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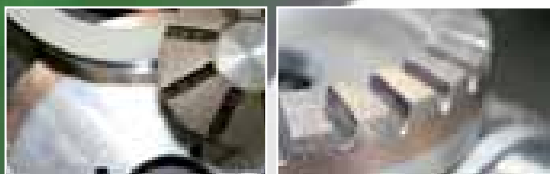


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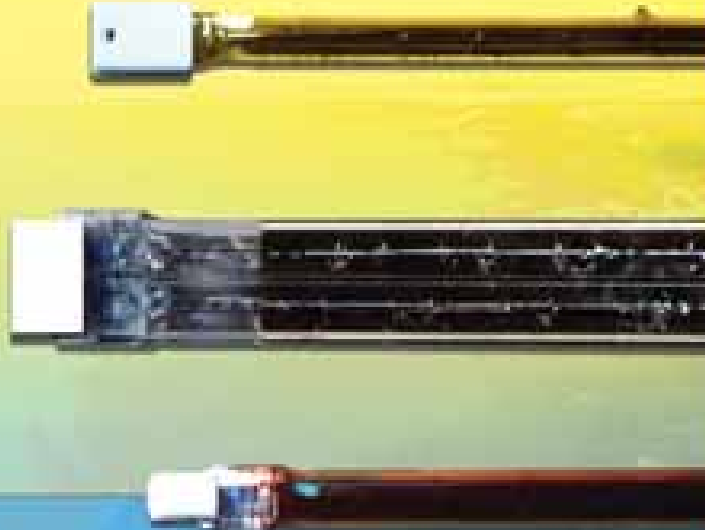
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- variable height transport conveyor in the buffer system
- TWIN output shuttle with two air cushioned slots
- bypass conveyor for externally processed glass
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the dynamic input-shuttle,
loading panes to the buffer



the TWIN output shuttle,
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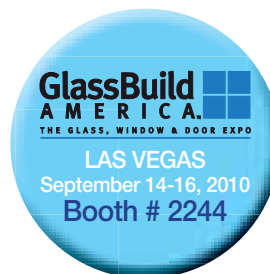
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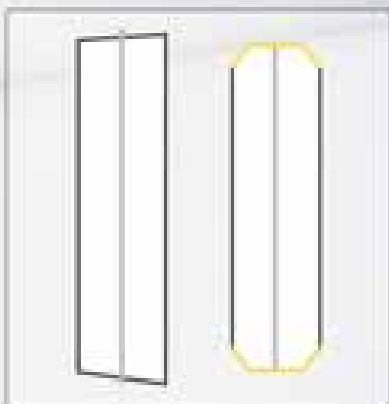
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GLASS DECORATION USING UV INKS

Conveying Messages Beyond Coloured Glass: UV-Curable Digital Technology And Art Transfer

Glass is a term that defines a structural material that not long ago was used to fill a hole in our house to let the light in, with no specific aesthetic or energy-saving functionality. Today the new processes in glass manufacturing make its transparency an appealing quality for personalised decoration, offering possibilities for unique designs and finishes.

Nowadays glass has an increasingly decorative value and its use has been rising rapidly in recent years.

Furthermore, glass manufacturers and processors are choosing to add decorating facilities to their production and processing lines in order to offer added value.

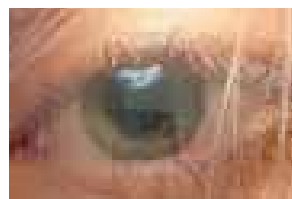
The advantage of the WP Digital solution is that it gives the same extraordinary results for adhesion, surface tension, colour saturation and dot definition, from small batches in production through to industrial quantities.

WP Digital, the system supplier for industrial glass decoration lines, brings digital images to the glass surface.

The modular glass decoration solution is suited for printing low numbers up to high volumes in all sizes up to a width of 3.5m and a thickness of 19 mm.

WP Digital started its associations with glass in 2009 with the Virtu RS25/RS35 industrial UV printing platform and, with the development of a glass surface cleaning and pre-treatment solution, the mechanical adhesion of UV-curable ink to glass is guaranteed. UV-curable ink is a revolution in the industry as it eliminates the toxicity of VOCs and is metal-free.

The time to create a decorated product takes just as long as is required to translate the digital image file into drops of inks. When the ink droplets are combined together, a wide range of colours can be formed, from natural to saturated effects. After printing, the colour shows its final appearance immediately. No oven or other additional drying processes are required.



Through The Looking Glass

Designers are looking to alter the appearance of glass to offer individual designs that enrich architectural spaces.

There are many languages throughout the world and many ways to display emotions... decorated glass comes at the top of the list for preferred ways to convey messages beyond the coloured surface. Saturated to natural colours in opaque or translucent finishes are possible in photographic quality and are just a 'click' away.



Scalable Process

The need for flat glass producers and flat glass processors to reduce labour costs by using automated lines to keep high speed, high volume production is well satisfied by the WP Digital Glass Inline Decoration Process. Knowledge has been acquired from the glass producers and glass processing professionals who have joined the WP Digital industrial glass excellence team.

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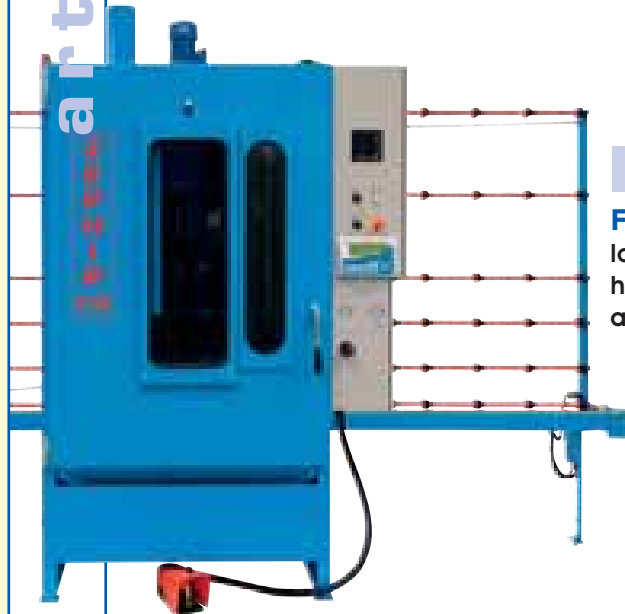
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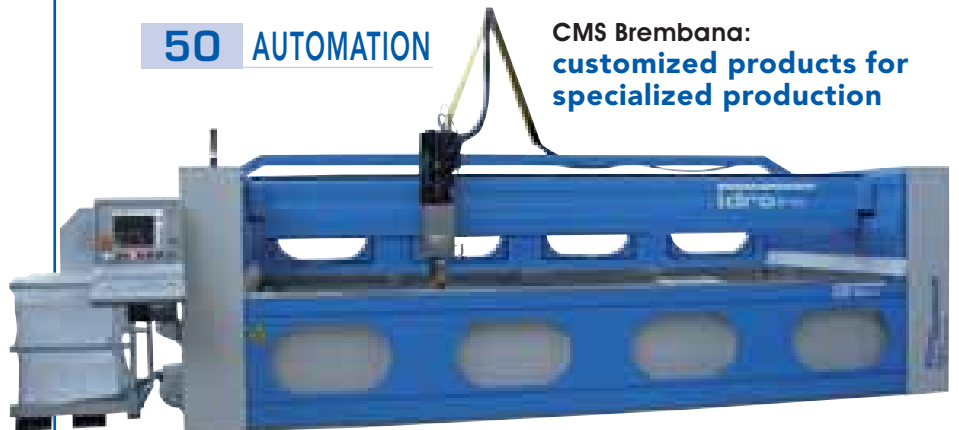


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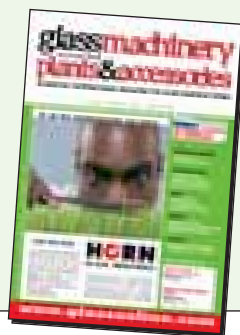
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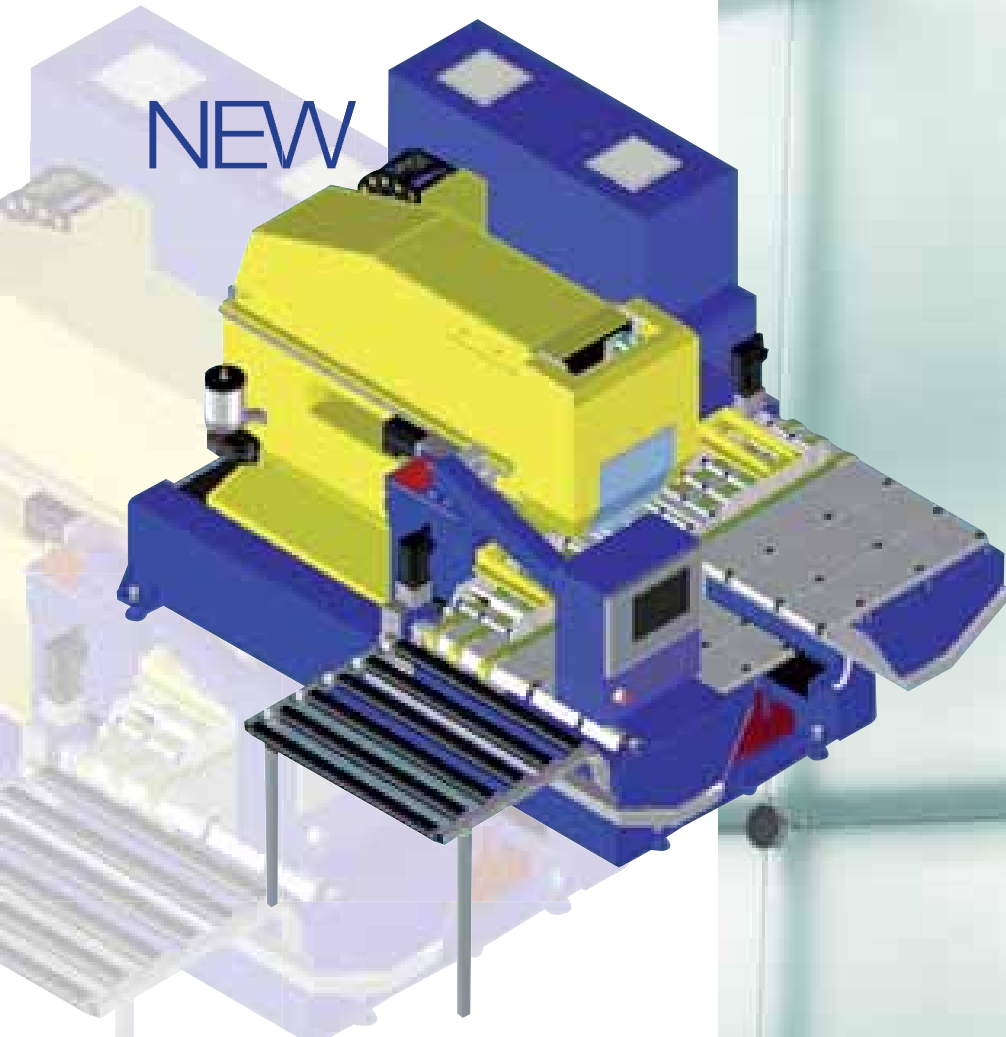
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ASAHI GLASS

Four-fold rise in 4Q 2010 profit for India



Integrated glass maker **Asahi India Glass** (AIS) reported 14 May 2010 a near four-fold increase in its consolidated profit after tax (PAT) for the fourth quarter of 2010 ended 31 March to INR 95 million, on the back of improved performance in the automotive and construction segments.

The company had incurred a consolidated loss of INR 23.8 million during the corresponding quarter of the last fiscal, AIS said in a statement.

It also reported a 5.62% increase in consolidated net sales for the fourth quarter, at INR 3398.2 million, against INR 3217.3 million during the year-ago period.

AIS's consolidated profit after tax for 2009-10 stood at INR 19.9 million, the statement said, adding that the company had reported a consolidated loss of INR 426.3 million during the previous fiscal.

During 2009-10, AIS's consolidated net sales rose 4.58% to INR 12,949.8 million against INR 12,383.1 million in the 2008-09 fiscal.

"The financial performance in the fourth quarter, and the year 2009-10 as well, reflects the massive efforts put in by AIS to overcome the unexpected adversity that arose in 2008-09. I strongly feel that the worst is now behind us," AIS chief executive officer and MD Sanjay Labroo said, adding that both the target segments of AIS, automotive and construction, have shown improved performance.

"The automotive sector has done exceptionally well, and AIS continued to deliver on the stringent requirements of automotive companies operating in India," Labroo said, adding that the company expects the growth momentum to continue this fiscal.

Europe gets new headquarters

AGC Glass Europe is building a new headquarters in Louvain-la-Neuve, Belgium. As of 2013, the new HQ will house all the group's management and administrative departments, many of which are at the moment scattered around the country.

The choice has been dictated by the opportunity to house some 500 people in the same building and to reduce real estate costs, thanks to the less expensive location and the modular design of the new building. Louvain-la-Neuve is on the edge of the greater Brussels conurbation, and at the same time it has the additional advantage of being fairly close to various glass production sites. It also lies at the heart of the dynamic cluster of companies, local facilities and university institutions, some of them open to the general public. Moreover, it is

served by an efficient communications network (motorway, rail and the future RER rapid transit system), which members of personnel will be strongly encouraged to make use of.

Architects and designers from all over Europe have been invited to take part in a design and construction competition for the new HQ. AGC Glass Europe wants to make its new building a leading example of glass at the service of innovation and sustainable development.

Representing an investment of around EUR 29 million, the new headquarters should be ready to welcome its first occupants in the first half of 2013.

Traxon Technologies agreement

AGC Glass Europe, a leading glass manufacturer, and **Traxon Technologies**, a global leader in LED lighting systems and solutions, have signed an agreement to develop their worldwide business of innovative LED-glass solutions. They will combine their knowledge and experience in glass and LED design to market unique solutions for lighting up buildings and interiors.

Glassiled, AGC's patented safety glass with embedded LEDs, together with Traxon's technology for sustainable LED lighting systems, will illuminate and animate façades, atriums, conservatories and interiors.

In addition to the advantages of LED technologies such as low energy consumption, long lifetime and space saving, as well as monochrome or sophisticated RGB colour mixing options, Glassiled enables designers to create new applications with an unlimited range of effects thanks to LEDs embedded in the transparent or mirror glass structure.

Furthermore, coupled with advanced control solutions from Traxon Technologies, customers have a world of colours at their fingertips, with individual lighting memory settings and remote control features.

"Architects and designers all over the world will be able to give their creativity free rein in mastering light with Glassiled. Thanks to the high-performance lighting software and control system from Traxon we can propose exclusive, environment-friendly solutions," says Jean-Luc Batkin, vice-president, Solar & Processed Glass of AGC Glass Europe.

"Our partnership with AGC will enhance our portfolio of LED systems and in combination with our control systems we will be able to offer superb, integrated and innovative LED-glass based solutions to the market," says Mike Mastroiannis, managing director of Traxon Technologies. "Our agreement will also lead to further synergies based on the global presence of both companies, to support local projects and customer needs."

DUPONT film plant for laminated glass



US global chemicals and plastics group **DuPont** is constructing a new plant for the production of films for laminated glass in the Moravian town of Holesov in the Czech Republic.

Through its local subsidiary Retrim-CZ, a specialist in recycling PVB (polyvinyl butyral resin) materials, acquired in 2004, DuPont is investing about EUR 9.2 million in the new facility, which initially will employ 15, and is scheduled to be launched in October 2010.

DuPont already produces safety glass interlayer materials at plants in South Korea, the US and Germany, and made the Czech acquisition to boost its presence in central and Eastern Europe.

Moreover, in 2009, the US group, which employs a total of 111 people in the Czech Republic, also opened a structural demonstration centre in Prague.

Brazilian economy is excellent.” Guardian also inaugurated its second float glass plant in Brazil, located in the city of Tatui, São Paulo.

Partnership with Intermolecular

Intermolecular has announced the signing of a multi-year collaborative development programme (CDP) and technology licensing agreement with Guardian.

The partnership involves the development and commercialization of advanced glass coatings, with target applications such as sputtered coatings to be developed with Intermolecular’s Tempus™ P-30 combinatorial physical vapor deposition platform, and liquid coatings to be developed with Intermolecular’s Tempus F-10 and F-20 wet workflows.

“Glass was one of mankind’s first breakthroughs in materials science, and it has undergone tremendous development over its 5000-year history,” said Scott Thomsen, Guardian’s chief technology officer and group vice president for glass in North America. “Through our work with Intermolecular, we hope to take materials innovation in glassmaking to an entirely new level. Intermolecular’s HPC approach to R&D allows us to comprehensively and efficiently explore the periodic table of elements, and to quickly develop and commercialize high-performance coatings for a variety of high-growth applications. Glass coatings still have enormous potential for innovation. Working with Intermolecular will allow us to extend our technical leadership, improve the performance of our existing products and accelerate new product development with lower cost and risk.”

Technologists from Guardian Science & Technology Center and Intermolecular will work together on multiple product development projects simultaneously, with Guardian team members spending significant time onsite at Intermolecular’s development facilities in San Jose, California.

“A CDP with a company of Guardian’s scale and reputation represents an important milestone for Intermolecular, extending our experience in the semiconductor sector into the significant new market of performance coatings on glass,” said Craig Hunter, Intermolecular vice president and general manager, clean energy technologies. Founded in 2004, Intermolecular is based in San Jose, California.

GUARDIAN

Launch of high technology coater



Guardian celebrated the addition of its new state-of-the-art coater at its Porto Real, Brazil float glass plant with a dedication ceremony attended by government and company officials, including Porto Real Governor Sergio Cabral and Guardian Glass Group president Russell J. Ebeid.

The coater represents the most advanced technology in the world for turning standard glass into high performance, value-added glass. The coater allows the plant to produce energy-efficient residential and commercial glass addressing the rising cost of energy for home and building owners and the reduction of CO2 emissions.

The glass coater is part of USD 40 million expansion that will create new jobs in the region.

“This expansion reflects the confidence Guardian has in the Brazilian economy. We have been growing in the country for more than 12 years now and this is just the latest in that progression,” said Guardian Glass Group president Russell J. Ebeid. “We are thankful for the support we have received from the government of Rio de Janeiro and its impressive programme of economic growth that focuses both on supporting existing business and attracting new investment to the state.”

“The State of Rio de Janeiro is proud to have been chosen by Guardian for such a significant investment,” said Governor Cabral. “We are living a moment of growth, coupled with the consolidation of stability in our economy. The timing of this project given the

LG DISPLAY new line opens



LG Display has begun operations of the extension line of the existing eighth-generation panel plant. The new line, called "P8E," will mainly produce flat-screens for televisions to meet the rising demand from its major television set makers.

LG Display's key clients range from LG Electronics to leading Chinese TV makers, while it also supplies screens to Apple, Hewlett-Packard and Dell.

"The extension line, with an initial monthly capacity of 30,000 glass sheets, will churn out 32-, 47-, and 55-inch LCD panels for televisions," said Claire Ohm, a company spokeswoman.

LG has invested some KRW 3.4 trillion (USD 3 billion) in the line located near the Demilitarized Zone (DMZ) that divides the Korean peninsula, excluding the building cost, Ms. Ohm said, adding some 2,200 new workers were hired.

She said the company is aiming to raise the monthly production capacity to 120,000 units by the end of 2010 as it is positive about the continued tight supply situation seen in the global flat-screen industry through to 2011.

"Growth in LCD panels for televisions is expected to outpace earlier predictions. The operation will pave the way for us to actively respond with growing calls from clients," she added.

Unlike its main domestic rival Samsung Electronics, LG Display is pushing its aggressive investment plans as its chief executive Kwon Young-soo is very keen to eventually lead in the sector.

LG was the winner for the first three months of this year by profits. During the January-March period, LG earned a KRW 800 billion operating profit, while that of Samsung approached KRW 500 billion.

LG also supplies its in-plane switching (IPS) technology-based LCD panels to Apple's iPads, while Samsung is making "all-out" efforts to provide its panels to the US consumer company, without any concrete results.

The company has also won approval from Beijing to build its latest eighth-generation line in southern China by knocking off Samsung, which is struggling to revamp its detailed investment plans this year due to such issues.

The LCD business is cyclical and highly volatile; making the profit structure rather susceptible to economic conditions.

If economies weaken, then consumers will delay either upgrading their consumer gadgets or buying new ones, in turn delivering a blow to LCD makers.

Although there are some worries that the sector may go into another oversupply phase due to production muscle by top-tier makers during economic recovery, it seems too early to discuss another downturn at least with just market data.

DisplaySearch, a market research firm, expects the demand for global LCD TVs to expand to 195 million units by the end of this year from 163 million units in 2009. The demand is forecast to increase to 216 million units in 2011.

"Still, the growth pace for LED-backlit LCD TVs and three dimensional TVs is bullish, capitalizing on developed markets such as the US and even China," Ms. Ohm said.

OLDCASTLE GLASS name change



To reflect the evolution in its product offering over the years, **Oldcastle Glass**® has now become *Oldcastle BuildingEnvelope*™. In fact, for many years, Oldcastle Glass® has been supplying products and services that go well beyond the definition of a traditional glass fabricator.

