trends that enable us to predict future growth areas.

M&A ACTIVITY (pg.4)

Even though Asia is the largest glass processing market worldwide, Europe and North America are the most active in M&A transactions.

LISTED PLAYERS AND VALUATIONS (pg.5)

A selection of the main players and valuation trends in the glass processing sector.

SPOTLIGHT ON GROGLASS (pg.7)

We look at the performance and future strategy of the world's leading anti-reflective glass manufacturer, Groglass.

“The future of the glass industry is smart—smarter glass for smarter buildings in smarter cities. The most successful companies are those that anticipate this and are ready to provide innovative solutions to clients.”

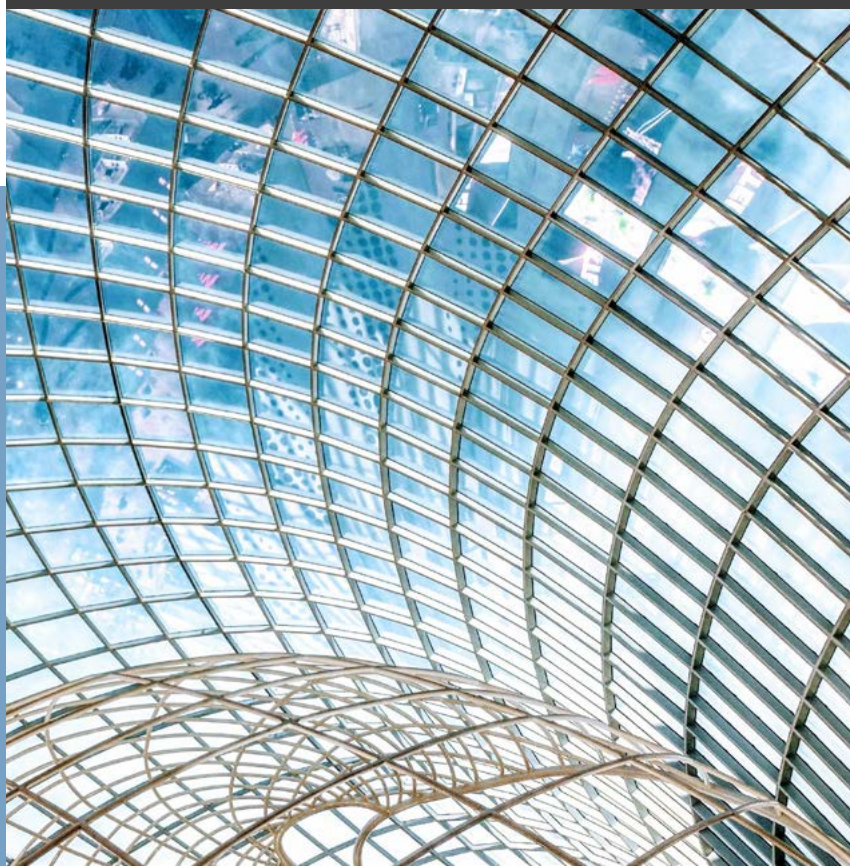
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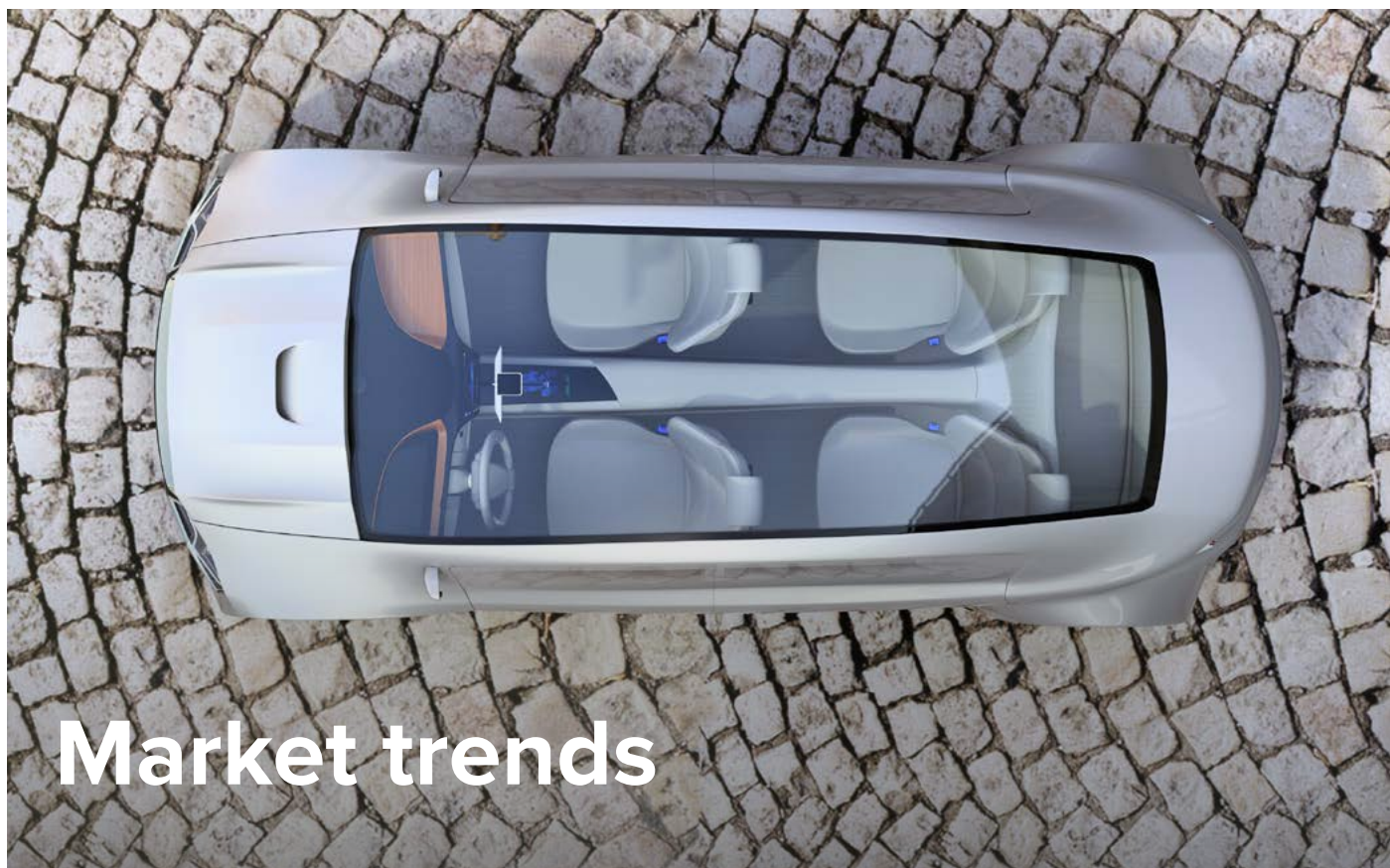
OAKLINS' GLASS PROCESSING & FINISHING SPECIALIST