Oldcastle BuildingEnvelope™ has, thanks to key strategic acquisitions and product development, positioned itself as an integrated building envelope supplier, with products including custom-engineered curtain wall and window wall, architectural windows, storefront systems and doors, skylights, and architectural glass.

"The products we engineer are vastly different from anyone in our space - there's no one in our marketplace that has the depth and breadth of building envelope products," said Ted Hathaway, chief executive officer, Oldcastle BuildingEnvelope™. "And no other company has the ability to engineer those products as an integrated system."

Hathaway added that this name change reflects a comprehensive approach in responding to the changing needs of the marketplace. "Our approach is consistent with what the American Institute of Architects describes as Integrated Project Delivery, which integrates people, systems, business structures, and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste and optimize efficiency of design, fabrication, and construction. We believe this approach is the key to the future of our industry," said Hathaway.

Oldcastle BuildingEnvelope™ is a subsidiary of CRH plc, one of the top five international building product companies.



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SOLVAY failure to acquire Russian soda ash plant

 Belgium's **Solvay** has announced that it is unable to complete the acquisition of a majority stake in the Russian *Berezniki soda ash* (BSZ) plant from Sodium Group Investment Limited.

After a five-month administrative procedure, Russia's Federal Antimonopoly Service (FAS) cleared Solvay's proposal to acquire a majority ownership of BSZ on 4 June, and authorized the Bashkhir Group of Companies to acquire control of BSZ soda ash plant.

The Sodium Group decided to sell its majority ownership in BSZ to the Bashkhir Group of Companies on 9 June, resulting in Bashkhir gaining 65% control of the Russian soda ash market.

Solvay said that it is "deeply disappointed" by the administrative process which led to this outcome.

KÖMMERLING

new sealant and adhesive production facility

 Adco Europe Holdings, the parent company of **Kömmerring**, has announced the opening of its new production plant in Nanjing, China, which will be involved in the manufacture of sealants and adhesives for

the growing insulating glass, solar photovoltaic, structural glazing and transportation markets in the Far East.

Dick Spalton, managing director, Kömmerring Europe, said; "This new plant is a response to the growing demands from our customers in the rapidly expanding Asian market. Whilst some of our more established markets are still struggling to come out of recession, demand for our products and expertise in the Far East is continuing to grow. With the opening of this plant we will be able to provide our customers with a far more efficient and economic supply chain, which will reduce both freight costs and delivery times."


Sales prices increase

Kömmerring carried out double-digit price increases on its range of adhesives and sealants effective 1 July 2010.

The drastically increased demand for key raw materials used in adhesive and sealant manufacture in the first quarter of 2010 has led to supply bottlenecks and consequently massive price increases. This is a consequence of the macroeconomic recovery. Limited freight capacities and increasing packaging costs have an additional impact, which can no longer be mitigated by internal efficiency improvements. To maintain the high quality standard expected from end-users this initiative has become inevitable.

Kömmerring Chemische Fabrik GmbH is one of the leading manufacturers of Polysulfide, Polyurethane and Polyisobutylene adhesives and sealants for the insulating glass, solar and automotive industries.

MIR STEKLA'2010 post-show report

 **Mir Stekla'2010** took place in Pavilions No.1 and Forum of the Expocentre Fairgrounds, Moscow, Russia, from 7 to 10 June, 2010, occupying 19,000 sq.m.

The Project, arranged by Expocentre and the Russian Union of Architects, with the support from *GIMAV* (Italy) and *VDMA* (Germany) Associations, was held under the auspices of the Russian Federation Chamber of Commerce and Industry and the Moscow City Government.

The high international level of the event gained the approval of the international exhibition community - the Global Association of the Exhibition Industry (UFI) and the Russian Union of Exhibitions and Fairs (RUEF).

The latest glass manufacturing and processing technologies, modern machinery, equipment and tooling gave a comprehensive idea of modern glass production development prospects.


Art and decorative glass, stained-glass windows, control-measuring equipment and software support, as well as research developments, were brought to

specialists' attention. 250 enterprises and companies from 20 countries took part in Mir Stekla'2010. Fifteen per cent of companies participated in the Exhibition for the first time.

This year, Germany, Italy and China also exhibited their national and joint expositions.

The Mir Stekla'2010 programme of business related events focused on practical recommendations to help companies set up effective sales systems, to develop correct Internet advertising campaigns and explore the Russian glass market development trends and prospects.

CORNING strong Q2 results expected

 **Corning Inc.** is sending out positive vibes about its upcoming second-quarter earnings report, and indications are that results will meet or exceed the company's expectations.

Top officials of the company have said, during public appearances, that all businesses are on track to meet earlier forecasts. However, these forecasts deal only with demand, retail sales and growth rates in specific businesses, and not with revenues or profits, making it difficult to determine whether the company has met its second quarter financial goals because it has not announced them.

Consensus from Wall Street is that Corning will earn 52 cents per share, up from 39 cents per share in the second quarter of 2009 and level with the first quarter of

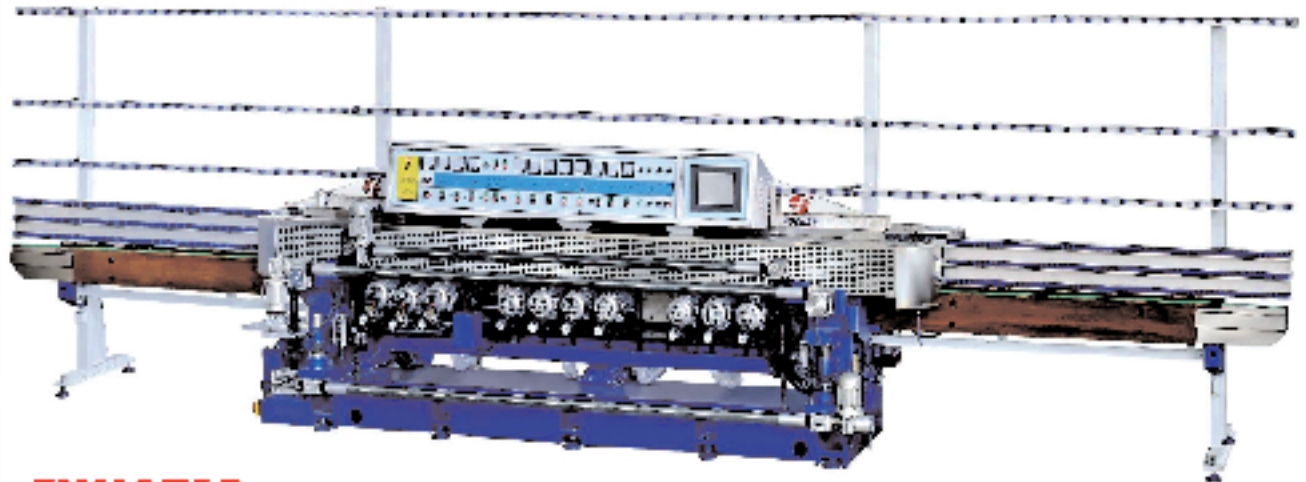
2010. With regards to revenue, Corning will take in USD 1.64 billion, an increase from USD 1.40 billion in the same period of 2009, and USD 1.55 billion in the first quarter of 2010.

Analysts have repeatedly raised their second-quarter estimates for Corning, which reflects continuing strong demand for the company's liquid crystal display glass used in televisions, notebook computers and monitors. Another factor is the increasing growth of Corning's touch-screen *Gorilla Glass*.

Corning also expects a 10-15% increase over first-quarter sales in its telecommunications business, with the start of fiber-to-the-home projects in Canada and Australia and stronger private network demand for optical fiber and cable expected to boost that business.

Corning's relatively high net income in 2010, at about 50% of sales, results from at least two factors. The first regards the company's significant cut in payroll and other costs due to the 2008-09 recession. Manufacturing operations in the highly profitable Display Technologies business have also been highly efficient.

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24 **GUARDIAN** solar mirror performance

 Glass manufacturer **Guardian Industries** has reported the results of an independent performance study demonstrating that its *EcoGuard Solar Boost-LP*, a laminated parabolic mirror for concentrated solar power applications, provides industry-leading performance.

The tests were carried out by the National Renewable Energy Laboratory (NREL), and compared the reflectance of EcoGuard Solar Boost-LP with standard 4mm monolithic mirrors currently used in most large solar fields. According to the tests, EcoGuard Solar Boost-LP has a higher solar reflectance – at 96.75 – than any measured 4-mm monolithic mirror. Moreover, according to the tests, Guardian's laminated glass reflector has an initial solar-weighted hemispherical reflectance of 96.75 ± 0.09 , and an initial specular reflectance of 95.86 ± 0.08 into a 25-mrad cone angle and 7-mrad of 94.93 ± 0.97 .

NREL is also testing the long-term durability of EcoGuard Solar Boost-LP.

PILKINGTON solar technologies partnership

 **Pilkington** is partnering with UK R&D on two separate projects to follow the progress of new solar materials that can be coated onto glass.

In one project, which has received funding from the UK government, Pilkington is working with Cambridge-based *Polysolar* to develop a demonstrator made of a large pane of glass with spray-coated organic photovoltaics (OPVs), achieving good levels of transparency. This two-year project continues PolySolar's original investment in technology, which originated from Cambridge University's Cavendish Laboratory, along with technology from US Plextronics.

Founder of Polysolar, Hamish Watson, said that the company aims to produce glass with an efficiency of 4%. This would mean that a building envelope comprising of the glass could then generate between 20-30% of its energy needs.

It may take three years before the OPV glass is commercialized, but, in the meantime, Polysolar is providing a solar glass based on amorphous silicon with a good degree of transparency, which is


already being used in bus shelters and some new building projects.

Pilkington is also the industrial partner on a project bid that involves several UK academic institutes, including Swansea University and The University of Manchester, regarding dye-sensitized and other emerging solar cell technology for the building-integrated PV market.

Dye-sensitized solar cells and other emerging printable PVs are more effective at turning more light on the spectrum to energy, whereas silicon is most effective in bright sun, making these technologies suitable for use in cloudy climates, such as in northern Europe.

In this project, Pilkington's interest is in new opportunities for construction glass, where it can be treated with the capacity to harvest energy from light and solar.

SAINT-GOBAIN second photovoltaic module plant

 As part of its solar power growth strategy, **Saint-Gobain** has announced that its subsidiary *Avancis*, will be building a new plant in Torgau, Germany, to produce photovoltaic (PV) modules for roofs of residential, industrial and commercial buildings and solar plants. The Group is already present in Torgau with *Saint-Gobain Glass* (flat glass and coated glass), *Saint-Gobain Sekurit* (automotive glass) and *Avancis* (PV modules).

The new Avancis plant, the second in this area, will have a production output of 100 MWp/year, capable of supplying year after year the electricity needs for cities of 15,000 inhabitants. With a surface area of 25,000 sq.m., the site is scheduled to come on stream by the first quarter of 2012.

"This project marks a new milestone in Saint-Gobain's commitment to the renewable energy sector. With this plant, Saint-Gobain will boost the industrial development of Avancis and help it become a major reference in the field of high-efficiency thin-film PV modules," explains Jean-Pierre Floris, president of the Innovative Materials Sector and senior vice president of Saint-Gobain. This is an extremely promising technology which combines the low production costs associated with all thin-film based techniques, with efficiencies approaching the higher levels achieved using polycrystalline silicon cells. The Avancis modules are particularly recommended for roof installation, being simple to mount, stylish and reliable.

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SOUTHWALL TECHNOLOGIES Southwall Insulating Glass joint venture



Southwall Technologies Inc. has announced that it has acquired a 70% majority interest in Chicago-based **Southwall Insulating Glass**. Ron Spielman, president of *Sound Solutions Windows & Doors*, will remain a partner and continue to contribute his extensive glass and window industry expertise to the venture. Thanks to this acquisition, Southwall Technologies has strengthened its position in the fast-growing green building market, and can accelerate the automated production of *Heat Mirror* insulating glass.

This move also demonstrates the company's continued focus on investing in strategic innovation to contribute in its meeting the growing demand for improved window energy efficiency, required by the Department of Energy's recently introduced Highly Efficient (R-5) Windows Volume Purchase Program.

"We established the joint venture 24 months ago to directly address the challenge of manufacturing high performance Heat Mirror insulating glass at volume," said Dennis Capovilla, Southwall chief executive officer. "As the market increasingly demands higher energy efficiency performance that can no longer be achieved with dual-pane insulating glass technology, this acquisition positions Southwall to drive broad market adoption of higher performing Heat Mirror suspended-film technology."

"The selection of Heat Mirror insulating glass by established brands such as Owens Corning and in landmark projects such as the Empire State Building energy efficiency retrofit has helped validate green building as a potential high growth market for Southwall. Coupled with the solid progress that we have made on key process automation projects, the timing was right to accelerate our investment in making Heat Mirror insulating glass suitable for high-volume production."

Heat Mirror insulating glass suspends one or more low-emissivity and solar-reflective Heat Mirror films inside an insulating glass unit to create two, three or even four insulating cavities without adding weight. Thanks to this innovative approach, window fabricators can obtain offer higher performance glass options for both existing window systems as well as for those under development. Heat Mirror suspended film technology thus creates the industry's first "super glass" with centre-of-glass insulating performance ranging

from R-6 to R-20 while minimizing solar heat gain and blocking UV radiation.

Southwall Technologies Inc., leading innovator of energy-saving films and glass products that dramatically improve the energy efficiency of buildings, homes and vehicles, is an ISO 9001:2000-certified manufacturer with customers in over 25 countries.

LUMIGLASS INDUSTRIES laminated glass capacity boosted



Lumiglass Industries has reportedly almost doubled its production capacity of laminated glass thanks to the installation of a state-of-the-art pre-laminating unit from Germany-based global automotive supplier Benteler AG.

Lumiglass, a subsidiary of *Glass LLC*, which is wholly owned by Dubai Investments PJSC, is one of the largest manufacturers of laminated safety glass in the Middle East. The company's laminated glass production capacity has, with the installation of the new pre-laminating unit - the largest machine of its kind in the region - increased to 35,000 sq.m. per month, almost double its previous capacity.

"In adding this state-of-the-art machine to our equipment line-up, Lumiglass increases its laminated glass capacity by almost 100% at a stroke," said Sultan Al Zarif, general manager of Lumiglass Industries. "The new machine will help us meet the rising demand for laminated glass, and allow us to boost our competitiveness by delivering superior quality, low-emission laminated glass products."

"At Lumiglass, we always seek to be at the leading edge of glass development in the Middle East. Our strong focus on innovation, coupled with our constant upgrade of equipment and facilities, allows us to produce and supply a wide selection of high-performance laminated glass to customers around the region," Al Zarif added.

The new pre-laminating unit, which is designed to handle soft coatings, low-emission glass, temperable glass, and photovoltaic solar cells, and more, can produce 2,600 x 5,500mm, and thicknesses of approximately 4-100mm.

Lumiglass' also has one of the world's largest *Tamglass* autoclaves, a fully automated Robotech pre-processing line, digital ceramic frit screen-printing, and two *Tamglass* continuous-carrier bending furnaces.

BOHLE AMERICA technical sales manager

 **Bohle America, Inc.**, with headquarters in Charlotte, North Carolina, has announced that Justin Lineberry has joined the team as technical sales manager. Bohle America, Inc. was established in 2008 and is part of the *Bohle Group*, leading manufacturer and supplier of tools, machines and consumables for glass processing and finishing.

Justin Lineberry brings many years of management experience in sales and glass processing, the last six years with an international company in the glass industry. He has also gained considerable knowledge of and appreciation for Bohle products.

As technical sales manager, Justin is responsible for application and sales support for a rapidly growing customer base. His expertise will benefit sales staff and customers alike, as Bohle America further positions itself as

a company that supports customers with advice and transfer of know-how and delivers not only quality products, but solutions as well.

The Bohle Group, Europe's leading supplier and manufacturer of quality tools, machines and accessories for glass processing and finishing, has had its own subsidiary in North America since 2008. Bohle America, Inc. is the Bohle Group's 14th location worldwide, and is responsible for developing the customer base in the US and for providing services to these customers.

In America, Bohle is building a full range of products to become a leading supplier to the American glass industry. It is committed primarily to market quality products from the divisions Manual Glass Cutting (Silberschnitt and Diamantor tools), Industrial Glass Cutting (cutting wheels) and Glass Bonding (Verifix products), but also every day supplies to the glass business. The family business, founded in 1923 in Germany, is represented by over 300 employees at many locations worldwide. Divided into the product divisions Handling, Glass Cutting (manual and automatic), Glass Bonding, Glazing, Tools, Machinery, Fittings and Surface Technology.

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DENVER new sales organization



San Marino-based **Denver** presents its new sales department organization, designed, the company says, to better focus on specific markets and to offer customized relations to its clients. The sales area is now split into two different divisions: glass and stone, with Alessandro de Angelis and Mauro Bedocchi as sales managers of the two divisions respectively.

Aurelio Gramellini, who previously managed the sales department in Denver and is now a senior manager, will support the strategy definition and implementation.

“Mauro Bedocchi grew up as a professional salesman in Denver, in fact he started working with us more than 10 years ago. During this time he was area manager and then export manager. He is a very skilled professional, with a strong dedication to his job and to our company, we have to thank Mauro for a number of commercial success in Denver, for example thanks to his ability the North American market grew up in a successful way. Considering this it seems natural to give him the opportunity to upgrade his role in Denver family. Mauro will oversee the back-office and the other area managers operating on single market areas. I’m confident that Mauro, thanks to his motivation and professionalism, will be the right person to tackle the global market crisis and to drive us to conquer a new position closer to our clients both in terms of presence on the market field and service offer.”

But stone machines is one side of Denver business, the other – stronger and stronger day by day – is glass. To handle this growing success, Denver has appointed Alessandro de Angelis.

“We chose to have on board a very experienced person, who worked in leading companies, in order to invest in a long way perspective. Alessandro knows this market very well and will start very soon to expand key client databases and to develop the business. If I look back I see great goals achieved in only four years: a fantastic job mainly performed by Maurizio Scaglia, and I’m very glad to thank him on behalf of Denver too. Maurizio of course is always part of our team managing both the domestic market and extra European ones,” said Aurelio Gramellini.

“As a senior manager, I will support Mauro and Alessandro in their new roles. I will also work with the General Management and Denver’s owners to define guidelines and strategies: in other worlds I will be, more than ever, part of the board of direction of our company working hard to create a successful future for all of us.”

GLASTON

CFO appointed



Glaston has appointed Tapio Engström to take over as chief financial officer (CFO) from Kimmo Lautanen, who announced his resignation earlier in May, as of 1 July 2010.

Engström comes from CPS Color Holding Oy, where he has worked since 2009 as CFO, and was previously CFO at Aspocomp Group Oyj. He was also CFO at Vaisala Oyj and director of business development from 2003 to 2006.

“Tapio Engström will bring us a broad international know-how. His experience of improving the operational efficiency in the finance function is also valuable to our organization,” says Arto Metsänen, president and chief executive officer.

Vice president, sales and services

Sasu Koivumäki has been appointed as vice president of sales and services for North America with effect from 11 May 2010, taking over from Jack Van Meerbeeck.

Koivumäki, who joined Glaston in 2002 and has held various financial and management positions over the years, reports to Arto Metsänen, CEO and president, Glaston Corporation.

“We want to be in the forefront of the technology. Glaston continues to design, develop and engineer the dependable world-class *Bavelloni*, *Tamglass* and *Uniglass* machinery and services. Our *Albat+Wirsam* and *Cantor* software team is at the forefront of innovation and technological advances. At Glaston, we want to be more than just a supplier; we truly want to be a reliable partner for our customers and constantly seek better ways to serve them,” says Koivumäki.

Senior vice president, Supply Chain

Glaston has appointed Pekka Huuhka (53) as senior vice president, Supply Chain as of 1 August 2010. Pekka Huuhka will be a member of Glaston Corporation’s Executive Management Group and report to Arto Metsänen, president and CEO, Glaston Corporation.

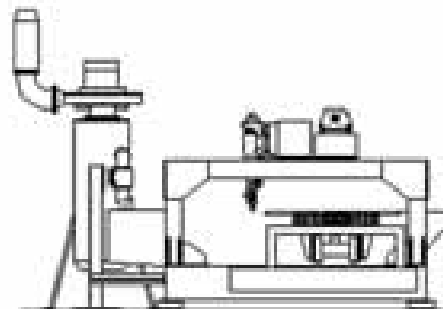
Huuhka will join Glaston from Oy SWOT Consulting Finland Ltd., where he has worked since 1998 as managing partner. Prior to that, he was general manager at Tamrock Proco’s Tampere plant 1997-1998 and President for Tamrock Region Europe 1993-1997.

Topi Saarenhovi continues as SVP, Machines, concentrating on Technology and Product Management. He continues as a member of Glaston’s Executive Management Group reporting to Arto Metsänen

TOTAL SOLUTIONS FOR GLASS INDUSTRIES!



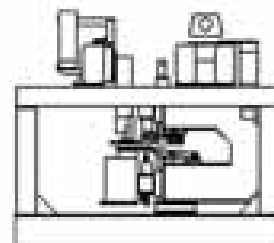
AUTOMOTIVE AND ARCHITECTURAL
LOADING SYSTEM
UNLOADING SYSTEM



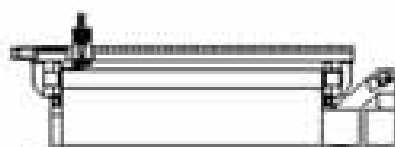
AUTOMOTIVE AND ARCHITECTURAL
CUTTING/BREAKOUT/GRINDING MACHINE
BEVELLING MACHINE



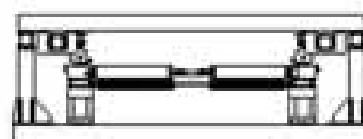
AUTOMOTIVE AND ARCHITECTURAL
STRAIGHT CUTTING MACHINE
SHAPE CUTTING MACHINE WITH EDGE DELETION DEVICE
WITH BREAKOUT DEVICE
DIAGONAL CUTTING MACHINE
LAMINATED GLASS CUTTING MACHINE



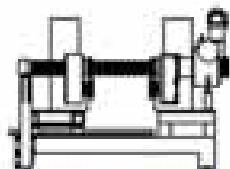
AUTOMOTIVE AND ARCHITECTURAL
DRILLING MACHINE



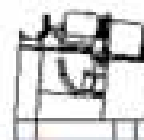
AUTOMOTIVE AND ARCHITECTURAL
WATERJET CUTTING MACHINE



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AGC new president, senior VPs at AGC North America



Asahi Glass Company Ltd. (AGC) has appointed Marehisa Ishiko as the new president and chief executive officer of AGC Glass Company North America (AGNA), succeeding Brad Kitterman.

Ishiko was previously president of AGC Glass Company for the Japan/Asia Pacific region, and has 28 years of experience with various AGC companies.

Further appointments include: Kenzo Moriyama as executive vice president of strategic planning; Kazu Sako as senior vice president and chief financial officer, succeeding Ryne Van Gorp; and Mike Vigna, vice president, human resources, who succeeds Lisa Escobar, all at AGNA.

Moriyama and Sako are 28-year veterans of AGC, and have moved to the US to fill their new positions. Moriyama was general manager of planning and strate-

gy for AGC Glass Company Japan/Asia Pacific, while Sako had a dual role in AGC's Finance and Control Office, heading up both the finance area as well as leading the planning and coordination for that office.

Vigna has been with AGC for 10 years and was most recently with AGC America (AGNA's parent company) as North American regional vice president of human resources.

In his present role, he will be responsible for all human resources for AGNA and its subsidiaries.

"AGNA's financial performance has been disappointing over an extended period of time - even taking into account the economic downturn," says Akio Endo, AGC senior executive vice president and president of AGC Glass Company, which oversees all of the AGC's worldwide glass businesses.

"AGC is a world leader in glass production, and we are determined to be a leader in North America. We are fully committed to this end, and will leverage our global resources to achieve the full potential of our businesses here. The assignment of these proven and talented executives is, in itself, a strong statement of our commitment."

BENDHEIM new production manager



Architectural and speciality glass specialist **Bendheim** has announced the appointment of Mr. Boldyrev as responsible for the company's architectural flat glass processes, overseeing production and sampling of speciality decorative glasses.

Boldyrev brings to Bendheim more than 12 years of management experience in plant operations, extensive software development knowledge and team management skills. Prior to joining Bendheim, he worked for seven years as production/operations manager for Carvart Inc., with responsibilities for the company's manufacturing operations and technological process development and implementation.

Before that, he was senior project manager for BOND Technologies, Inc., a New York City website development company. He headed project analysis, design, and implementation, and was involved in new business development and client relationship management.

Boldyrev holds a Bachelor of Science degree in computer science and business management from Odessa Polytechnic University in Odessa, Ukraine.

CHEADLE GLASS sales manager named



Cheadle Glass has appointed Steve Dakin as sales manager, where he will also be responsible for developing new markets for Cheadle Glass. Dakin has spent 10 years in the glass processing industry and was most recently business development manager with glass surface protection specialists, *Ritec*.

Cheadle Glass, a privately owned business, was founded 42 years ago, and is headed up by Keith Flowers.

Flowers said: "We have made significant investments in the business over the last few years, most notably an extension to our factory plus new technology and machinery. In order to keep developing and growing the business we need to take full advantage of the resource we have, which of course includes our highly skilled workforce, and Steve will help us to do just that."

"Cheadle Glass is well respected in the industry and I am looking forward to developing Keith's vision for the business as we take it into the next decade, said Dakin. The skills, know-how and technology available here are second to none and I am looking forward to working with the team to help make the business even more successful."



MOUNTAIN

Mingte Company, specialized in manufacturing first-grade glass processing machineries.

Main product scope: Flat/bent glass tempering machines, double-curvature glass tempering machines, flat, bent glass laminating production line, automatic mirror silvering line, CNC cutting machines..

The glass products made by such machineries can be fully as architectural glass, elevator glass, shower-room glass, auto glass (windscreen, sidelites, backlites, and skylight windows, etc.), and mirror glass.

Advanced Heating system

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Custom Machines Available



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Web:www.mingteglass.com

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CRL acquisition of Vitrododi Supply Division



CRL has acquired the supply division of Italian **Vitrododi International Co.**, with effect as of 30 June 2010. Milan-based Vitrododi, which has been operating in the glass field supplying machines and tools for three generations, serves several markets, predominantly across Europe, the Middle East, and North Africa.

The business was established in 1927 by the Dodi family for the traditional production of mirror paint, going on to the export of Italian made machinery and tools in the second post-war period. In the 1980s, Vitrododi started to develop and manufacture its own machinery, also becoming the exclusive European distributor for *Toyo Glass Cutters* from Japan: Supercutters, Pistol and Thomas Grip Hand Cutters, as well as Glass Cutting Wheels for automatic machines - such as the innovative Tap Wheel, plus all of Toyo's associated glass working and breaking tools.

The company then developed into two distinct business units, *Vitrododi Production* and *Vitrododi Supply*. CRL has acquired the supply division, along with the distribution rights to the entire Toyo product line. This acquisition will allow Vitrododi to focus on R&D and the manufacturing of its glass washers, which will become the core business of the company's Production Division.

"We are proud to welcome the Vitrododi Supply business into the expanding CRL family; this move both underscores our commitment to developing the European, Middle East, and North African markets, and to ensure our customers have great choice and availability of proven and well respected products," said Lloyd Talbert, president, CRL, in the release. "We are particularly proud of the support shown by Toyo, Japan, for this arrangement following their recognition that we are determined to not only serve them well, but also develop the markets and opportunities for their range. In addition, we will continue to

VITRUM 2011 official dates set



Vitrum, the international event that brings thousands of foreign visitors to Milan, northern Italy, has announced the dates for the next edition.

To be held between 26-29 October 2011 at the Fiera Milano complex in Rho, expectations for the fair are high on the results obtained from the last edition: foreign visitors (from more than 100 countries) increased significantly compared to 2007 (+3.68%).

Vitrum will also include the latest technological innovations in flat glass applications: sophisticated technology companies in the sector engineered for the most traditional (i.e. industrial, architectural and furniture) and innovative applications, such as solar power systems.

The entire Vitrum Hollow Glass section will be dedicated to tableware, bottles, speciality glass for pharmaceutical/technical applications and state-of-the-art products designed to meet high safety and sanitation standards.

Energy-saving and renewable energy technology will be featured in the Vitrum Energy section, while Vitrum Lab, the art lab project launched in 2009, and sponsored by the Lombardy Regional Authority - Education, Training And Labour Department, as well as the Provincial Authority of Milan will also continue to promote glass related art, crafts and culture. Elementary school children will once more be invited to attend the Fair, participate in creative workshops, and watch amazing live performances by Master Glassblowers from Murano.

During *glasstec 2010*, updates on Vitrum 2011 will be available at the *GIMAV* stand: Hall 16, stand D 36.

supply the Vitrododi portfolio of small glass processing machines and the associated lines that we feel compliment or enhance our product offer."

Managing director of CRL Europe, Simon Boocock said in the release: "We will retain the Vitrododi name; it is highly respected, well recognized, and closely associated with the distribution of Toyo products. With this acquisition CRL moves further into Europe and becomes a major force in the supply of glass cutting tools, cutting wheels, and related technologies through the exclusive master distribution agreement. Just as Vitrododi did before, CRL Vitrododi will supply wholesalers and distributors throughout the region, in addition to any existing end users. To ensure high levels of service, the business will be transferred to our new 75,000-sq.-ft. (7,000 m²) sales and distribution facility near Manchester, UK and will be operating as normal within a few short days."

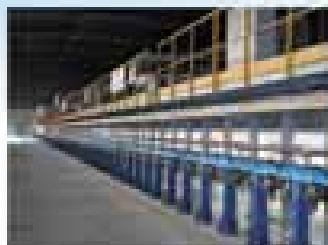
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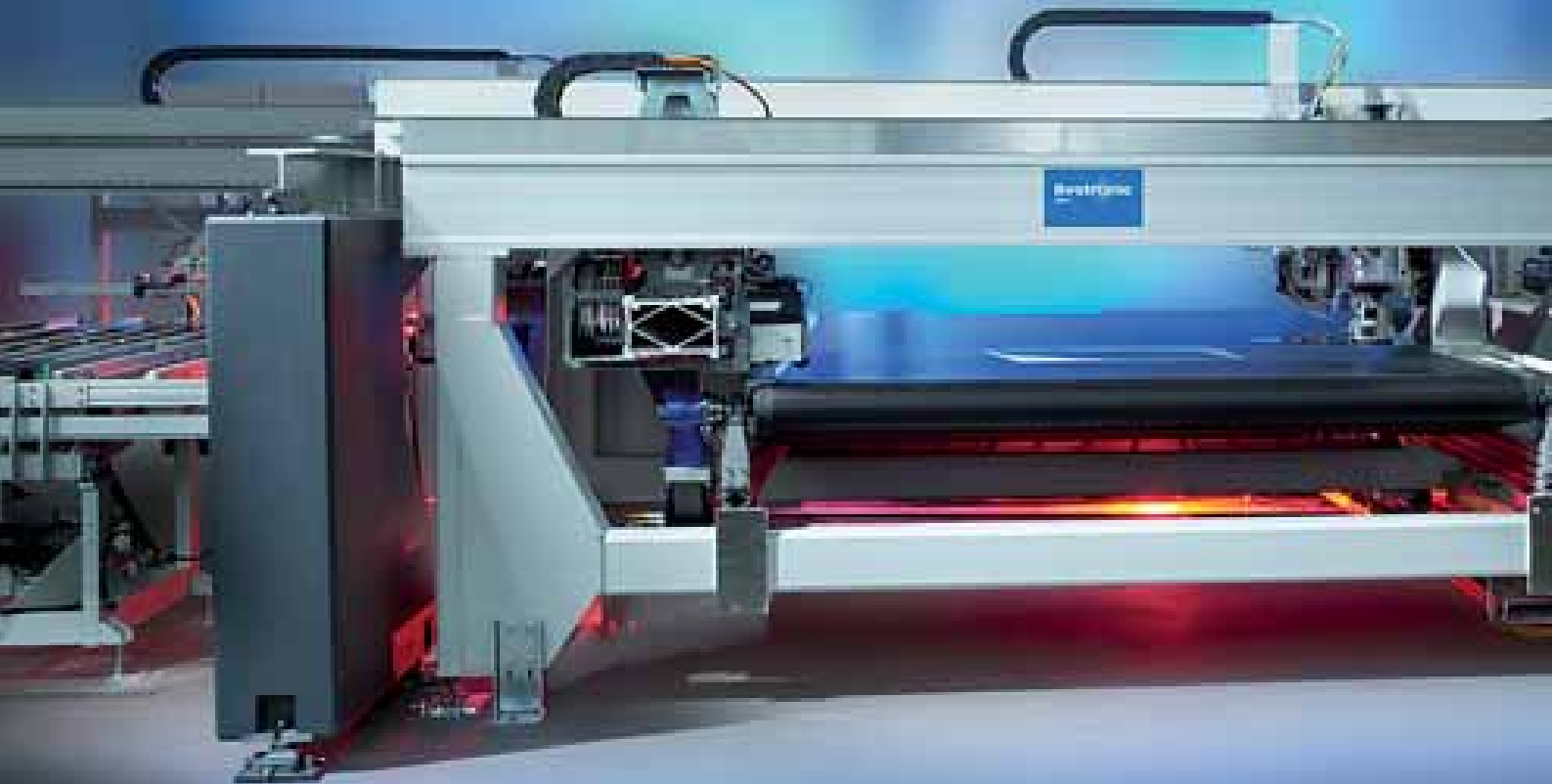
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Bystronic glass: more precise glass

RELAUNCH: 2ND GENERATION BYSTRONIC GLASS COMPACT'S SEALER

German manufacturer and distributor of IG units *KÖWA Isolierglas GmbH*, Wackersdorf, has been working with the first Bystronic glass second generation *compact's sealer* since the beginning of 2010. "We were won over by both the machine's capabilities as well as the fast, expert

service provided by Bystronic glass," explained *KÖWA's* Managing Director, Klaus Köhler.

The compact's sealer was originally designed as a start-up solution for automatic sealing of insulating glass units. As it has been in the industry for almost 40 years, 'start-up' is hardly the word to use to describe *KÖWA*, a member of the *Uniglas* group, and manufacturer of insulating glass. When the company contacted Bystronic



champ'speed line

This article gives examples of how Bystronic glass can make important contributions to very important glass sectors: insulating glass and automotive – with two of its machines in their latest formats. With these developments, architectural glassmakers are able to obtain the automatic sealing of IG units, while automotive glass can be cut, separated, ground and drilled with, in both cases, the highest possible precision and flexibility.

faster and processing

glass it had already been manufacturing the product on two insulating glass lines for many years; the larger of these lines was modernized in 2009 and equipped with the latest machines from Bystronic glass. The smaller of the two lines then needed a new sealing robot, which had to fit exactly into the available space. So the company, based in Eastern Bavaria, decided on the compact version of the sealing robot, among

Peter Tauber, KÖWA,
positioning a spacer frame
at the insulating glass line



Bystronic glass: faster and more precise glass processing

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other things, because of the machine depth. “Bystronic glass was able to produce good references and ultimately convinced us not only about the machine’s technology, but also in respect of the personal advice given to us by their expert sales team,” recalled Klaus Köhler.

COMPACT’S SEALER WITH INNOVATIVE TECHNICAL DETAILS

Besides the compact’s sealer’s proven functions including a volume-controlled and easily accessible dosing system, no-contact conveyor through an air cushion rear wall, and a quick-release closure system for rapid nozzle changing, the latest version of the machine has a few extra technical details. By using a metal spatula which was already in use on its ‘big brother’ – the ‘sealer’ sealing robot – which locks the corners during the injection process, it is possible to achieve a much better quality at the corners. Furthermore, an additional sensor ensures even more accurate calculation of the required quantity of sealing material - even when the space between lites is uneven it is impossible to dispense too much, with resultant spillage. A special coating on the mixer prevents the sealing material from sticking and extends the intervals between cleaning. By implementing high-performance materials with outstanding surface qualities, the dosing unit’s service life is also extended.

COMPACT AND SIMPLY FAST

The staff at KÖWA are extremely pleased with the way the new compact’s sealer operates. “It’s a completely new generation of machine, that has made our work much easier,” reported Peter Tauber, who, with Cornelia Krempf, is joint Production Manager at KÖWA. He added: “The machine is controlled on a 3D interface with sliders, so it’s easy to operate and very accurate even while wearing gloves. Just one person can quickly change the material drums, and the nozzles are flushed by simply actuating the operator knob while in automatic mode.”

The dosing pistons on the two materials compo-



Figure A

Fig. A - The compact’s sealer for sealing IG units at KÖWA

Fig. B - Klaus Köhler, KÖWA, and an employee at the control unit of the Bystronic glass washing machine at the beginning of the IG line

Fig. C - Loading of automotive glass at the champ’s speed line



Figure B



Figure C

nents are synchronized during the mixing process. This means that in automatic operation it is possible to utilize the maximum amount of material available, therefore avoiding machine stoppages. "On our smaller line we seal insulating glass units in very many standard sizes," continued Klaus Köhler, who saw a distinct increase in demand for triple insulating glass units in 2009. To meet this demand, the sealing robot needed to be able to provide a high quality seal quickly and evenly, also on triple units. "With the compact'sealer we have acquired a machine that meets all our requirements perfectly," explained Production Manager Peter Tauber. In addition to the compact sealing robot, KÖWA has also been operating on the Bystronic glass insulating glass line mentioned at the beginning of this article since last year, with the company producing units up to 4.00 metres in length.

FASTER AND MORE PRECISE AUTOMOTIVE GLASS PREPROCESSING

With its *champ'speed line*, Bystronic glass is launching a brand-new generation of machines for preprocessing automotive glass. The line enables cutting, breaking, grinding and drilling of automotive glass with the utmost precision and flexibility. "The champ'speed line is currently the fastest machine of its quality on the market," says Jean-Philippe Chételat, Sales Manager for the Automotive Glass Sector at the Technology Center Bystronic Maschinen AG in Switzerland.

"We have listened to our customers' demands and now – with the champ'speed line – we have adapted our system solution for preprocessing automotive glass for the latest market requirements", explains Jean-Philippe Chételat. All the modules in the machine are individually matched to each other, the movements can be separately configured and, for example, optimized with regard to cycle time. The extremely stable, vibration-free process means that customers can work for many years with a consistently high quality level. "With a repeat accuracy of up to 99 per cent, the champ'speed line outshines every other machine available on the market", the Sales Manager is pleased to report. As all the machine parts are within easy reach, working with the new system is an extremely ergonomic process.

CUSTOMIZED, INTELLIGENT STATE-OF-THE-ART TECHNOLOGY

The heart of the system is the cutting and breaking unit. The cutting module contains a maintenance-free AC servo direct drive. Thanks to faster acceleration, it operates extremely dynamically with simultaneous maximum cutting accuracy. While doing so the machine automatically optimizes its speed to match the shape to be cut. Precutting of the glass lite, along with shape cutting and breaking, is conducted in two process steps and therefore enables parallel processing. This in turn results in a definitive cycle time advantage along with high productivity. In addition to this, the use of a special, maintenance-free breaking tool guarantees perfect quality of the edge breaks.

MAXIMUM GRINDING STANDARD

The grinding module can simultaneously use two grinding wheels enabling a fast bit change. "This means that, for example, automotive glass can be ground in different edge radii, without any need to change the tool in between," explains Jean-Philippe Chételat. As with the cutting module, the grinder module's rotating table is equipped with a maintenance-free CNC direct drive that operates with extreme precision without any play. Additional technical advantages are the automated system for height adjustment of the grinding wheel and a new, efficient cooling system, which ensures that the glass remains dry during processing.

With its champ'speed line, Bystronic glass provides not only a machine for preprocessing automotive glass but also one for processing glass in solar technology as well as for domes-

Automotive glass breaking with the champ'speed line



Bystronic glass: faster and more precise glass processing

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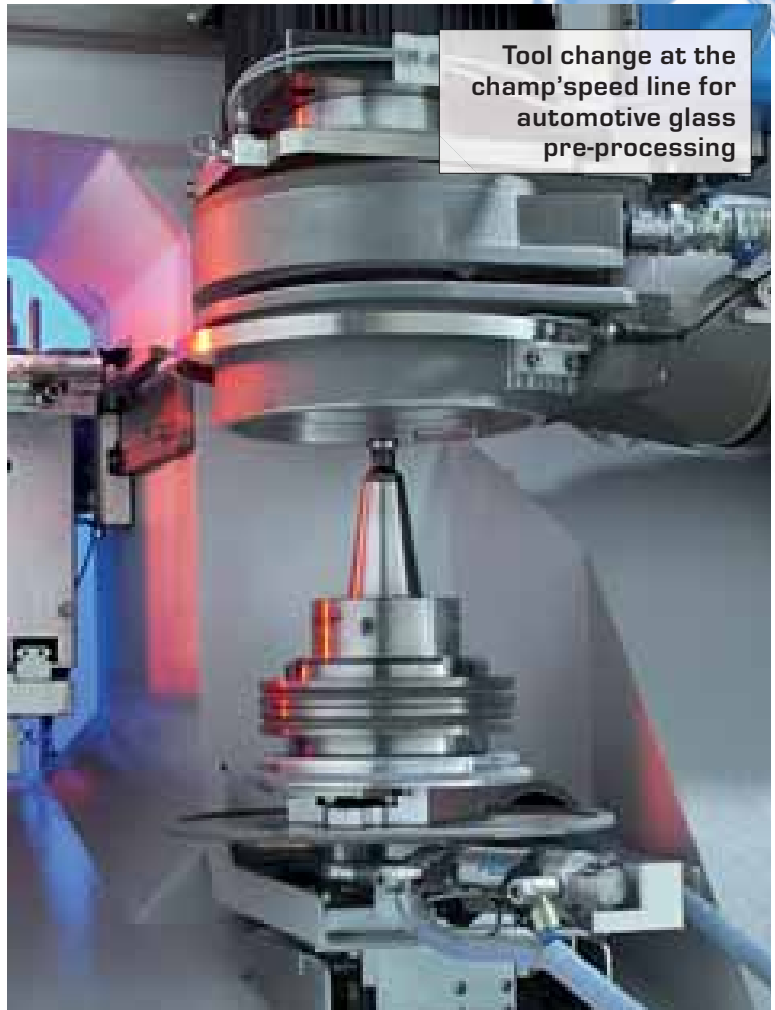
tic appliances. “As market leader we guarantee the highest production and quality standards providing maximum productivity, outstanding performance, stringent tolerances in grinding precision and perfect edge-processing technology,” says the Sales Manager.