MARKET TRENDS

Although the manufacture of raw flat glass follows a well-established process—and basic flat glass products are made in a similar manner—technological innovations still occur. In recent years, new value-adding developments have created exciting new opportunities for glass companies to stand out in the marketplace.

(CONTINUED ON NEXT PAGE)





Market trends

The robust level of activity in the overall glass processing market is reflected by changes and innovation in several segments.

CONSTRUCTION SECTOR

Growth of the building and construction industry is the major driver for the market. The industry has witnessed considerable growth in the past few years and is anticipated to grow at a compound annual growth rate (CAGR) of 6% over the coming few years. The growth is significant in all regions, especially in the Middle East and in Africa, where it is being propelled by government initiatives toward infrastructural development in African countries.

Applicationwise, the construction sector held the major market revenue and volume share in the year 2018. Innovations in the construction glass industry, such as solar control glass,

self-cleaning glass, thermal insulating glazing glass, anti-reflective glass and sound-reducing glass, are expected to contribute to the adoption of construction glass products in residential and nonresidential buildings. Increased investment in the global construction sector, specifically in the residential and commercial sub-sectors, boosts market growth. However, the high cost of raw materials and economic downturns are the major factors that restrain the growth of the market.

In terms of demand, industry needs are trending toward bigger lites—separately framed panes of glass. Architects' drive to create modern, open buildings has fueled demand for glass panes that offer visibility between workspaces and often make up entire interior walls. It's not just office spaces that are utilizing more glass, either—even residential homes are calling for large, unobstructed views and larger windows.

Along with larger lites, architects and designers are calling for more decorative glass, too. This includes panes with

patterns, designs, colors or textures added, to create a more ornamental finish. It can also be incorporated into traditional glass applications, such as room partitions and doors or, less commonly, countertops and furniture.

Bent glass is also growing in popularity, with applications for glass railings, awnings and even walls. While this technology has been around for some time, recent advancements now enable larger and more complex bent shapes to be created. This has expanded the uses of bent glass and driven increased demand.

AUTOMOTIVE SECTOR

Automotive end-use of flat glass, such as installations in the side, roof and window panels, is expected to exhibit significant growth in laminated flat glass in the future. Additionally, the significant growth in luxury cars that include double-thick glass in interiors is also one of the factors driving sales in the automotive flat glass market.

While thin glass has been gaining popularity in the exterior glazing of cars for some time, displays in car interiors are the main driver today.

Automotive displays require unique features of display glass that result in special processing challenges, like complex shapes, holes and other special features. There is no one-size-fits-all processing strategy for thin glass used in automotive displays, as different processing technologies (e.g. conventional cutting, grinding and laser processing) each have specific advantages and disadvantages. Depending on the application and the shape of the part, the different processing strategies need to be combined in an optimal way to achieve a high efficiency.

Automakers are even working to integrate solar cells directly into automotive glass in order to provide an additional auxiliary power source.

ENERGY EFFICIENCY

The solar industry has witnessed tremendous growth in the past few years. The global solar capacity grew at a CAGR of 29.9% from 2013 to 2017. Factors such as depletion of renewable resources, technological advances, government regulations, environmental concerns, reduction in the cost of solar installations and growing electricity demand are propelling the installation of new solar plants worldwide.

In addition, controlling energy costs has become an increasingly major concern among building operators, leading to heightened interest in solar control glass—glass that reflects away a significant portion of the sun's heat while still admitting sunlight to brighten interiors. Low-E glass—glass with a transparent coating that reflects heat, or smart windows that are capable of darkening and lightening either automatically or on command—is currently widely used in new construction projects.

INDUSTRY 4.0

Industry 4.0 can be described as a toolbox full of new technologies with the potential to boost the efficiency and flexibility of plant and supply chain operations. The expected benefits are broad and extensive, ranging from product quality and competitiveness to improvements in terms of safety and sustainability, and glass processing companies should be now ready to seize the opportunities offered by Industry 4.0 to serve their customers even better.



M&A activity

A selection of recent private transactions in the sector

Date	Target	Rationale	Bidder	Country	Valuation		
					EV (US\$m)	EV/ Revenues	EV/ EBITDA
Oct-18		US-based manufacturer of large-format, laminated, tempered, value-added glass products used in the car market			N/A	N/A	N/A
Jun-18	Sangalli Vetro Manfredonia/ Satinato/ Magnetronico	Both plants offer lamination and coating lines. These lines will allow Sisecam Group to expand their product range and become the largest architectural glass producer in the Italian market			15.72	N/A	N/A
Jun-18		Sekurit is the leader in automotive glazing, providing high-added-value glazing products and services for carmakers			192.17	0.9x	8.3x
May-18		Latvia-based developer and manufacturer of anti-reflective and other high-performance coatings on glass and acrylic			>50.0	4.2x	9.3x
Mar-18		Italy-based specialist in glass systems and accessories for the fixing and assembly of glass			N/A	N/A	N/A
Oct-17	Pilkington Bristol assets	Pilkington 37,000 sq. ft. factory that manufactures a comprehensive range of glass products			N/A	N/A	N/A
Mar-17		Germany-based insulation glass manufacturer			N/A	N/A	N/A
Mar-17		Poland-based company that manufactures glass and aluminum facades			8.55	1.0x	5.6x
Mar-17		Two UK-based factories of the Pilkington Group that produce insulating glass units for the residential market			N/A	N/A	N/A
Nov-16		US-based company that manufactures insulated, heat treated, heat soaking and laminated glass			40	0.8x	6.5x
Oct-16		Italy-based glass manufacturer that filed for insolvency in 2015			90	N/A	N/A













Source: Mergermarket

Selected listed players

Staple glass players

Company	Country	Market cap (US\$m)	Enterprise value	Revenues	EBTIDA	EBITDA margin	EV/ Revenues	EV/ EBITDA
 SAINT-GOBAIN		18,792	26,972	41,774	4,785	11.5%	0.65x	5.64x
 İŞECAM		1,661	2,992	2,557	612	23.9%	1.19x	4.99x
		956	1,154	1,234	106	8.6%	0.90x	10.48x
 CENTRAL GLASS CO., LTD.		816	1,285	1,844	185	10.0%	0.66x	6.59x
 Trakya Cam Sanayii A.Ş.		578	974	966	217	22.5%	1.03x	4.57x
 KAC KOREA AUTOGLASS		259	210	344	60	17.3%	0.63x	3.64x
 PT ASAHIMAS FLAT GLASS Tbk		123	314	267	33	12.4%	1.10x	8.85x
Average							0.88x	6.39x
Median							0.90x	5.64x