LIVING FOR THE FUTURE

Alongside the technical advantages the champ’speed line has an additional benefit: 20 per cent of the energy used is recycled back into the production process. While the system’s drives are braking, Bystronic glass converts kinetic energy into electrical energy and feeds it back into the network. This way, Bystronic glass upholds its “Preprocessing of Automotive Glass” core competence in respect of sustainability, conservation of resources and energy saving, while also systematically committing to the ‘Living for the Future’ ecological concept as introduced at *glasstec 2008*.

ABOUT BYSTRONIC GLASS

Bystronic glass is the most competent and reliable partner for services, machines, plants and systems in the major sectors of glass processing for building and automotive glass. For some time now the Bystronic glass Technology Centers, Bystronic Armatec GmbH, Bystronic Lenhardt GmbH and Bystronic Maschinen AG have been using tried-and-tested machine technologies, including in major areas of the photovoltaics industry. This encompasses solutions in preprocessing, front end and back end. Bystronic glass is an international brand with globally-operating companies, that supports its customers with local and its own sales and service companies. Since 1994, Bystronic glass has been part of the Conzeta Group, a renowned Swiss industrial holding. ■



Tool change at the champ’speed line for automotive glass pre-processing



Cutting of automotive glass with the champ’speed line

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Fratelli Pezza: low consumption, high performance and reliability

In July, Glass-Technology International went to visit Fratelli Pezza, an expert in the construction of sandblasting machinery. Concentrating on only one type of machine makes Pezza a real specialist in its sector and the company is known the world over for its machines and their reliability.

THE COMPANY

Fratelli Pezza, located in Clusone, near Bergamo, northern Italy, was founded in the 1970s as a manufacturer of plants for the chemical sector, shifting its focus to the glass sandblasting sector in the 1980s, a sector to which it dedicates effort and enthusiasm, designing and manufacturing technologically-advanced equipment currently representing leading edge technology in Italy as well as throughout the world. Accurate designing and scrupulous manufacturing result in an equipment range that is both versatile and thorough.

Pezza's manual and semi-automatic cabins and automatic numeric-control plants are used for extensive productions with absolutely constant and verifiable quality on every single item. All equipment and systems are covered by patents, which ensure and protect process quality together with the absolute safety that has always been the strong point of Fratelli Pezza's machinery.

Fratelli Pezza: low consumption, high performance and reliability

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THE INTERVIEW WITH PAOLO DE BORZATTI AND MICHELA PEZZA

During our visit to Fratelli Pezza, we spoke to Paolo De Borzatti, Sales and Marketing Manager, and Michela Pezza, Sales, to find out about their ideas on the past, present and future of the market.

“Even if the past year was critical for us all, we can honestly say that despite the present year beginning with a state of general calm, above all in Italy, we at Pezza have 15 per cent more turnover than last year, thanks mainly to exports - especially with regards to May and June. This difficult situation, due to very limited cash flow in all sectors and countries – is a further and continuous consequence of the global financial crisis.”

“But I must say that sales are coming in, even if with maybe fewer requests from clients. This is what we are experiencing especially on the Italian market, where we have direct contact with clients, while in foreign countries we chiefly work with retailers.”

In 2009, at the centre of the financial crisis, Fratelli Pezza created its own special campaign where clients were invited to trade in their old machine for a new one – with the possibility of a discount and, as De Borzatti said during the interview, “our campaign to trade in old machines had much more success and gave more benefit to us than that of the Italian

government!” The campaign was aimed at clients with a manual machine, giving them the possibility to trade it in for an automatic one, with a considerable discount.

And what about products? Is sandblasted glass still requested?

Oh yes. There are certain companies that are varying their product range – especially in this crisis period – and sandblasting is a method of processing that can enable to use glass pieces that would otherwise be thrown away – a further savings for glassmakers even with glass that is not completely perfect.

It also means that glassmakers can diversify their production range – and even with a small investment and low production costs, and can enable to have artistic pieces and small glass items.

What about international markets – which have already had a good comeback?

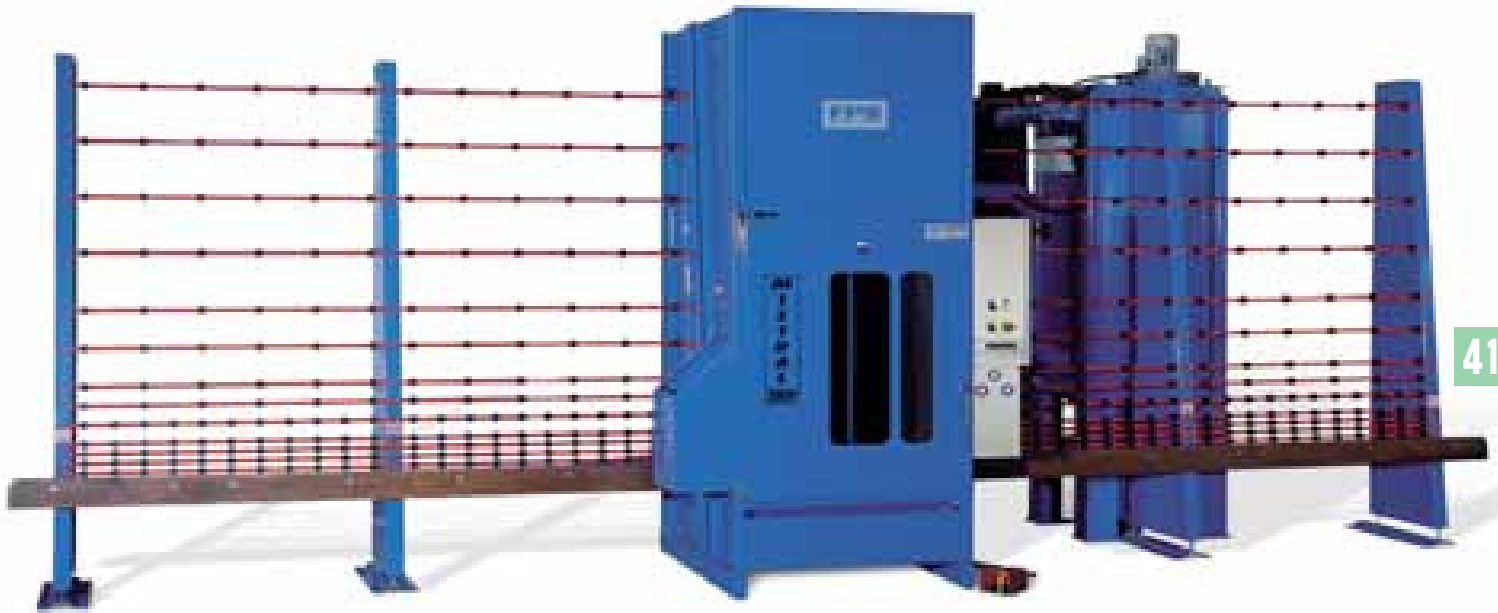
“South America has always been a good market for us – it is the market that the crisis in general has not really had much effect.

Brazil is a rather particular market and sales there are very difficult, especially because of the import taxes which increase prices so that they are no longer competitive.

Those companies that can afford to open a production unit in the country can reach good



Zephir Z120



Mistral 260V

results but those who want to sell their products from their own country generally have great difficulty.

This does not exclude, however, one-off sales even if the import taxes are almost 40 per cent.

Venezuela is also a good market for us, thanks to state grants that are financing companies as far as exchange rates are concerned, along with Peru, Chile and Mexico.

Argentina, however, is a difficult country, mainly because of the country's internal economic difficulties."

Pezza is, on the other hand, presently concluding an order for a large plant in the United Arab Emirates – the second plant from the same client who has diverse manufacturing plants there.

And what about Europe?

"It is suffering too – just like Italy, even if Pezza has some ongoing projects that will bring results in the medium- to long term. In some countries results are positive, but on the whole, these are one-off sales as there is still difficulty in programming long-term sales campaigns."

EXPERIENCE AND RELIABILITY – 40 YEARS OF ACTIVITIES AND FOUR-YEARS' GUARANTEE

With new companies setting up in Europe, where price seems to be a fundamental strategy, and which are cutting prices to the minimum, Pezza has reacted aiming at communication and advertising on the quality and reliability of its products – with a special guarantee of four years – the only company to do so.

With markets that are full of low-cost machines that work today and tomorrow are broken, reliability is an important characteristic. Being able to guarantee a machine for four years is important – both for Pezza and especially for the companies that buy the machines.

Pezza has been able to give a four-year guarantee because it knows very well that its machinery does not have any other problems other than the usual programmed substitution of parts in contact with the chemicals used for sandblasting. This is a certainty for the company thanks to the 40 years it has spent becoming an absolute expert in its field – sandblasting.

PRODUCTION AND NEW MACHINE – STANDARDIZED PRODUCTION

With the present and ongoing difficult economic situation in mind, Pezza has launched a new product on the market.

"We thought – why invest money and human resources in another high-tech machine to make it the top of the range if there are no buyers as these technical features would obviously increase the price of the machinery?"

Obviously, research is still ongoing to look for and create these high-tech advantages and machinery and optimization, which also includes the identification of top level suppliers and components. But what the company has decided to do during this difficult period is to avoid further steps in technology – with consequent price increases for its clients – concentrating more on the central and lower parts of the market, to increase its coverage there while maintaining its strong position in the higher market sectors.

This has led to the creation of the *Zephir*, a sandblaster that differs from the *Mistral* in that it does not have the full series of options that the latter has but, on the other hand, is perfectly suitable for all those glassmakers who mainly need the most common working features/options (such as normal, light and engraved sandblasting) and want to limit the extent of their investments without renouncing to the highest quality standards that only Fratelli Pezza can offer."

"Glassmakers who didn't really need a

Fratelli Pezza: low consumption, high performance and reliability

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machine with all the options of the top of the range often found the Mistral to be a bit expensive and therefore decided to buy a machine of lower quality at a cheaper price.”

Zephir, which has been developed thanks to the experience gained with the Mistral series, has undergone an optimization overhaul, standardizing production even further, and is therefore a turnkey machine. This machine will have two different versions as far as voltage is concerned, which is a fundamental feature we consider electric control panels and supply in the different sized glassworks.

“We will therefore keep one or two of these machines in stock to be ready to supply to those who need them. There will also be the possibility of slight modifications – obviously with change in price as per the modifications that are requested – and more time needed to suit the machines to these different needs.”

“This level of standardization has therefore enabled us to differentiate the price of the Zephir considerably from the Mistral – with obvious advantages for the glassworks who do not need a full-optional machine.”

“There has also been a radical price change and this is already bringing good results. We have not really started to advertise the machine yet – we will start in the next few months on our website and advertising – but since we have informed our sales network and agents, we have already sold a lot of these machines in the last three months”.

Zephir will be on show at *glasstec* at the end of September, along with the Mistral, as well as a totem with a glass cabinet, where Pezza will also have on show the other parallel products that it commercializes – the sand and the chemical mix used for sandblasting.

OTHER PRODUCTION

Pezza still manufactures its manual machine – the *Ghibli* entry-level machine – but is concentrating more on automatic machines – its core business. The *Ghibli* is generally the first machine that these glassmakers buy before deciding on an automatic machine.

Other advertising concerns the products that are used in sandblasting because clients often do not know that, other than manufacturing machines, Pezza also sells the sand used by the machines and the chemicals. Mix 30, for exam-

ple, used to treat the sandblasted parts of the glass; and more, which will also be on show and advertised during *glasstec*. ■

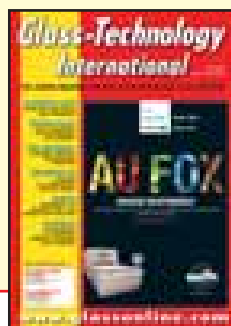


Mistral 180V

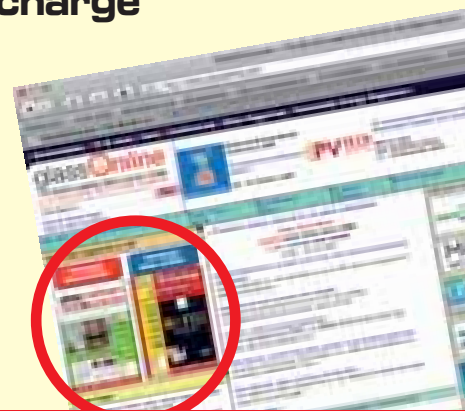


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Automatic supply of glass panes for IG production

SortJet, from **Hegla**, is, says the German machinery manufacturer, the ideal solution where the optimized cutting and breakout sequence does not match the ideal input sequence of the next processing step, as in the case of insulated glass. *SortJet* facilitates the optimization of sequential processing steps independently; reducing offcuts and eliminating the need to consider the next step in the IG production process, as it automatically places the panes in the dynamic buffer in the correct order for use in each production sequence. As the dynamic buffer stores and feeds the panes separately, the next part of the process can begin as soon the first pair or sequence is complete, thereby

speeding up the whole manufacturing process and reducing the stock of materials used.

A high-resolution camera system optically measures pane shape and size and cross checks the information against the data in the optimization software. All shapes that are processed on the insulated glass lines - not just rectangular panes - can be fed directly into the production line through the dynamic buffer.

The glass is loaded in cutting order by an electromechanical conveyor - or a swivel conveyor if surface sensitive glass needs to be correctly orientated for production.

An input shuttle takes the panes vertically and transfers them to the dynamic buffer, which can hold several panes per slot, depending on the length of each pane.

Another new feature of the *SortJet* is the option of using magnetic linear drives for the input and output shut-

tles. These drives, says Hegla, guarantee precision and smooth movement, combined with durability and minimal maintenance.

The twin output shuttle has two vertical levels and transports several pieces at a time, which enables the supply of the individual panes into the required sequence. High-speed automatic loading into harp racks (offline-loading) is also possible, thus ensuring the panes are correctly orientated and in the required production sequence, ready for further processing.

Secondary processes, such as edging and tempering, can also be handled by the system. An additional vertical input station is used for manually loading and synchronizing of externally processed glass. One, two or more cutting lines can be connected online to the *SortJet*.

www.hegla.de



Multi-directional side loaders

Italcarrelli, a leading company in the design and construction of machinery for the transport of flat glass, has recently developed and built a new loader: the *EN4L 60G* multi-directional side-loader for the transport of flat glass.

The *EN4L 60G* is innovative, above all because, unlike normal side-loaders, fuelled by battery, it is fuelled by a GPL motor. According to the Italian company, the decision to produce a range fuelled by GPL came from the growing request in some areas of the world to have machinery with internal combustion motors instead of electric ones. Thanks to the low level of emissions compared to diesel-fuelled motors, also considering that the loaders must work inside glassworks, and ease of fuelling: as all that is needed

is the substitution of the gas bottle, Italcarrelli has chosen to equip these new loaders with GPL motors.

The *EN4L 60G*, says Italcarrelli, can transport loads up to 6,000 kilos and is able to load and transport three packs of glass at a time. The glass can also be in boxes and the loader is



able to pick it up from float glass line unloaders, transport it to the warehouse and, thanks to the considerable working range of the equipment used to pick the glass up, can also load and unload the packs of glass on trucks without the need of a crane. The driver has a comfortable and safe seated position thus enabling him to have optimum vision while driving.

The *EN4L 60G* can also be equipped with a variety of optional equipment such as optical and ultrasound sensors, videocameras, semi-automatic driving, etc., which simplify the pick up and transport operations of glass sheets.

Moreover, as with all Italcarrelli products, the *EN4L 60G* has been designed and built respecting the highest quality standards that make the Italcarrelli brand a guarantee for its clients.

www.italcarrelli.eu

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Chemical tempering of large-sized glass windscreens

China's high-speed trains have front glass windscreens that are tempered using LEMA tempering furnaces. In fact, in just a few years, LEMA has already installed its second plant for the chemical tempering of these glass windscreens.

The choice of buying a second LEMA chemical tempering furnace was made by an important glassworks near Shanghai, despite the fact that there are manufacturers of similar equipment in the country, because the results of tempering using LEMA's furnaces

show higher quality and are therefore approved by the strict tests that glass must undergo before being used.

This second plant is a special version of LEMA's *TC 9501* and can, says its Italian manufacturer, temper glass with maximum dimensions of 3,200 x 2,500mm, with considerable ease and production flexibility.

LEMA is, today, a worldwide leader in the sector of chemical glass tempering furnaces, thanks to its high-

ly reliable 'made in Italy' products, combined with unrivalled and specialized experience since 1972.

Always ready to respond to the needs and demands of a continuously growing and expanding market requesting chemical tempering, LEMA concentrates on supplying its clients with personalized solutions, guaranteeing technical support, quality and flexibility for each and every situation.

www.lemaparma.it



Automatic storage systems

Antonio Piazza created his first automatic traverse storage system – the *Comb* – in 1990, and since then, the activities of the Piazza family have been continuously concentrating on the design and construction of automatic storage systems for glass.

Today, **apb Antonio Piazza Brevetti's** Traverse Storage System, called *MTO*, has, the company says, a maximum loading capacity from 2 to 50 Ton per frame.

The *MTO*, which has interchangeable frames as per the diverse developments of the glass industry, is available in automatic, semiautomatic or manual version, including the following models: *MTOH*, *MTOC* and *MTO MAP*.

MTO storage units are available with orthogonal traversing, in various versions and storage capacities ranging from 1,000 to 35,000 kilos for half- and large-sized glass sheets.

The *Automa RBT* conveyor has bilateral pick-up and vertical or horizontal unloading directly onto the cutting table, for half-sized glass sheets. Once it has extracted the



sheet from the selected frame, the tip-over unit with extensible arms positions itself in front of the cutting table on which it deposits directly the glass sheet to be cut.

apb Antonio Piazza Brevetti also manufactures the *SS 6000 BE Combined Loader*, suitable to handle glass sheets of 3210 x 6000 mm and smaller, thanks to the automatic choking of the suction cups. The *SS 6000 BE* is made up of a mobile pick-up unit, where the suction cup car-

riage is mounted and slides (180° rotation of the suction cup group is available, as per current production, to collect glass from A-racks), and by a tip-over group with roller-bed, to unload and transfer the glass to one or more cutting tables.

The *Automa RBT* and the *SS 6000 BE* are both suitable for the handling of low-E glass.

apb Antonio Piazza Brevetti will be present at *glasstec* in Hall 16, Stand A57.

www.apbsrl.it



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Detection of defects in clear/tinted plastic film and sheet and clear coatings

Detection of defects in clear/tinted plastic film and sheet and clear coatings has been a difficult task for most manual operations and the majority of inspection systems. Laser systems perform this task very well, but are cost prohibitive. Lower cost camera systems perform an adequate job but suffer

from many problems which include false hits, missed defects, difficult installation and constant maintenance/alignment/tuning.

NxtGen™ ClearPlas from **Dark Field Technologies** has just been released and is, says the US company, the most powerful technology for inspection of clear or tinted film, sheet and clear coatings in the world. 100% solid state, the proprietary patent-pending *NxtGen™ ClearPlas* system delivers unparalleled defect detection for all PET, polycarbonate film/sheet, acrylics, laminates, hard-coats and other applications. Unique benefits include:

- 100% inspection. Defect maps and alarms;
- installation in very tight spaces;
- system modules all on one side of

the film/sheet. No active modules on the other side;

- installation without line shut-down;
- no maintenance;
- consumes 90% less power than conventional systems.

Dark Field Technologies has led the inspection industry for over 14 years with innovative and first-of-a-kind laser and camera-based inspection and metrology systems. From retro-reflective laser systems for the float glass industry to high-resolution telecentric laser and camera systems for coated glass, display films, display glass, electronics and semiconductor applications, Dark Field Technologies has been the technology vanguard.

www.darkfield.com



Vacuum laminating

Innovations in terms of laminated material must not only regard structures, electronics or informatics of machinery. Careful attention must also be paid to the other components that are a fundamental part of the success of the finished product.

The bags used in vacuum laminating have, in fact, an important active role in this kind of production.

There are many different types available, with different closures and combinations, even mono-use ones. **RCN** has, alongside its traditional solutions, also developed *Silikosoft*, a new version of lamina-ting bags with innovative technical characteristics.

The result of numerous tests and experience, *Silikosoft* is a highly flexible silicon bag that can be used for the lamination of both flat and curved glass. A single solution for each and every processing need, also for use with autoclaves.

With a thickness of 1.5mm, resistance to heat up to 280°C and a break load of 190 kg/cm², *Silikosoft* has the most exceptional manual pressure closure system ever seen, says the Italian company. The highest airtight seal – even under exertion – can be

obtained with slight pressure, and tear resistance of 40 kg/cm².

No need for zips nor hooks, or even complicated fastenings: *Silikosoft* is therefore able to simplify preparation procedures guaranteeing complete performance reliability.