Specialty glass players

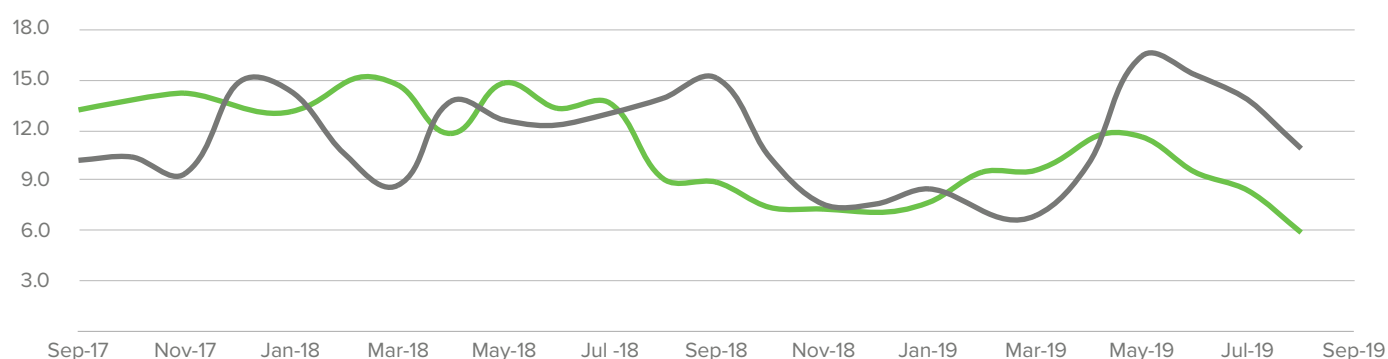
Company	Country	Market cap (US\$m)	Enterprise value	Revenues	EBTIDA	EBITDA margin	EV/ Revenues	EV/ EBITDA
 PILKINGTON		1,213	1,213	492	77	15.6%	2.78x	17.81x
		981	1,295	698	117	16.8%	1.85x	11.07x
		953	1,122	442	103	23.3%	2.54x	10.89x
		561	3,583	5,527	418	7.6%	0.63x	8.35x
		93	506	381	76	20.0%	1.33x	6.64x
		38	93	182	20	11.3%	0.55x	4.88x
Average							1.61x	9.94x
Median							1.59x	9.62x

Source: Infiniti

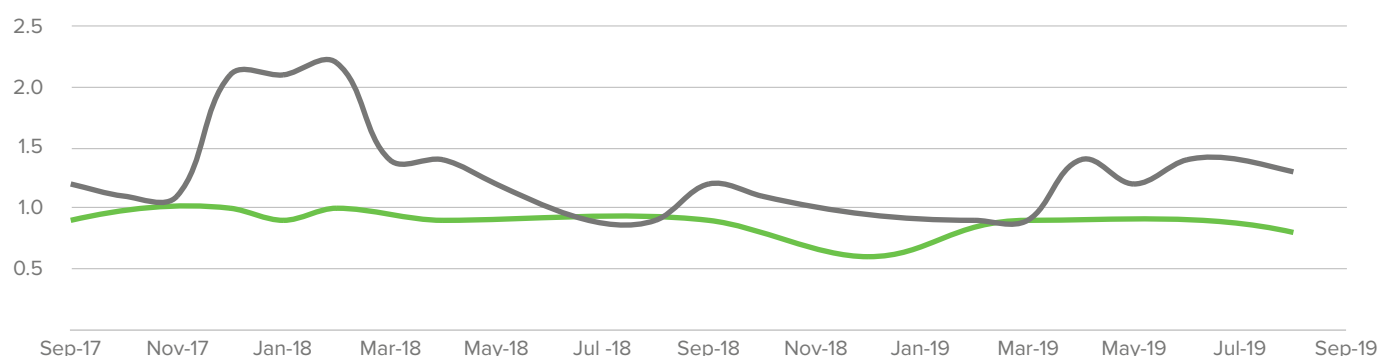
Valuation trends

The following is a selection that compares the valuation multiples of the two subgroups of publicly listed companies within the glass processing sector. Overall, both subgroups have experienced some volatility during the last two-year period. However, the staple glass processing companies have seen relatively more stable valuation trends compared with the speciality glass processors, mainly due to the differences in the rate of innovation and demand for speciality glass in various end segments. It is important to note that the EV/EBITDA multiples for the speciality glass players have been consistently rising throughout 2019 and have increased by 64% compared with the end of 2018. This increase corresponds to the market outlook of strong demand for high-value-added glass products and demonstrates why these companies are an attractive target for other glass industry players.