Time needed for logistics, which has an important effect on production capacity is considerably reduced.

Silikosoft is available in horizontal format for vacuum systems, as well as ‘hanging’ for lamination with autoclaves.

www.rcnengineering.it



Universal solution for in-line gas filling

For.El. presents a further innovation dedicated to insulating glass manufacturers wanting to make high thermal efficiency insulating-glass panels in a fast and automatic way, by filling the space between the glazing with gas. Considering the restraints imposed by European rules with respect to energy saving in buildings, there is an increased need and demand to fill insulating glass with gas to reduce the thermal transmission coefficient and increase the acoustic insulation coefficient.

The new *GFC Universal Gas Filler* adapts to all types and configurations of For.El. insulating-glass lines as well as those of other manufacturers and offers, says the Italian company, all the advantages of automatic filling thanks to the accuracy of an analogue and verified process.

The machine fills the space between the panel glazing with gas by exploiting a laminar type filling motion. Gas filling takes place through the micro holes of the channel itself. In the top part of the panel, a probe checks the percentage of remaining air, until the desired quantity of gas is reached. Afterwards, the two introduction and verification points are automatically sealed using butyl, which ensures that the gas remains unchanged in the glazing space over time. All these operations are performed totally automatically by the machine, without the need for any manual operations.

Both Argon and Krypton gas can be used, and automatic triple-glazing and shaped panel filling is possible.

The gas concentration level is managed on board the machine by means of the interface computer which also permits filing data and

Video and further details at www.forelspa.com



cataloguing different orders, as well as controlling gas uses.

For.El. continues to devise and implement major solutions to cater for businesses of all sizes in the flat glass sector. Today, For.El. is able to

propose different gas filling systems with correct solutions for all production levels, while always assuring top-quality results.

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CMS Brembana: products for



A recent visit to one of its clients – CMS Brembana – enables Glass-Technology International to see exactly how the company works to satisfy each and every specific request from its clients. The machinery on show, for one of its most important customers, a manufacturer of shower doors, was up and running for both the press and invited guests.

Founded in 1969, CMS Industries is the head of CMS Brembana, a brand name that brings together three companies, and has reached a turnover of EUR 100 million, with four subsidiaries and a worldwide sales network. CMS Industries products: CNC work centres, thermoforming machines, CNC cutting robots, waterjet systems, compete to produce space shuttles, military and civil aircrafts, Formula 1 cars, competition and road vehicles, America's Cup boats and yachts, wind power generators, combining processing quality and precision, studied technology based on the customer's needs, able to cover several production phases, but also optimized for every single process.

In 2002, a strategic decision brought the group leader CMS Industries to join forces

customized specialized production



SHOWER DOORS

specialist

with SCM Group, world leader in the production of processing machines for wood, with more than 3,500 employees, a turnover of EUR 650 million and a presence in 120 countries throughout the world.

The strength and the characteristics of CMS Brembana is and has always been that of building special machines; not at all standard in any way, and which are solutions that develop from the needs of its clients and its planning department and engineers who know how to identify and sue this information with excellent and often innovative results.

THE VISIT TO THE COMPANY

On 24 May 2010, *Glass-Technology International* was invited to see, before delivery to the client, two complete and fully-automated

Shower doors specialists, Novellini, is one of Deltaprogetti's (today part of Brembana Glass)– historical clients, and of which it has always appreciated both the high quality of products and processes carried out, as well as the complete automation of its machines.

This new machine, designed especially for the most demanding production lines as far as quality is concerned, is just one more of the numerous Deltaprogetti machines bought by Novellini over the years: 15 complete lines and stand-alone machines, along with 32 robotic loading, unloading and palletizing systems.

lines for the production of glass for shower doors, and the innovative *Deltaprofile*, the first vertical work centre for glass.

In particular, at the premises of CMS Brembana at Levate, Bergamo, northern Italy, we were also able to take a look at two of the three lines ordered by Novellini, a European leader in the production and distribution of shower doors, with headquarters in Mantova,

CMS Brembana: **customized products for specialized production**

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and present in over 30 countries worldwide.

During our visit to CMS, Maurizio Bernini - Head of the Marketing Department - took us to see the machines on show. With regards to the robotic water jet cutting centre, the most important feature to be considered is that is the precision with which it works – able to carry out countersunk holes which, especially with regards to shower doors, are a fundamental aesthetic aspect of the glass.

The Idroline, which, as previously said, uses an anthropomorphic robot to load, unload and position the glass, is totally-automated and needs only one operator. The machine was up and running regularly, and was observed by invited guests and clients.

Another machine that Glass-Technology International has the opportunity of observing was the Deltaprofile vertical work centre. This machine, also completely automatic, is ideal for situations where space is an issue, but also where glassmakers want to facilitate the movements of the glass during the various processes it undergoes.

We also met Carlo Alberto Crescini – Area Manager – who spoke to us about the company's interest in the photovoltaic sector, an important part of the glass market, and which is developing fast in Europe.

Carlo Propersi – Head of the Glass and Stone Division, spoke to us about the international markets and the company's global activities.

Of course, the typical question is that of the crisis and how the company is reacting. Maurizio Bernini informed us





that 2009 was, of course a difficult year for them too, but not so much thanks to orders that the company had received in 2008.

2010 got off to a bad start, for all companies, but, since March, things have been picking up. This year has begun with more requests for specific machines, which are more complex and take longer to make. And this is where CMS Brebana can put its expertise on show. Being a company that works exclusively as per client order, it can dedicate all its attention and

AUTOMATIC LINE FOR FLAT EDGES, DRILLING AND MILLING OF PARTS OF SHOWER DOORS

with the highest level of quality

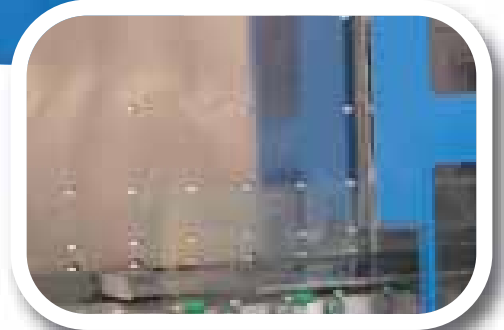
The pieces of glass, arranged on vertical racks, are removed by a Kart-Pall robot and loaded onto the Futura FP horizontal bilateral machine, which carries out flat edge grinding. A second Kart-Pall robot removes the glass leaving the bilateral machine and loads in onto the vertical Compact Drill+Mill, which carries out both holes and notches.

This is followed by washing of the glass in a washing machine and, last but not

least, the unloading onto the racks along with laying of paper, carried out by a third Kart-Pall robot.

The entire line can be managed by only one operator, who only needs to input the glass sizes in the computer and processes to be carried out and the rest is done by the machine. Speed can be up to 1,500 millimetres per minute, with glass sizes ranging from the smaller

sizes of 300 x 300 millimetres, to 2,000 x 2,600 millimetres, right up to 4,500 x 2,600 millimetres, and thicknesses of from 3 to 30 millimetres. The machine on show at CMS' premises was for glass sizes of 4,200 millimetres.



CMS Brembana: **customized products for specialized production**

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technical ability to each single and individual client request.

MARKETS

Markets that are more active for the company are Canada, the Middle East, Saudi Arabia and Turkey. The company is carrying out important investments in Brazil, also because of the important growth that this country is undergoing. In fact, CMS Brembana is supported by a local branch in Brazil (Tecmatic, São Bento do





IDROLINE

High-production robotic island for drill holes, countersinking and notches, using water jet cutting



The loading area is made up of two racks positioned on a rotating platform, designed to load the machine while production is running: this means that while the external rack is loaded, an anthropomorphic robot picks up the pieces of glass from the internal rack and loads them onto a Tecnocut Idroline 1740, which carried out drill holes, countersinking and notches. The processed pieces of glass are then picked up again by the anthropomorphic robot which loads them into the washing machine. At the

exit of the washing machine, the glass is picked up by a Kart-Pall robot arranged in a similar system to that of the loading area (two racks on a rotating platform), which also enables the unloading while production is running.

The design of this line derives from an extremely rigid demand of precision on countersunk drill holes, which can only be obtained by systems with tools by drastically reducing productivity. This system, based on water jet cutting, combined with anthropomorphic

robot, fully satisfies this request, combining productivity with total automation.

One particular feature of this robotic island is that, thanks to the robotic positioning of the glass, there is no need for suction cups. This means that the positioning of the glass sheet is extremely exact and perfect precision is guaranteed.

Idroline

CMS Brembana: customized products for specialized production

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IDROLINE - TECHNICAL DETAILS

| | 1720 | 1740 | 2040 |
|----------------------|---|--|--|
| Axis X | 2000mm/78.7" | 4000mm/157.5" | 4000mm/157.5" |
| Axis Y | 1700mm/66.9" | 1700mm/66.9" | 2000mm/78.7" |
| Axis Z | 250mm/9.8" (150mm/5.9" with 5-axes head) | 250mm/9.8" (150mm/5.9" with 5-axes head) | 250mm/9.8" (150mm/5.9" with 5-axes head) |
| Axis A | 600° | 600° | 600° |
| Axis B | ±60° | ±60° | ±60° |
| Axis R | Ø min/max pipes 40>400mm 1.6>15.7" with 5-axes head (Ø min/max pipes 40>340mm 1.6>13.4" with 5-axes head) Length max. 1830mm/72" Max. weight 100kg/m | Ø min/max pipes 40>400mm 1.6>15.7" with 5-axes head (Ø min/max pipes 40>340mm 1.6>13.4" with 5-axes head) Length max. 3830mm/150.8" Max. weight 100kg/m | Ø min/max pipes 40>400mm 1.6>15.7" with 5-axes head (Ø min/max pipes 40>340mm 1.6>13.4" with 5-axes head) Length max. 3830mm/150.8" Max. weight 100kg/m |
| Support plane | 2700x2050mm/106.3x80.7" | 4600x2050mm/181x80.7" | 4600x2100mm/181.82.7" |
| Overall | 4700x2300xh3700mm 185x90.6xh145.6" | 6400x2300xh3700mm 251.9x90.6xh145.6" | 6400x2600xh3700mm 251.9x102.4xh145.6" |

Sul) which belongs to the Group and takes care of sales and assistance in the area.

With regards to its 'historical' branches, CMS Brembana is still quite active with them in their relative market areas. One of these is North America, which saw record sales for composite materials in 2008. Other branches include France, of course, and Switzerland.

China is another important market for CMS Brembana where it is carrying out investments, and where it is seeing important sales figures, mainly for composite materials and aluminium.

As far as the glass sector is concerned, the product range is satisfying but, like all machinery manufacturers, CMS Brembana is always convinced that there is something lacking. It carried out continuous revisions of its machinery, one of which dedicated to its float glass cutting table line, in 2009. There is still no intention of starting the production of laminated cutting tables but who knows what the future will bring. These 'revisions' will contin-



ue in 2011 with work centres, while the vertical line is also undergoing studies to improve its performance even more.

All PLC and CAD/CAM software are produced in-house, along with, more important still, in-house quality control, thus ensuring that products are as the company says they are. ■

Institutional videos are available at www.youtube.com, key words: CMS Brembana.



CMS Brembana
glass technology

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Brembana**

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Grinding wheels

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Peripheral grinding wheels



Speaking to Mauro Bovone, Sales and Marketing Manager at Belfortglass, gave Glass-Technology International an important idea of how the market of diamond tools is changing. Not only are clients becoming more technically-minded, they are also a lot more informed and interested in what each tool actually does to the different types of glass.

Belfortglass was founded in 1971, with the production of thiokol and butyl extruders for insulating glass: machines that are still today very well known and appreciated all over the world.

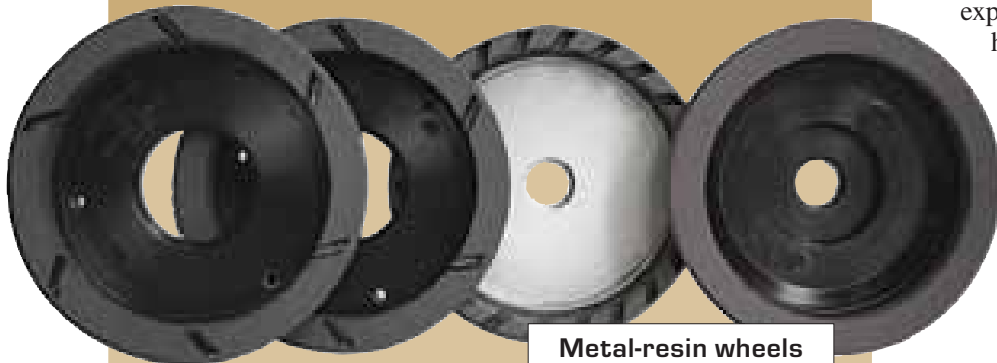
In 1979, the company started the production of diamond wheels, reaching, today, very high quality levels, also thanks to the continuous exchange of experience with machinery manufacturers.

THE INTERVIEW

“Today’s market and, therefore, the glass-makers working in it, are a great deal more technical, and are fully aware of what kinds of processing and tools the different types of glass require to give premium results.”

This is how Mauro Bovone, Sales and Marketing Manager at Belfortglass started to explain to *Glass-Technology International* how the market and glassmakers are changing continuously, and, therefore, machinery and tool manufacturers involved in glass processing too.

This extremely competitive market is really thinning out the best in class of machinery and tool manufacturers and, as Mauro



Metal-resin wheels



Belfortglass: dynamism in a continuously evolving market

Bovone told us, “It’s now really easy to lose a client with just one small mistake – something that would never have happened a few years ago. It’s also more difficult to win clients over as you need to really demonstrate the validity of your products. For a company like ours – Belfortglass – it’s actually a good thing as our products are specific for each client and each client’s needs. And, in fact, if we are able to solve a ‘problem’ for our clients, all the better. It means that our work is not in vain – we are responding correctly to their needs.”

At the same time, the company also needs collaboration from its clients, with complete and detailed information on what they want and the kind of glass they want to process.

“Nowadays, standard products do not exist – everything is made to measure – and the market is becoming more and more specialized. Machinery and tool manufacturers must, in order to stay alive, be able to respond with the correct information and products, as well as with the right prices.”

MARKET SHARE, PRODUCTS AND PRICES

The global crisis has also produced some good effects, with companies like Belfortglass

developing new and more specific products, but also being able to change its market share and strategy. For Belfortglass, in fact, the crisis has even resulted in an increase in its market share in Italy.

With regards to other effects – turnover, for example - “The approximate figure is probably about 15 per cent but we must consider that Belfortglass is also active in the sector of IG units, where figures can fluctuate quite a lot. What is sure, however, is that the diamond tool sector was affected a lot less than that of IG units and therefore, we concentrated more on our tools division.”

“An important part of our personal crisis, however, was also caused by other companies offering products at extremely low prices, therefore literally dumping their products – a situation that is highly criticized and looked down on in other sectors and countries.”

“2010 is looking to be a lot better, partially because we have started working for new markets and new sectors.”

“There are also some small signs of recovery – with 5-6 per cent more than in the same period of 2009. The situation is now stable – there are no more decreases – but we need to carry out an analysis also considering the fact

Belfortglass: dynamism in a continuously evolving market

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that 2006 and 2007 were incredibly positive years, with peak production figures. This means that we need to take this in consideration.”

“As far as prices are concerned, one of the difficulties that has been created by the global economic crisis is that of price decreases – a dangerous commercial strategy that can lead to considerable problems in the market. This is not a company policy at Belfortglass – where the company and its technicians concentrate on the technical aspects of the products, looking to specialize its range.”

“Speaking more to clients is fundamental now, and is an important part of market feedback. And this feedback is an important part of company strategy because there are double the number of wheel manufacturers to machinery manufacturers.”

“There are also many different types of wheels as per the processes that need to be carried out. In the past, many companies were all specialized in one or two particular types of wheels, now it is completely different, we all need to be able to make them all.”

Italy, in fact, has about 50 per cent of the worldwide production for diamond tools, also thanks to the high quality of its products.

The most important and strongest markets for the company during this period are certainly Spain, followed by Germany, France and the Netherlands, and then Asia.

“We no longer have exclusive agent agreements in Europe for example, we have a few agents in Germany, Spain, dividing the areas and covering them more.”

“China is also giving good results even if it is a very difficult market with extremely aggressive competition – but we are there! Our quality is therefore recognized and appreciated, especially with regards to exports to other parts of the world coming from Chinese companies.”

IMPORTANT CHANGES IN COMPANY STRUCTURE

During the positive period of 2006-2007, Belfortglass saw an important change in company structure, with regards to market, agents, representatives and more, due to the scission from Elettromeccanica Bovone.



Jumbo metallic cup wheels

Starting right from these two positive years, the company worked on finding its space and area in a highly competitive market, leading to the present – with an expanded product range, suitable for all machinery manufacturers, assessed at over 50 at present, and where it exports all over the world.

“All together, the scission was not really so bad. It gave us a push to move ahead and find our right place – with our own products that are suitable for diverse and numerous types of machines.”

“Of course, over 30 years of experience – the company is now in its third generation of Bovone family management – were fundamental in the choice and fight to stay alive, and the results are easy to see. We are, in fact, the first and foremost competitor of Bovone for tools.”

“We are now present in sectors such as: glass, optical and their different sub-sectors – especially in special glass such as, for armoured and technical glass.”

DEVELOPMENTS - TEAMWORK - SPECIALIZATION

“Belfortglass has made important investments in Research and Development, and in machines, but the results that we have are also due to the flexibility of our employees – starting from the top: where the commercial staff can also be involved in research or technical aspects, right down to the same technicians, who can collaborate in assisting and advising clients as to which product to choose. This is real teamwork - important in a crisis period like now.”

Thanks to its technical staff, made up of young and dynamic people, Belfortglass is able to concentrate on creating new products each year and will certainly be presenting something new at glasstec.

A new sector for Belfortglass is optical glass. The company is in touch with an important Italian company of this sector, who is presently testing Belfortglass products, and results are extremely positive.

“Dynamism is the key word today – the ability to enter and work closely in a market that we have never entered before.”



NEW PRODUCTS

“We have continued developing our products leading on from those of last year, especially for bilateral and NC machines; we now have two or three products in the pipeline and we are waiting for the results of tests.”

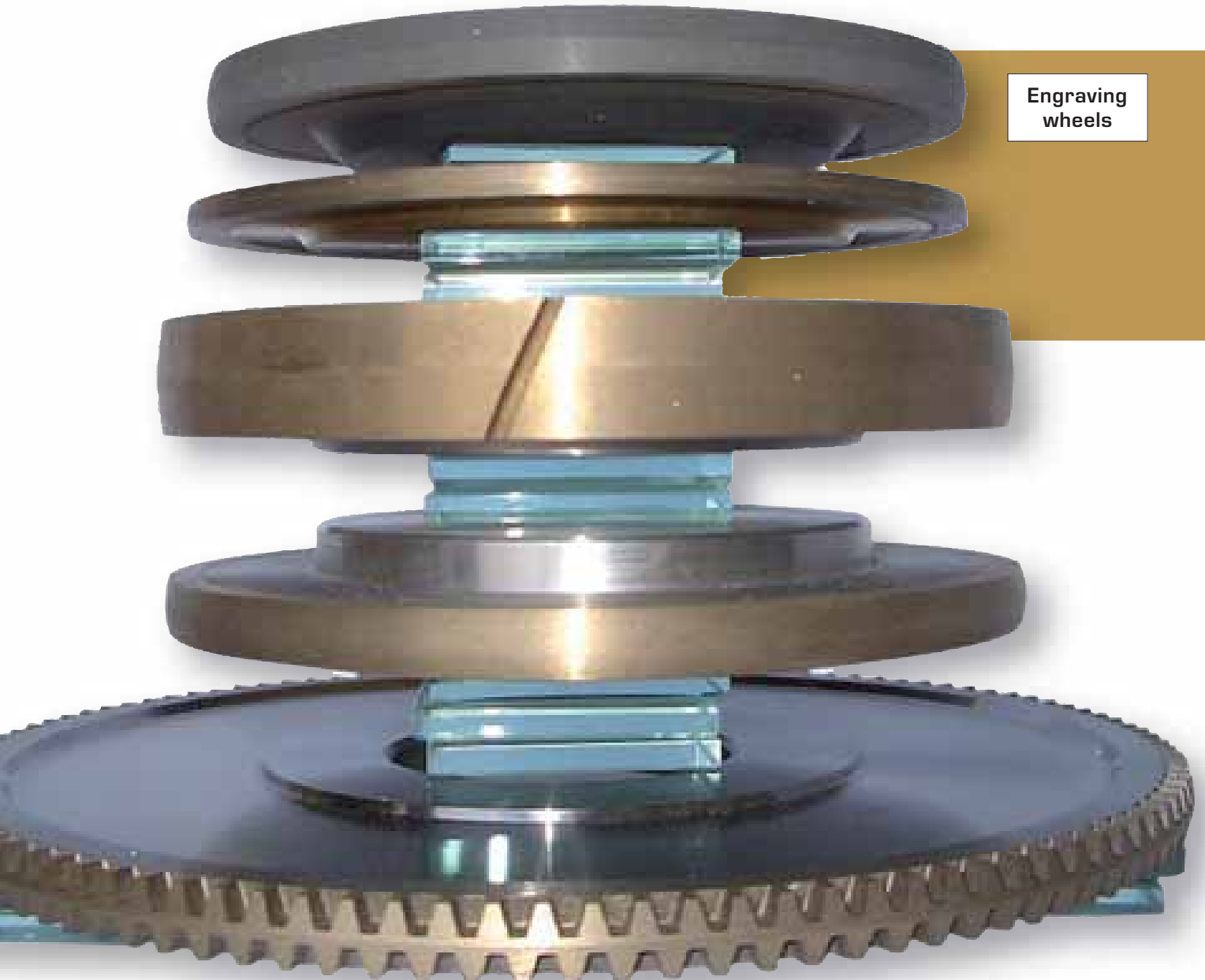
“These two sectors of bilateral and NC machines, which we are concentrating on at present, are in need of new products: we have already obtained good results from the bilateral sector and are now beginning to see the same or even better from the controls sector,

which, up to now, has been a niche market sector for us.”