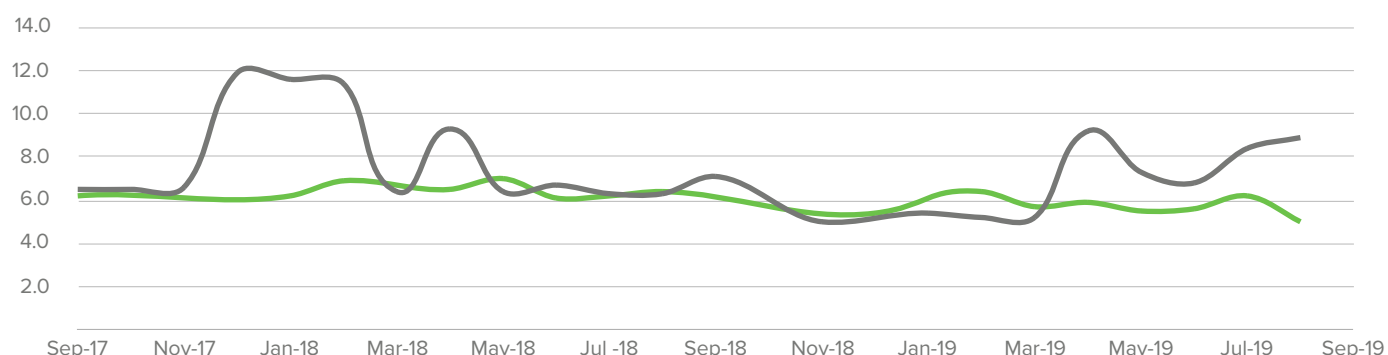
Price/Earnings LTM (last 12 months)



EV/Sales LTM (last 12 months)



EV/EBITDA LTM (last 12 months)



■ Glass processing specialty ■ Staple glass processing

Source: Infinitals
Valuation data is as of 30 September 2019



Spotlight

GROGLASS IS THE LEADING ANTI-REFLECTIVE GLASS PRODUCER IN LATVIA.

Groglass operates in picture framing, cold storage, electronic displays and other high-value-added markets across 45 countries. Its proprietary double-sided vertical coating technology has allowed the company to establish itself as a key market player in the markets it currently serves. Cost and quality leadership, coupled with economic and environmental rationale for increasing the usage of anti-reflective and energy-saving coatings in the refrigeration, electronic displays and lighting markets, provide a tremendous growth potential for the upcoming years, making it an even more exciting target for international private equity (PE) and strategic players.

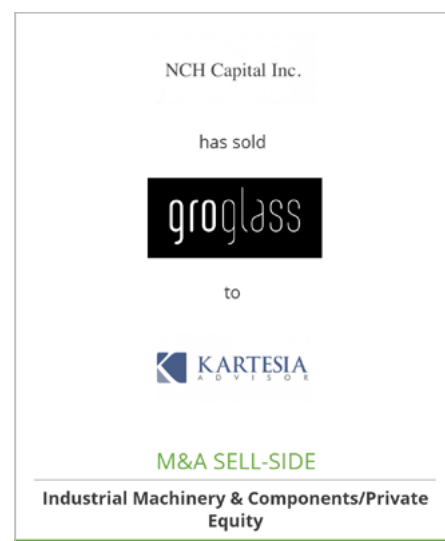
Last year Groglass' management team, led by the founder and CEO Alexander Sasha Kelberg and supported by Kartesia Advisor, acquired the company from NCH Capital Inc. in a management buy-out transaction. As the company appears attractive to investors and their

recent takeover has further fueled its appetite for growth, we interviewed the CEO, Mr. Kelberg, to understand more about Groglass and its strategy.

Q&A

How has the market been changing over the last few years and how has Groglass reacted to such changes?

The glass market is owned by an oligopoly of glass producers—the process is capital intensive and costly, so there are very high barriers to entry. Glass is expensive to ship around the globe, so it tends to be localized. The market for basic glass is closely linked to construction and automotive cycles, and the glass producers control the supply to periodically build deficit in the market by closing down furnaces, in a similar fashion (and with similar periodic success) to OPEC countries trying to control oil production to affect



the market price. However, basic glass remains a commodity, albeit a slightly controlled one.

Most of the value is added to glass with processing, such as cutting, grinding, tempering, printing, coating, etc. Glass producers, who control the supply, tend to enter very large sectors for processing, such as architectural and automotive, where one can leverage glass supply and economies of scale.

Other niche markets, which require a high level of customization and market knowledge, remain in the hands of independent producers. I would note this as one of the common themes of development in the glass industry—large markets concentrating in the hands of glass producers and smaller, independent processors exploring the high-value-added niches.

What are the most important trends in the glass processing industry affecting your business?

The price of glass substrate is always important, and we are now in the cycle of increased supply. With our geography we are also benefitting from the over-supply of good-quality float glass from Russia. We also see an increased demand for coatings in the automotive industry, as energy management is becoming important in vehicles: roof windows are becoming larger and more functional.

What are the future perspectives and the main drivers of success for a company like Groglass?

Groglass exists by striving at the cutting edge of technological innovation. Maintaining a high competency in research and development keeps us on that edge. We are able to be quicker and more agile than large companies, and we live by serving small high-value-added niches. So a deep focus on understanding our customers' needs is important to continued value creation.

How do you remain innovative in such a fast-moving environment?

Being relatively small and picking niche markets is a key advantage in a fast-moving environment, where it is more difficult for large organizations to compete. In our business it is important to have very short lab-to-market cycles.

Adding a personal touch goes a long way for our customers, moving away

from a business-to-business approach and moving to a person-to-person business model.

What is your opinion on external growth by acquisition? Is it something Groglass is willing to pursue?

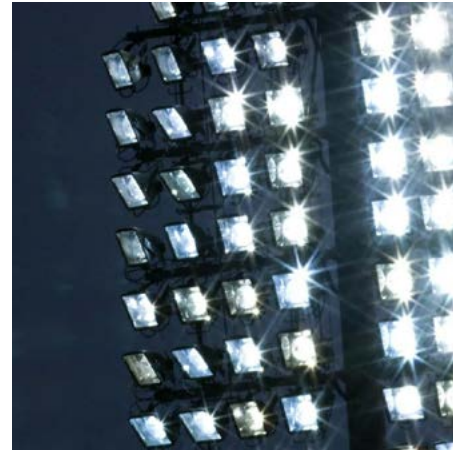
Growth by acquisition is the best way to acquire certain competencies quickly and, sometimes, cheaply. If we identify competencies important to our strategic growth that are available for sale, we would certainly consider acquisitions.

Since its foundation, Groglass has always been backed by financial investors, do you believe that this has been a factor in Groglass' success?

I would say it is the key to our success. However, financial investors come in different flavors. In the early stages of our development, when we were a greenfield startup, NCH was the perfect, patient investor, whose University Endowment and Pensions funds had a long time horizon. This allowed us to pivot several times before finding the winning formula. Kartesia is the perfect investor for us now, able to provide us with deep leverage, while keeping us focused on rapid growth.

What is your suggestion to entrepreneurs considering the sale of their companies to financial investors? Do you believe that some of the typical concerns that surround such a type of operator are founded?

I don't believe in generalizations. Very rarely, the money alone or the financing terms are the main success factors of a transaction. The partnership between the management team and the financing party is complicated, as most things are when money is involved. The key question to ask is "Would I want to be stuck on a desert island with these people for the next five years?" And if the answer is anything but a resounding "yes," there is no financial incentive that would make the venture worth it.



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Glass processing & finishing is one of our focus areas. Combining comprehensive sector knowledge with global execution has led Oaklins to become one of the most experienced M&A advisors in the glass processing & finishing sector, with a large network of relevant market players worldwide. This results in the best possible merger, acquisition and divestment opportunities for glass processing & finishing companies.

If mergers, acquisitions or divestitures of businesses or business units are part of your strategy, we would welcome the opportunity to exchange ideas with you.

OAKLINS' GLASS PROCESSING & FINISHING SPECIALISTS



AUTHOR

✉ **ANNA AILE**

Managing Director

Riga, Latvia

T: +371 26 310 006



✉ **VALĒRIJA LIEĢE**

Partner

Riga, Latvia

T: +371 29 178 061

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