DEVELOPING A ‘MADE TO MEASURE’ PRODUCT

When we speak about a new product, we must consider all the aspects involved – from the basic idea, the development of the idea, and the consequent testing that must be carried out in laboratories and at clients’ premises. All this requires time and hard work, along with, of course important discussions with clients.

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Engraving wheels

Belfortglass: **dynamism** in a continuously evolving market

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“First of all, we must speak about two different categories. The first is the development of the wheel, and tool for the client, and the other is the product developed in response to the needs and demand of particular market sectors and trends. These two aspects require completely different methods of study, design and even production.”

“And, of course, there must be a mould created just for that product. So we can see how much technical work is involved, which ranges from the chemicals and of course the diamond, the concentrations, the quantities of materials such as bronze and copper, titanium or cobalt. And, therefore, before presenting the sample to the client there are numerous examples made and tested here in-house to try to identify as much as possible the right combination and prototype.”

“With regards to the market, there is more or less the same procedure – the only difference is that it is

you – the manufacturing company that chooses the product to put onto the market.”

“Costs are also an important fact – based on the quantity of diamond used – and therefore involving feasibility studies to identify the correct combination with the right price.”

If we speak about time, this also depends on whether it is a ‘made to measure’ product or a market-aimed product. Both, of course, require studies and technical skills, but a customized product also requires more than one specific mould – and the time involved can be quite long. A completely new product, for example, also involves extensive tests and trials – both here at Belfortglass and then at the client’s premises – that the product has to undergo to find out its resistance, precision, working life, and so on.”

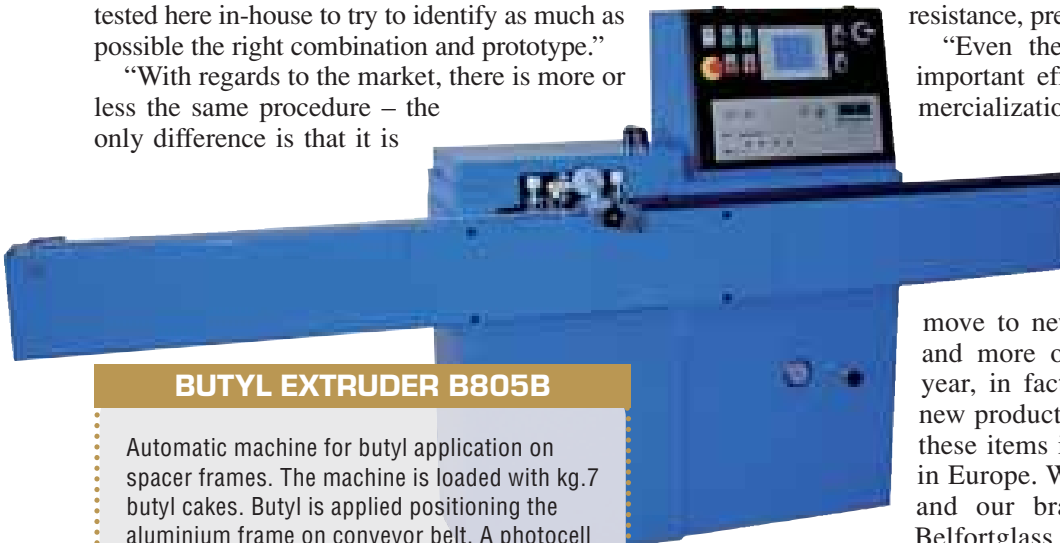
“Even the colour combination have an important effect on the outcome and commercialization of a new product.”

FUTURE SCENARIOS

“With the future in mind, Belfortglass has diverse projects undergoing development: we would like to move to new premises and develop more and more our commercial network. This year, in fact, we have developed a lot of new products and we now need to promote these items in new markets and, of course, in Europe. We also need to make ourselves and our brand name known more too. Belfortglass is also working to expand into new sectors – optical glass is one – but photovoltaics is another, as well as on the development of new machines for the IG sector.” ■

BUTYL EXTRUDER B805B

Automatic machine for butyl application on spacer frames. The machine is loaded with kg.7 butyl cakes. Butyl is applied positioning the aluminium frame on conveyor belt. A photocell feels aluminium and starts a working cycle synchronized by electronic timers. All mechanisms are moved by pneumatic cylinders. Heating is controlled by a manual or programmed start and is divided into two independently regulated units, checked by electronic thermo-regulators. Operation on the control panel are very easy, thanks to the graphics on the front panel. All adjustments are very easy and rapid to carry out. Butyl application is possible on panels with internal decorations (Georgian frames) by excluding the two blocking wheels. Maintenance operations are also very easy.



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PV TECHNOLOGY

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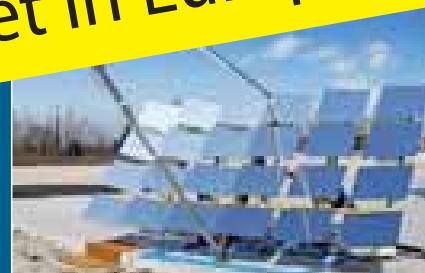
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Landglass: the application of convection in continuous furnaces

Landglass successfully developed forced convection furnaces applying Jet Heating Technology in 2004, with immediate and considerable success. In tempering soft coated and hard-coated low-E glass, screen printed glass, extra-white glass and other glass with high quality requests, forced convection furnaces show their incomparable advantages. This, in turn, means that convection furnaces made by Landglass are not only welcomed and accepted in the company's domestic market, but are also entering American, European and Asian markets as well.

TEMPERING GLASS FOR SOLAR AND ARCHITECTURAL APPLICATIONS

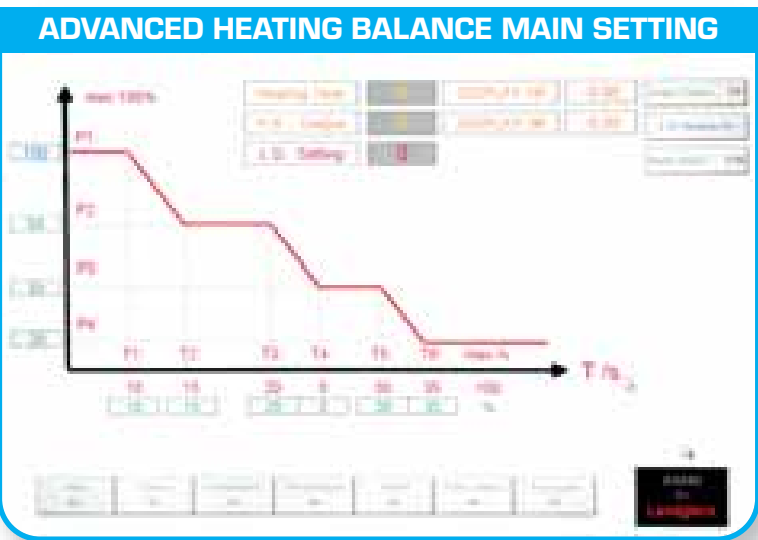
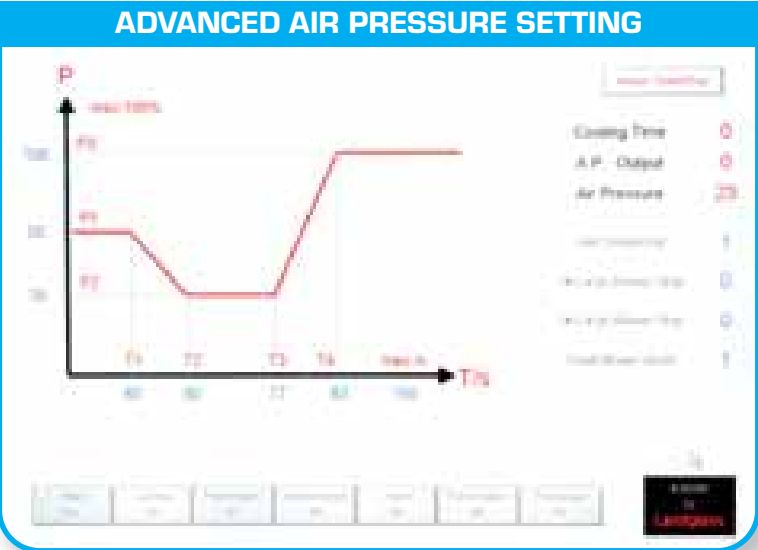
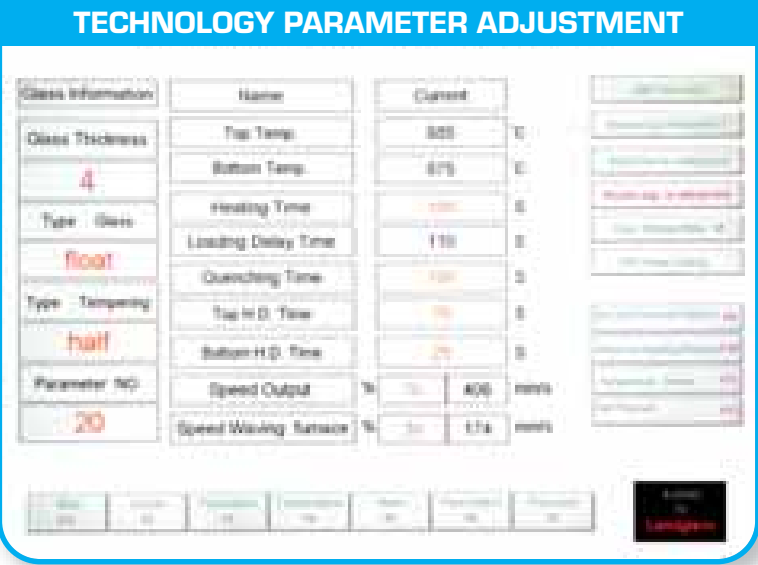
In recent years, the development of the solar power industry has been soaring due to the global search for low-carbon economy and green GDP. Thus, requirements of tempered extra-white glass for solar power modules are increasing considerably. Furthermore, accompanied with the industry's refinery division and increasing large-scale manufacture, the production of tempered glass for architecture and household appliances has moved from medium-

and small-sized companies to large-scale companies due to advantages in quality and costs. In this process, continuous furnaces play an important role.

Continuous furnaces are suitable for tempering large numbers of glass sheets with similar size used in solar power, architecture and household appliance industries. Because of the long length of heating furnaces, the glass sheets can be heated to temperable temperature during movement in a single direction, and, therefore, the scratches usually caused in oscillation type furnaces can be avoided. Furthermore, since quenching and cooling are also continuous, there is not need for the blower to start and stop frequently, thus ensuring reduced running costs. So, continuous furnace has advantages in quality and costs when tempering large number of glass sheets!

However, different kinds of low-E glass, screen printed glass, and extra white glass are widely used in the above-mentioned industries and continuous furnaces with traditional radiation heating fail to meet the challenges of quick and even glass heating, which actually deteriorates the quality of end products.

Developed by Landglass in 2004, forced convection furnaces with Jet Heating Technology were immediately accepted. And now, with continuous growth in the use and development of special glass for solar applications, the use of convection not only makes the tempering process faster, but also reduces or even eliminates the danger of scratches and other damage on the glass surface.



JET HEATING TECHNOLOGY

After gaining detailed information from glass processors regarding the difficulties involved in tempering, Landglass engineers began to study more innovative applications of convection heating technology. An example of this is Jet Heating Technology, used in traditional radiation continuous furnaces. This means that, during the glass heating process, convection heating technology can not only heat low-E glass, screen printed glass and extra white glass evenly, but can also increase heating speed. Therefore, continuous convection furnaces can ensure the quality of tempered glass.

The set up and running of the prototype furnace in Landglass' test factory proved the design, and convection continuous furnaces entered the market in 2009 and were quickly accepted.

In 2009, numerous renowned glass processors purchased continuous convection furnaces, with one buying even two over a period of six months. Landglass is therefore continuing to build its continuous furnaces with convection heating technology. ■



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Green power

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Roberto Nori
General Manager

Even those who wish to take active part in the ongoing and continuously growing ecological way of thinking are finding it hard to combine the costs needed for these choices with the present economical crisis. In this article, Denver informs us about how it is, and has been since its set-up, working to reach the highest level of environmental sustainability.

DENVER: sustainability as company value – for products and for people

As international politics have shown us, it is not easy to speak of sustainability in this time of crisis: the costs of ‘ecological choices’ are, in fact, often high and in conflict with the cuts of budget necessary to face the actual negative situation. Moreover, making clear and appreciating the value of certain productive choices represents a real challenge, which implies a suitable ‘education’ of clients, more inclined to consider the performances of products rather than their ecological characteristics. For these reasons, moving along the road of sustainability has to be considered particularly virtuous today.

CONTROL OF ENVIRONMENTAL QUALITY

“Denver was set up to produce systems for the control of the environmental quality in stone

workshops, we were the first to produce dust collector systems and clarifying water systems in series - attention to the environment is engraved in our Dna! Our machines with innovative materials have been introduced to the market, such as the ABS, for the construction of protections and carters. This has assured recyclability, simpler processes of production, fewer pollutants, reduction of painting cycles and - not less important - acoustic comfort for the operator,” says Adolfo Fabbri, Manager of the technical department at Denver and leader of ecological choices.

“Obviously, with the growth of our technological skills, we have also improved research regarding minor environmental impact. In fact, as an option, we have installed a speed control system or inverter on all our machines. This device allows to regulate the power of the elec-

DENVER: sustainability as company value

– for products and for people

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tric motor, suiting it to the real demands of energy, without waste. We have still foreseen that cooling of tools on our electro-spindles is carried out by means of a hydraulic closed circuit to drastically decrease the consumption of water. I would also like to add that the possibility of simulating the process before performing it, thus optimizing the parameters of the machine without the need to test the material, allows our clients to save glass otherwise used for the same tests.”

It is important to remember that all Denver products can be transported in 40-foot containers and no special transports is needed: an enormous advantage in terms of pollution, reducing the remarkable impact that transport has on the quality of the environment.

NOT ONLY PRODUCTS AND PRODUCTION

Denver’s ecologist choice is limited not only to production products and processes, but also has an important impact on other aspects of life in the company.

“The whole new facility of Gualdicciolo is cooled without the use of air conditioning systems, but by controlling the percentage of humidity. This sophisticated system at the forefront of technological advancement, with an important initial investment, allows us to pollute less while saving energy.”

General Manager Roberto Nori, states: “This year we have also drastically reduced the use of paper in the offices and the dispatch of paper materials. We prefer to talk more to our clients rather than to submerge them with brochures,

with the double goal of consuming fewer resources and aiming more at the human value of relationships.”

In Denver they are even more ambitious: “For the next years we are seriously thinking about the use of recycled paper for all communications and to certify our whole productive system, so have all phases under control, even those managed externally, of our production cycle, consequently monitoring the environmental impact.”

RESULTS

But what kind of results will be achieved from these policies? Once more, Roberto Nori clarifies the firm’s point of view. “First of all it is necessary to say that the ecologist choice has a value, however, looking at our case, those who purchase a Denver product can directly verify advantages in terms of lower costs of electric energy, lower costs of water supply, better acoustic and environmental comfort, reduction in transport costs, less use of stone and glass material, drastic reductions of costs for assembling and disassembling the machines.” ■



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Socabelec: specialization in automation, robotics, mechanics and electronics

Experience in different sectors is a fundamental characteristic for many industrial applications. Combined with specific and customized services, means that clients can be sure of turnkey solutions and strategic response. Socabelec is the company presented in this article, which, thanks to its philosophy and missions, responds in full to the demands of the worldwide glass industry.

Socabelec: **specialization** in automation, robotics, mechanics and electronics

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THE COMPANY

Founded in 1965 by specialists in electricity, Socabelec is, today, an expert in the integration of tools and equipment in the automation, robotics, mechanics, electronics and electricity sectors.

Socabelec's primary missions are:

- to offer proximity industrial services: to meet the needs (cabling, optical fibre, robotics, automation) of industrial companies (glass, quarries, cement works, chemists, etc.) in a



DEPARTMENTS

Management

Marco Veri: *Manager*

Claude Sdraulig: *Director*

Legal Department

Eric Causin: *Director, Chairman of Board*

Engineering and Design Departments

Engineering department Electricity-security

Mechanical Design Office

Head of Business

Administration and Accounting

Marketing, Communication and Export

Assembling Teams

radius of 300 kilometres and in the Silice Valley; and

- to offer specific industrial services to international glass producers and, therefore, to meet the needs of the glass industry worldwide, which it does competitively thanks to its glass specialization.

The company's qualified staff, products, workshops and supervision and assembling teams, enables Socabelec to design and put into practice turnkey solutions, always meeting specific client needs.

History

Socabelec started its activities in the manufacture of electrical cabling, moving, in the 1980s, towards higher added value fields such as: computer assisted design of sophisticated electrical sketches, integration of PLC (Programmable Logic Control) in supervision systems of production process.

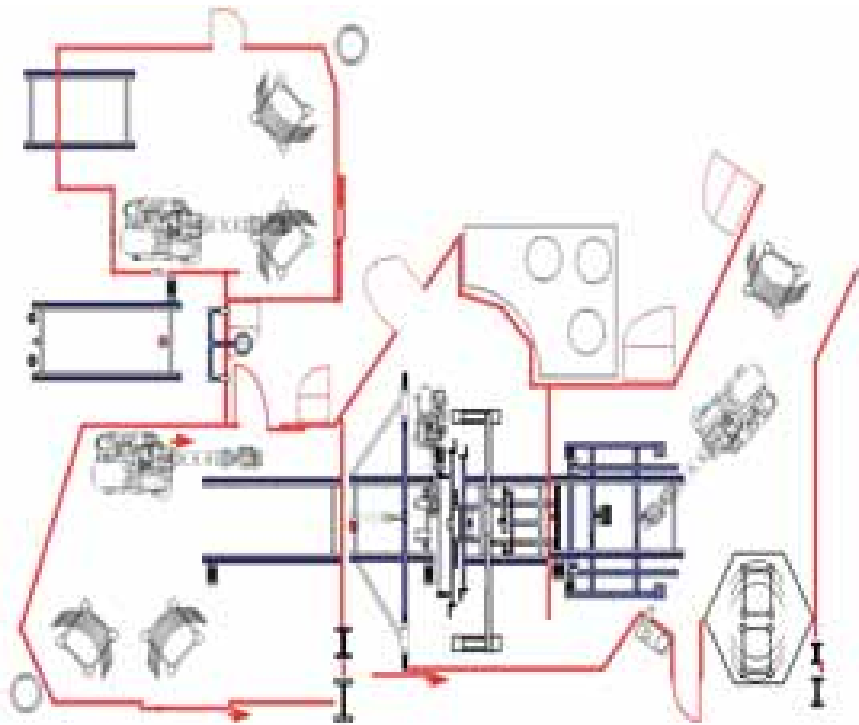
In 1990, the company developed its first research unit, and in 1995, became an integrator in industrial automation and robotics.

Thanks to these integration skills, in 1997, Socabelec started to offer services both to a proximity market located in the heart of the Silice Valley, as well as to international markets.

Philosophy

Socabelec concentrates on strategic values:

- competence: for each and every technical field, success is possible thanks to competence. Socabelec aims at offering its customers reliable technologies in accordance to the most up-to-date knowledge;
- flexibility: an industrial production chain is never standard and can never stop. Socabelec has to be able to solve unique problems;
- people: even if production is automated, it has to be managed by people. Socabelec is a person-to-person services company;
- technology: in order to meet the economically tolerable production costs in Belgium, Socabelec must be in the forefront of technological know-how.



Organization

The headquarters of Socabelec are located in Jemeppe-sur-Sambre, in the heart of the Silice Valley, with diverse production units:

- Socabelec: turnkey automated production lines and proximity services, such as maintenance, cabling, etc.;
- Mecafluide: mechanics, machinery conception and robotics;
- Mecapeinture: top-quality industrial painting;
- Mecawal: involved in large-sized mechanical constructions.

Glass department

Moreover, to insure an optimal presence, the company also has two subsidiary companies:

- Socaflo (France) (optical fibre cables); and
- Socabelec East Africa (Kenya) (power supply equipment).

At present, Socabelec employs about 100 people and, thanks to an efficient structure, each person works with a unique goal: to offer a personalized solution for each project, meeting the specific needs of each and every client.

Automation and robotics

A research unit specialized in industrial robotics and automation provides the whole conception of a complete robotics or automation installation. Thanks to this, the company's teams start from the mechanical and electrical study of the installation right up to tests after assembling in its workshops.

In this field, there are numerous possibilities: Socabelec carries out the automation, via programmable automaton, of every kind of manufacture process. This begins from some all or nothing inputs/outputs up to complex entities above 2,000 all or nothing inputs/outputs, analogical, along with API network and supervision systems.



Complex vision systems equipped with cameras



Socabelec: **specialization** in automation, robotics, mechanics and electronics

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Mechanics

Socabelec's Mecafluide Mechanics engineering department carries out the study and conception of each and every kind of industrial machine. It also plays an important part in the mechanical aspects of turnkey solutions proposed by Socabelec with, for example, software such as Solid Edge.

Last but not least, Mecafluide is active in pneumatics and hydraulics, fields where it can ensure the previous study and the conception of every project.

Electricity

Socabelec's electricity engineering department realizes the complete study of industrial electricity installations, along with those for low and high voltage.

Socabelec has several CAO stations equipped with Eplan, SEE3000 and Autocad software, which enables it to respond to most of the demands with regards to electrical drawings.

Particular skills

Company staff, trained in the latest technologies, has considerable skill in the following fields:

- mechanical conception;
- pneumatics, hydraulics and electricity;
- PLC process and security programming;
- HMI;
- supervision;
- robotics;
- vision systems;
- laser;
- computer systems; and more.

Equipment

To use these skills, Socabelec's collaborators work with the following software:

- Mechanical Computer assisted design: Solid Edge;
- Electrical Computer assisted design: Eplan, Autocad, SEE3 000;
- PLC: Schneider (version 0, version 7, premium), Siemens (Step5, Step7), Piltz, AB, Omron, B&R, etc.;
- Robots: ABB, Fanuc, Kuka;
- Vision: Omron, Keyence;
- Supervision: WinCC – Siemens, RSView (AB-Rockwell), Fix DMACS, Schneider (M77 / OS2), CimpliCity;



- Process management;
- Data processing: managing of copper networks and optical fibres, good knowledge in database. Language: VB, C, C++, java, delphi, etc.

Presence

Socabelec's clients are companies located all around the world, outstanding in their field and present in all industrial sectors, with production units located on the European continent as well as further abroad.

As a true partner, Socabelec joins forces to design and set up a unique solution for each project, meeting the specific needs of its clients. This must combine:

- competence: Socabelec specialists have considerable experience in robotics, automation, mechanics or industrial electricity and, therefore, the required skills to ensure the conception of a turnkey installation from A to Z, always according to the specific requirements of each client.
- price: For Socabelec, the right price is based on several criteria:
 - client demand and needs;
 - national and international competition;
 - costs and margins needed to ensure a lasting service;
 - efficiency of the customer's production: 100 per cent performance – zero per cent failure.

SOCABELEC PERSONNEL

| | 1997 | 1999 | 2001 | 2003 | 2005 | 2005/1997 +% | 2005/2001 +% |
|-------------------------------------|-------|-------|-------|-------|-------|--------------|--------------|
| Total employment | 63 | 69 | 71 | 79 | 99 | 157 | 139 |
| Engineers and comparable categories | 10 | 14 | 15 | 21 | 21 | 210 | 140 |
| Turnover (K EUR) | 4.215 | 6.295 | 6.477 | 6.048 | 9.000 | 214 | 139 |
| % export | 7 | 7 | 8 | 7 | 17 | 243 | 213 |
| Added value (K EUR) | 1.703 | 2.544 | 2.123 | 2.531 | 2.800 | 164 | 132 |
| Cash flow (K EUR) | 170 | 405 | 3 | 238 | 580 | 341 | 19333 |
| Own capital stock (K EUR) | 362 | 516 | 519 | 607 | 920 | 254 | 177 |

SELF-LOADING OF A BENDING FURNACE

- flexibility:
 - adaptability of the offer to clients' demand and needs;
 - respect of deadlines;
 - available maintenance;
 - long-term assistance;
 - use of convivial tools.

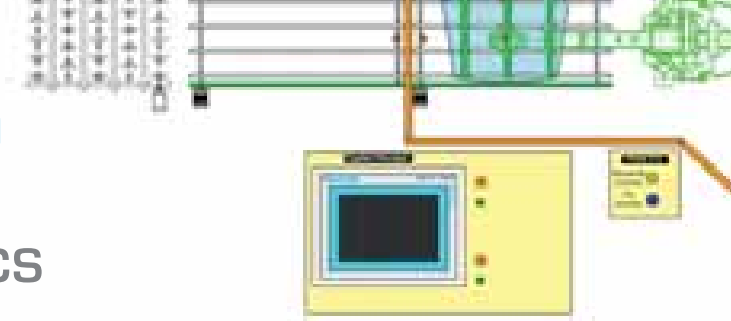
NATIONAL MARKETS

Socabelec has remained faithful to its proximity market, meeting the needs (cabling, optical fibre, robotics, automation) of industrial companies (glass industry, quarries, cement works, chemistry, it can ensure an optimal service in a radius of 300 kilometres.

International markets

Socabelec wants to be profitable to the worldwide industry, thanks to its glass specialization

Socabelec: **specialization** in automation, robotics, mechanics and electronics



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acquired for 40 years in the Silice Valley, the historic place of the glass industry and the heart of high and diversified skills in all the fields of glass.

GLASS DEPARTMENT

The customers of Socabelec are companies located all around the world, outstanding in their field and present in all industrial sectors. They have trusted the company for the automation of their production units, located on the European continent as well as further abroad, with company realizations, such as:

- loading of jumbo and primitive glasses;
- cutting, grinding and drilling lines;
- washing and drying machines;
- intermediate storage systems for paired glasses;
- loading and unloading lines;
- multiple printing lines;
- pairing stations;
- robotized furnaces loading of paired glasses;
- robotized furnaces unloading;
- windshields assembling (PVB);
- robotized exit of unglassing furnace;
- automatic fixing of mirror buttons, rain sensors;
- automatic entry and exit of autoclaves;
- strimming stations;
- final inspection lines with packaging in customers racks;
- online defect detection for float; as well as
- tailor-made solutions meeting all the specific requirements of each customer.

Each and every one of these realizations is made up of the following elements:

- robots and tailor-made grippers;
- all kinds of conveyors;
- various equipment for glass handling;
- complex vision systems equipped with cameras;
- grinding stations;
- intermediate storage systems for paired glasses;
- printing machines;
- tilting frames;
- corner tables;
- systems to remove and collect separators;
- vibrating system supplying mirror buttons, separators;
- devices fixing mirror buttons, rain sensors;
- turning tables;
- touch panels;
- electrical power cabinets;
- all the safety equipment with fences, light barriers;
- as well as all the equipment in response to the needs and demands of each client. ■



Socabelec S.A.

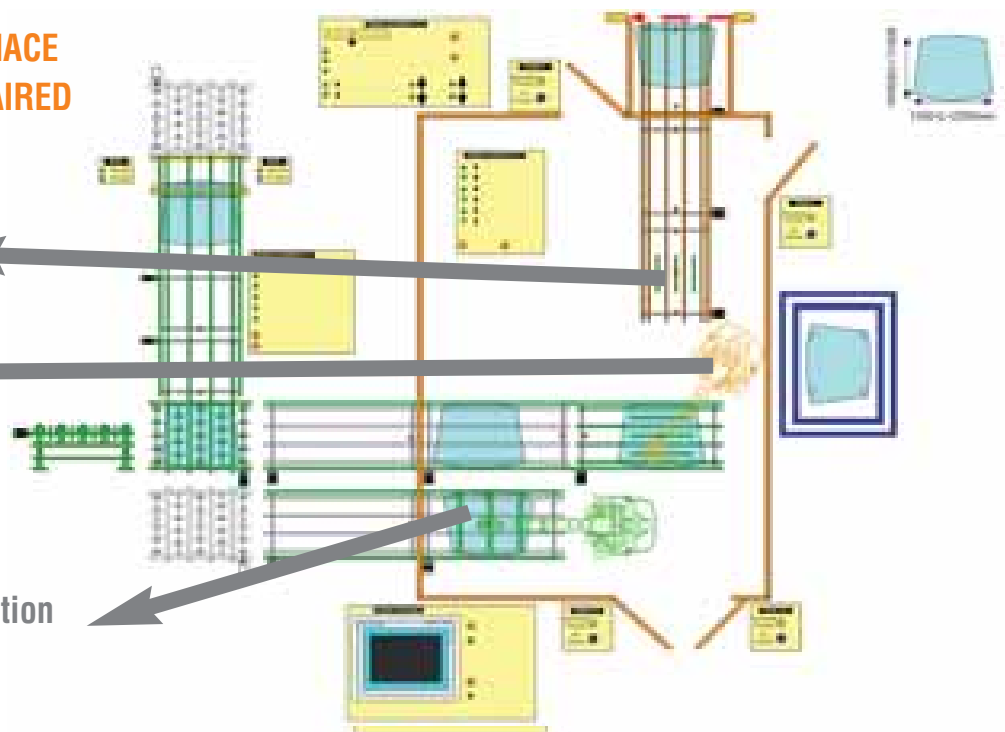
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LAYOUT - FURNACE LOADING OF PAIRED GLASSES

Exit Inspection Line

Furnace Loading

Robotized Pairing Station





Energy efficiency – driver of the construction industry

The reduction of energy consumption so imperative to halt climate change makes the energy efficiency of construction products a pivotal requirement for architects. Over the past 15 years, enormous improvements have been achieved in the thermal insulation of windows and glazing (see Figures 1 and 2). High-insulation frame designs and insulation glass have long made a decisive contribution to bringing down energy consumption in public and residential buildings. And yet, against the background of new energy requirements glass producers have to consistently develop their products further in order to be able to compete “in the premiere league” for shares in the building skin market.

In both the construction of new buildings and the refurbishment of existing ones there is an increasing trend towards construction materials with the highest possible energy efficiency. For structural glass producers and finishers this is a challenge and opportunity at the same time. Ever more efficient functional types of glass are being sought – in exchange for enormous market potential.

Fig. 1 - After the energy-saving reconstruction: in addition to a complete insulation of all outside walls the building was given triple-insulation glass, a generously

glazed conservatory as well as the latest heating and ventilation technologies. Thanks to the use of energy-efficient construction products heating oil requirements

could be cut to 1.5 l per year and square metre of living space. This amounts to a 94 per cent reduction. The annual CO2 savings total 50 tons

Energy efficiency – driver of the construction industry

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NEAR-ZERO ENERGY BUILDINGS

In Europe specified energy targets are already becoming clearly visible. With the implementation of the revision of Directive 2002/91, the EU Directive of the European Parliament and the Council on the Energy Performance of Buildings adopted in 2009, final energy consumption is to be reduced by 5 to 6 per cent and CO₂ emissions by 4 to 5 per cent in the EU by 2020. One of the essentially new provisions of the Directive is that all 27 member states must now lay down a national minimum standard for the energy efficiency of buildings that is mandatory for new buildings as well as for larger reconstructions and this should be guided by the European comparative method.

The Directive also states that from 2021 all new buildings in Europe shall be “Near-Zero Energy Buildings” with remaining heating and cooling needs essentially being covered by renewable energies. For new public buildings these high requirements will already apply two years earlier. This means the benchmark for the construction industry and its products is very high. Germany already set the pace here with the 2009 Energy Savings Ordinance (EnEV) entering into force in October 2009 which has tightened the requirements substantially. For instance: the admissible primary energy demand of new buildings was reduced by an average of 30 per cent. In addition to this, the demands

made on thermal insulation parameters (specific transmission heat losses $H_{tr}(T)$) of the building skin rose by an average of 15 per cent. In the area of refurbishment of existing buildings the relevant parameter specifications for components of the building skin rose by an average of 30 per cent. Another tightening of legal requirements is imminent with the next amendment of the Regulation on Renewable Energies in 2012.

GREAT POTENTIAL FOR THE GLASS INDUSTRY

Such ambitious energy saving targets can only be achieved through the use of highly efficient construction products. This is especially true for the energy-saving modernisation of buildings, currently the driving force in the building sector. In Germany alone approximately 340 million windows are technically obsolete consuming unnecessary amounts of energy according to Jochen Grönegräs, CEO of the German Flat Glass Manufacturers’ Association (Bundesverbandes Flachglas e.V.). The German Association of Fenestration and Façade Manufacturers (Deutscher Verband der Fenster- und Fassadenhersteller e.V.) estimates the total “stock” of windows in Europe to approximately 3.3 billion units (1 window unit = 1.69 square metres). “A large proportion of energy waste is accounted for by the 2.2 billion obsolete windows dating back to before 1995, which should be replaced by modern, energy-efficient heat insulation windows as fast as possible,” demands the CEO of the Association, Ulrich Tschorn. This represents enormous market potential for window makers and insulation glass producers for years to come.

The situation with new buildings is not that obvious. Here the construction glass industry has to ensure with innovative products that there is no trend back to smaller glass surfaces due to the ever higher insulation requirements. In view of the huge functional potential offered by modern glass products for thermal insulation, shading, light direction as well as exploitation of solar gains and power generation, even today they stand an even greater chance of taking over even more functions in building skins than ever before. In view of the reductions in the already very good heat transition coefficients (U-value) so far achieved with thermal insulation glass people will have to weigh off in future whether

KPIs OF DIFFERENT GLAZING WITH A TIMETABLE

| Glass Type | Structure | Coating in [%] | Gas Filling | U-Value W/(m ² K) | g-value* ca. values | Installed |
|---|-------------|-------------------|-------------|------------------------------|---------------------|---------------------------|
| Single glazing | monolithic | No | No | 5.8 | 90% | Until 1965 |
| Uncoated double glazing – insulating glass | 4/16/4 | No | No | 2.7 | 71% | From approx. 1950 to 1995 |
| Uncoated triple glazing – insulating glass | 4/12/4/12/4 | No | No | 1.9 | 83% | Until 1995 |
| Double glazing – insulating glass pyrolytic | 4/16/4 | Yes approx. 0.16 | Yes | 1.5 | 72% | From 1995 |
| Double glazing – thermal insulation glass | 4/16/4 | Yes approx. 0.1 | Yes | 1.3 | 80% | From approx. 1975 |
| Double glazing – thermal insulation glass | 4/16/4 | Yes approx. 0.04 | Yes | 1.2 | 83% | |
| Double glazing – thermal insulation glass | 4/16/4 | Yes ca. 0.03 | Yes | 1.1 | 83% | 1995 |
| Triple glazing – thermal insulation glass | 4/12/4/12/4 | Yes, approx. 0.03 | Yes | 0.7 | 50%-60% | From 2000 |

Comments on values stated in table:
g-values depend on the glass thickness and the type of glass used. The U_g value was calculated based on the currently valid DIN EN 12793 standard (validity to determine heat transfer coefficients in manufacturing) conditions. The g-value refers to the thermal insulation quality of a coating. It is the difference in Thermal Insulation coefficient between in 1995 and in 2009. For coated thermal insulation glass with an argon filling, the value for g-value is approximately 0.03. Source: ifl.

Warm edge technology on show

Edgetech Europe GmbH, leading manufacturer of *Super Spacer*® warm edge technology, announces its big plans for *glasstec 2010*. Adopting the theme of Formula 1 racing, visitors to Stand B68 in Hall 17 will be able to take the Edgetech Pole Position Challenge in an F1 car simulator for the opportunity to win an iPad from Apple® every day of the show.

Johannes von Wenserski, head of operations and marketing manager for Edgetech in Europe explains: "A regular exhibitor at *glasstec*, we wanted to do something really special to celebrate the record breaking sales we've enjoyed over the last year. The theme of Formula 1 fits perfectly with our business – it's about being the best at what you do in terms of engineering, productivity and innovation."

"Modelled on a large sealed unit, the streamlined stand is divided into zones depending on visitor interest. We'll have the productivity pit-stop which will show in detail our solutions for manufacturing the most

thermally efficient double and triple glazed IGUs in the most cost effective way, whether using manual, semi- or fully automated solutions. To learn more about the range of spacers we have available, visitors can talk to the team and see what's on offer in our Product Pit-Stop. For those interested in the structural integrity and proven performance of our *Super Spacer*® and *Super Spacer*® TriSeal™ products, we are planning a simulated interactive hurricane test live on the stand. Marketing and business support is an area that customers tell us differentiates Edgetech from other spacer suppliers, so we'll be show casing the full range of business to business and business to consumer materials available in 11 different languages, including sample cards, a consumer DVD and tailor made brochures.

"It's always good to have something fun on an exhibition stand too, and any visitors to the show who fancy themselves as Jenson Button can show their skills in our competition. Fastest laps on our F1 simulator will be awarded a selection of prizes announced at the end of each day. So whether you're looking to find out how to improve your productivity by switching to *Super Spacer*®, increase the energy efficiency of your units,



enjoy award winning marketing support, or simply test your driving skills, be sure to visit Edgetech where you'll be made to feel very welcome."

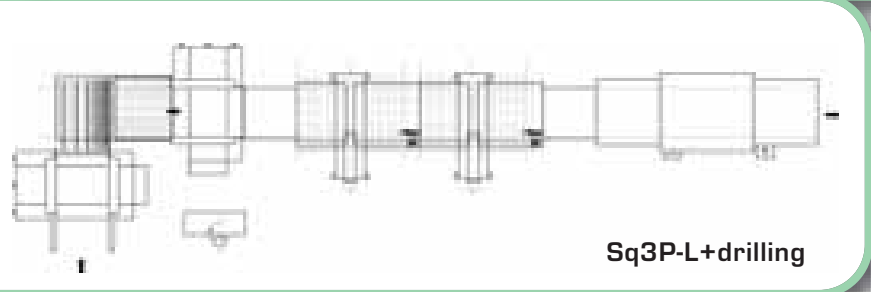
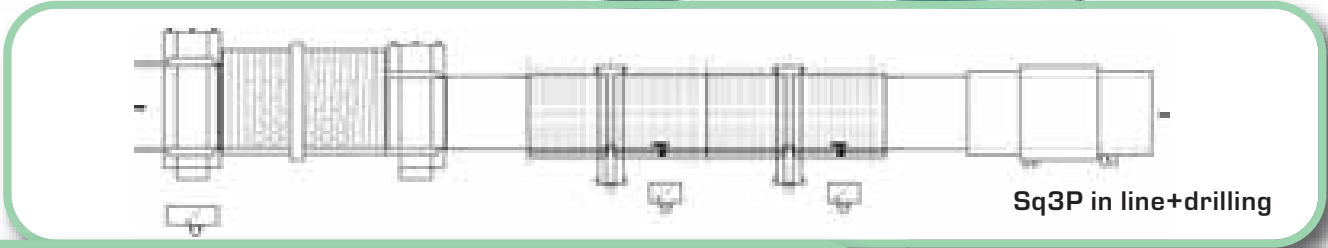
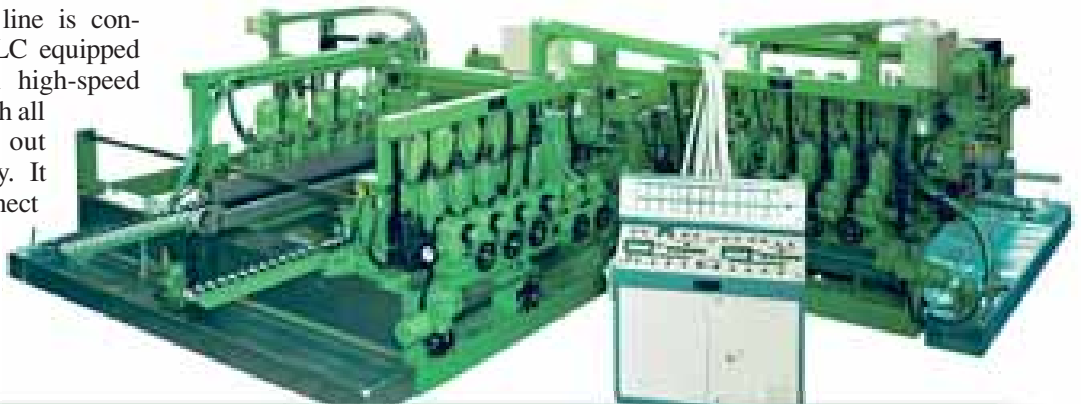
www.superspacer.com



New grinding and drilling line for solar panels

After the optimum results obtained with the bilateral grinder line for the production of glass for domestic appliances, able to carry out pencil edges at speeds of 30 mt/min. and arris at 40 mt/min, **CMB Besana** now has a new line of Bilateral Grinders and Drills. These machines, says the Italian company, can be installed in L- or U-shaped lines, with double transfer, and process glass sheets at high speed, with pencil or flat edges and arriasing, as well as one, two or more drill holes.

CMB Besana's new line is controlled by a Siemens PLC equipped with a new generation high-speed processor, thanks to which all processes are carried out completely automatically. It is also possible to connect the line to other production lines such as, for example, those for cutting, creating total production management.



This line, says CMB Besana, is ideal for the processing of glass for solar panels, with guaranteed continuous production of from three to six glass panels per minute 24 hours non stop.

www.cmbesana.com

Optimized thermal insulation


With its *Silverstar Combi* products Euroglas offers, says the Swiss-based glass specialist, architects and planners a wide range of glazing for building façades that combines high light transmittance with solar control and

thermal insulation designed to meet an extensive range of climate-related requirements. Euroglas has, it says, now succeeded in further improving the thermal insulating properties of the product range. All Combi insulating glass now comes with a Ug value of 1.0 W/m²K (as per EN 673), simultaneously retaining the visual effect, the so-called 'street appeal'.

Depending upon which coating is applied, *Silverstar Combi* glazing combines differing levels of solar control with maximum light transmittance and further enhanced thermal insulation. The entry product in the range is *Silverstar Combi Neutral 41/21* with a very low overall energy transmittance (g value as per EN 410: 22%) and a correspondingly high solar control effect. This product is particularly suited for regions, which experience distinctive fluctuations in temperature range, in other words hot summers and cold winters.

At the other end of the product range, with a significantly higher g-value of 37% (as per EN 410), *Silverstar Combi Neutral 70/35* provides reduced solar control, although it still absorbs almost 2/3 of the radiation energy. In conjunction with its high light transmission of 70%, this product creates a selectivity of 1.89.

The offering is rounded off by *Silverstar Combi Neutral 51/26* and *Combi Neutral 61/32*, with medium levels of overall energy transmittance and a simultaneously high optimum use of daylight. The *Combi Neutral 51/26* is also available in a temperable version which is identified by the additional code "T" (= temperable). When coated, this version can also be processed as single pane toughened glass, allowing very short delivery times and providing maximum flexibility in terms of application.



Reduced heating costs, improved comfort: All *Silverstar Combi* glazing now comes with an improved Ug value

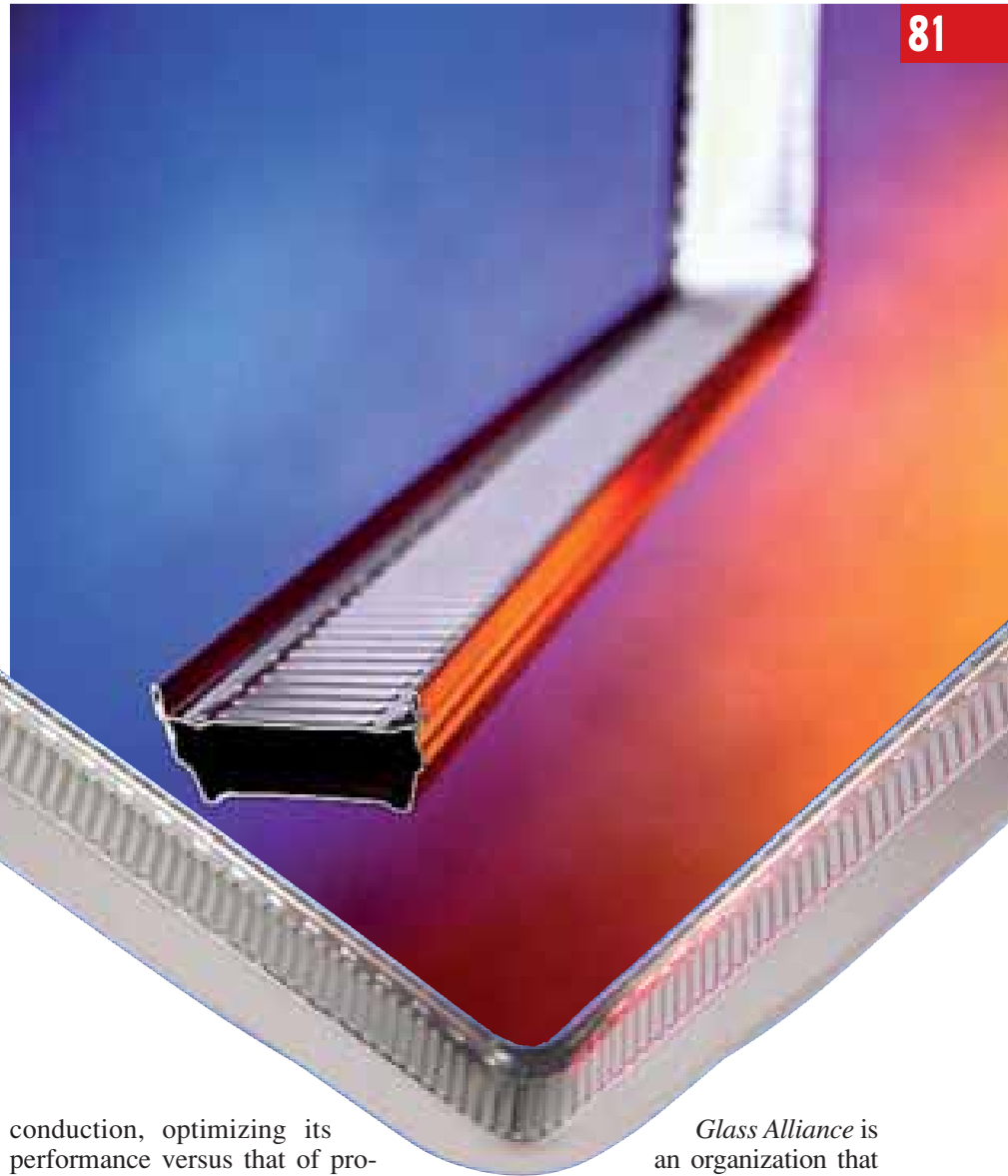
Stability and robustness of stainless steel for large-sized IG units

The *Chromatech Plus* stainless steel profile has been designed by **Rolltech** to guarantee excellent performance in IG. Its unique design and technical features, says its manufacturer, make it one of the world's most resistant and stable warm edge profiles.

These features make for an extremely stable frame, which is a must-have in large-size, important IG glass. The thermal expansion coefficient (elongation) of a stainless steel profile is, in fact, extremely low and very similar to that of glass. As a result of these very properties, the sealants are subject to less strain in insulating glass using *Chromatech Plus* when the outside temperature changes. The result is a more stable system which, in turn, means that any risk is eliminated.

As a result of the use of stainless steel, *Chromatech Plus* significantly improves gas retention in IG units, thus maintaining the same levels of thermal performance over a long period of time.

Chromatech Plus has a very special, unique shape that allows the thickness of the metal to be slimmed up to 0.15mm: the thickness of the steel is thus reduced and can guarantee an extremely low level of heat



conduction, optimizing its performance versus that of profiles made of the same material but with conventional shapes.

Chromatech Plus is a perfect warm edge profile, with enhanced thermal insulation at the edges of the glass, thus ensuring living comfort and less condensation, and offers a myriad of production benefits: profiles obtained from stainless steel can be bent; the stability of the profile allows for easier processing especially when large frames are involved; the special stainless steel offers excellent adhesion with all sealants.

Glass Alliance is an organization that produces and distributes worldwide everything necessary for the industrial production of insulating glass units. Its members are *Fenzi*, *Alu Pro* and *Rolltech*, three leading companies representing the state-of-the-art for quality and reliability in their respective sectors: polysulphur, butyl, hot melt and polyurethane sealants; aluminium spacer bars; steel, stainless steel and steel/polycarbonate spacer bars.

www.fenzigroup.com

Direct mass flow meters/controllers for industrial applications

The new *IN-FLOW^{CTA}* Mass Flow Meters by **Bronkhorst High-Tech** are modular instruments of rugged design according to IP65 (dust- and waterproof) certification. They can, says the Netherlands-based company, be combined with integrated or close-coupled control valves to form compact digital Mass Flow Controllers. In this way, flow ranges can be measured and controlled within the range of 10-200 ml/min up to 50-5000 l/min. The ATEX approval for use of these instruments in Category 3, Zone 2 hazardous areas is pending.

Mass Flow Meters of the *IN-FLOW^{CTA}* series work on the basis of direct through-flow measurement (no bypass), following the constant temperature anemometer principle. The instruments contain no moving parts and have no obstructions to the flow path, making them ideal for low-pressure drop applications and virtually insensitive to moisture or particulates.

The instruments have analogue I/O-signals as well as an RS232 connection as a standard feature. There is also the possibility of integrating an interface board with DeviceNetTM, Profibus-DP[®], Modbus or FLOW-BUS protocol. The basic

pc-board features integrated PID Control and various alarm and diagnostic functions. According to Bronkhorst, with these multiple functions and rangeability up to 1:100, *IN-FLOW^{CTA}* offers an excel-

lent price-performance ratio, and can be used in process control systems as for example in food, chemical and petro-chemical plants.

www.bronkhorst.com



Enhancing product portfolio and increasing glass production capacity

With the expansion of Melting Tank 8, **Schott Technical Glass Solutions** (TGS) has virtually doubled its production capacity. Following its renaming in 2009, the company is aiming towards attractive growth markets with an enhanced product portfolio. To achieve this goal, another tank will be put into operation in 2011.

"We are increasing our production capacity in order to accelerate our growing traditional business," was how Klaus Schneider explained the rebuilding of the tank, which was put into operation at the end of May. The facility now features an additional electric heating unit to increase the melting capacity, while the dimensions of the tank have remained the same. The use of microfloat technology also makes it possible to float smaller amounts of glass. A further microfloat tank to be commissioned in 2011 will offer even greater flexibility.

These are important advantages as the market moves away from standard glass to demand an increasing variety of glass with customer-specific properties for special fields of application. This is a call to glass manufacturers to target their activities more specifically. A step in this direction was the founding of Schott TGS on 1 April 2009 as a legally independent unit of the Schott technology holding to concentrate its competence in the field of special technical flat glass. In so doing, the newly founded subsidiary took over large parts of the former *Jenaer Glaswerk* resulting in a staff of 300

employees in Jena and a vast human resources potential based on over 30 sales offices worldwide.

This provides Schott with extensive know-how for the development, melting, thermal moulding and processing of highly stable and extremely thermal resistant special glass. In its role as advisor and partner, the company also supports its customers in all questions concerning glass properties, melting, processing and finishing technologies. One of the company's special strengths is developing customized glass and applications, according to Klaus Schneider. "We develop new special glass directly in our production facilities and bring these to the market for our customers. We are not simply a supplier of glass but of new, ready-to-market brands."

Schott TGS offers a product portfolio of float and rolled borosilicate glass in a wide variety of market-specific thicknesses and formats. Their special properties enable a wide spectrum of application areas from house automation, fire protection and optics through to medical equipment and photovoltaics. Exemplary for this wide range of applications is the well-known brand *Borofloat*, a borosilicate float glass with high thermal resistance and good surface quality. There are, on the other hand, glass types which have been developed especially for specific markets: The brand *Pyran* stands for special float glass and glass ceramics for fire protection.

Technical special glass is also increasingly being used in modern applica-

tions in life sciences and the electronic industry. For example, Schott TGS produces a glass substrate for microarray solutions for DNA and protein analysis on the basis of borosilicate glass. In a recent development, high-strength lithium-aluminosilicate and aluminosilicate glass have expanded their use from traditional applications, such as safety panels for high-speed trains, into new markets, such as cover and touch screens for smart phones, notebooks and hard disk drives. This represents a big chance for the future according to Klaus Schneider: "At present we are in the process of evaluating the properties and performance of our glass to determine further applications."

www.schott.com



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MÁQUINA LAVADORAS

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& Förderanlagen zur Spiegelfertigung
Líneas completas & trenes para la
producción de espejos*

Fushan

Mingte Glass Tech.

► PAINTING EQUIPMENT

*Installations pour vernir
Lackieranlagen
Instalaciones para pintura*

Mingte Glass Tech.

► DRYING OVENS

*Fours de séchage
Trockenöfen
Hornos desecadores*

Mingte Glass Tech.

► AUTOMOTIVE MIRROR BENDING FURNACES

*Fours de bombage pour miroirs et
rérovisseurs pour véhicules
automobiles
Biegeöfen für KFZ-Rückspiegel
Hornos de curvado para retrovisores
de automoviles*

B.H.T.

► ACCESSORIES

*Accessoires
Zubehör
Accesorios*

Helios Italquartz

INSULATING GLASS

MACHINES ET INSTALLATIONS POUR VERRES ISOLANTS

ISOLIERGLASMASCHINEN UND ANLAGEN

MÁQUINAS E INSTALACIONES PARA VIDRIO - CÁMARA

► COMPLETE INSULATING GLASS LINES

*Installations complètes
pour verres isolants
Komplette Fertigungslinien
für Isolierglas
Líneas completas para vidrio cámara*

Bystronic glass

For.El.

Glaston Bavelloni

Lisec Group

Zafferani Glas

► AUTOMATIC SEALING LINES

*Installations automatiques pour le
scellage
Automatische Versiegelungsanlagen
Líneas automáticas para sellado*

Bystronic glass

For.El.

Glaston Bavelloni

Lisec Group

► AUTOMATIC SPACER BENDING MACHINES

*Plieuses automatiques pour
entretoises
Automatische Faltmaschine für
Abstandhalter
Plegadoras automáticas para
separadores*

Bystronic glass

For.El.

Glaston Bavelloni

Lisec Group

► DESICCANT SALT FILLING MACHINES

*Remplisseuses pour
sels déshydratants
Trockensalzeinfüller
Embudos para llenado
con deshidratantes*

Bystronic glass

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**Glaston Bavelloni
Lisec Group**

► SPACER CUTTING SAWS

*Scies pour la coupe d'entretoises
Speziälsägen für Abstandhalter
Sierras para el corte
de los separadores*

For.El.

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Lisec Group

► BUTYL EXTRUDERS

*Extrudeuse de Butyl
Butilextruder
Extrusores de butilo*

Bystronic glass

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Glaston Bavelloni

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► HOT-MELT EXTRUDERS

*Extrudeuse de Hot-Melt
Hot-Melt-Extruder
Extrusores de fusión en caliente*

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Lisec Group

► POLYURETHANE EXTRUDERS

*Extrudeuse de polyurethanes
Polyurethanextruder
Extrusor de poliuretano*

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Lisec Group

► POLYURETHANE ENCAPSULATION

*Capsulage de polyurethanes
Polyurethaneinkapselung
Encapsulado de poliuretano*

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► SILICONE EXTRUDERS

*Extrudeuse de silicone
Silikonextruder
Extrusores de siliconas*

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For.El.

Lisec Group

► POLYSULPHIDE SEALANT EXTRUDERS

Extrudeuse de scellants polysulfuriques
Extruder für Schwefelsaurehaltige Klebemittel
Extrusores de polisulfuros

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► GAS FILLING EQUIPMENT

Appareils pour remplissage de gaz
Gasfüllgeräte
Equipos para relleno con gas

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► DESICCANT SALTS

Sels déshydratants
Trockenmittel
Sales deshidratantes

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► SPACERS/PROFILES

Entretoises
Abstandhalter
Separadores

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► GEORGIAN BARS

Croisillons de vitrages isolants
Sprossen
Barrotillos para vidrios aislantes

Hegla

► BUTYL

Butyle
Butyl
Butilo

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► POLYSULPHIDE SEALANTS

Produits de scellage polysulfuriques
Schwefelsaurehaltige Dichtungsmittel
Sellantes polisulfúricos

For.El.

► HOT MELT

Hot Melt
Hot Melt
Hot Melt

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► OTHER SEALANTS

Produits de scellage divers
Dichtungsmittel
Sellantes varios

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► PANTOGRAPHS

Pantographes
Pantographen
Pantógrafos

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► ACCESSORIES

Accessoires
Zubehör
Accesorios

For.El.
Helios Italquartz

TEMPERING

TREMPE

TEMPERTECHNIK

TEMPLADO

► TEMPERING FURNACES (ARCHITECTURAL GLASS)

Fours de trempage pour le verre destiné à la construction
Härtungsöfen für das Glas, das für Bauwesen bestimmt ist
Hornos para templar el vidrio para la construcción

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Landglass Technology
Lisec Group
Mappi International
Mingte Glass Tech.

► TEMPERING FURNACES (AUTOMOTIVE GLASS)

Fours de trempage pour le verre destiné à l'industrie automobile
Härtungsöfen für das Glas, das für die Automobilindustrie bestimmt ist
Hornos para templar el vidrio para la industria automovilística

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BENDING

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Fours de courbure pour le verre destiné à la construction
Biegeöfen für das Glas, das für Bauwesen bestimmt ist
Hornos para curvar el vidrio para la construcción

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Biegeöfen für das Glas, das für die Automobilindustrie bestimmt ist
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► ACCESSORIES

Accessoires
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LAMINATED GLASS PRODUCTION

INSTALLATIONS POUR
VERRES FEUILLETÉS

VERBUNDGLASANLAGEN

INSTALACIONES PARA
VIDRIO ESTRATIFICADO

► COMPLETE PLANTS

Installations complètes
Komplette Fertigungslinien
Instalaciones completas

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► LAMINATED WINDSCREEN BENDING FURNACES

Four de bombage pour pare-brise feuilletés
Ofen zur Biegung von Sicherheitswindschutzscheiben
Horno de curvado para parabrisas de vidrio estratificado

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► AUTOCLAVES

Autoclaves
Autoklaven
Autoclaves

Bystronic glass

► CLIMATIC CABINS

Cabines climatiques
Klimazellen
Cabina climática

Bystronic glass
Mingte Glass Tech.

► INFRARED OVENS

Four à radiations infrarouges
Infrarotöfen
Hornos a rayos infrarrojos

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Suppliers Guide

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90

► PVB - SHAPING AND CUTTING EQUIPMENT

Machines pour la découpe selon gabarit du PVB
Maschinen für die Formung und den Schnitt von PVB
Máquinas para perfilar y cortar el PVB

Bystronic glass

► ACCESSORIES

Accessoires
Zubehör
Accesorios

Helios Italt quartz

DRILLING

PERÇAGES

BOHRTECHNIK

TALADROS

► AUTOMATIC DRILLING LINES

Installations automatiques de perçage
Automatische Bohranlagen
Líneas automáticas de taladro

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► MULTI-SPINDLE DRILLING MACHINES

Perceuses multiples
Reihenbohrmaschinen
Taladros múltiples

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Perceuses à pointes opposées
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► COLUMN DRILLING MACHINES

Perceuses à colonne
Säulenbohrmaschinen
Taladros a columna

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► DRILLING AND MILLING MACHINES

Maquines pour percer et fraiser les plaques de verre
Bohr- und Fräsmaschinen für Glasplatten
Máquinas para agujerear y fresar hojas de vidrio

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► DIAMOND DRILLS

Forets diamantes
Diamantbohrer
Pequeños agujeros diamantados

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Mole Moreschi

OTHER EQUIPMENT AND PLANTS

INSTALLATIONS DIVERSES

SONTIGE ANLAGEN

INSTALACIONES VARIAS

► TURNKEY PLANTS / ENGINEERING - FOR BUILDING GLASS

Installations clefs à la main - Engineering - verre plat pour constructions
Schlüsselfertige Anlagen - Engineering - für Bauflachglas

Instalaciones llave en mano - Engineering - para vidrio plano para la construcción

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► TURNKEY PLANTS / ENGINEERING - FOR AUTOMOTIVE GLASS

Installations clefs à la main - Engineering - verre automobile
Schlüsselfertige Anlagen - Engineering - für Automobilglas
Instalaciones llave en mano - Engineering - para vidrio para de automóviles

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Instalaciones llave en mano - Engineering - Display para vidrio

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► WORKING CENTRES - CNC CONTROLLED

Centre de travail à control numérique
Arbeitszentrum mit Zahlenkontrolle
Centro de trabajo de control numérico

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► FLOAT PLANTS/LINES (EQUIPMENT & ACCESSORIES)

Installations pour la production du verre au méthode Float (systèmes & accessoires)

Float Methode - Anlagen (Systeme und Zubehör)
Instalaciones para la producción de vidrio con el método float (máquinas & accesorios)

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► WEIGHING AND DOSING SYSTEMS

Systèmes de pesage et dosage des matières premières
Wäge- und Dosiersysteme der Rohstoffe
Sistemas de pesada y dosificación de las materias primas

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► CULLET HANDLING SYSTEMS

Systèmes de manutention des bris de verre
Glasscherben-Handlingsysteme
Sistemas de manejo del vidrio de desecho

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► COMPLETE BATCH PLANTS

Installations complètes pour la fusion des matières premières
Komplette Schmelzanlagen für die Rohstoffe
Instalaciones completas para la fusión de las materias primas

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► ENAMELLING EQUIPMENT AND PLANTS

Systèmes et installations pour la peinture du verre
Systeme und Anlagen für die Emaillierung von Glas
Sistemas y equipos para el esmaltado del vidrio

Rollmac

► SANDBLASTING SYSTEMS, EQUIPMENT AND PLANTS - OPTIMIZERS

Machines et installations pour le sablage - Optimisation
Sandstrahlmaschinen und -anlagen - Optimierung
Maquinas e instalaciones para pulido con arena - Optimizadores

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► SCREEN PRINTING EQUIPMENT AND PLANTS

Machines et installations de sérigraphie - verre pour le bâtiment/l'automobile

Siebdruckmaschinen und -anlagen,
Glas für Bauwesen/Kraftfahrzeuge
*Máquinas y equipos para serigrafía -
vidrio para la construcción/vehículos*

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► SCREEN PRINTING DRYING SYSTEMS

Systèmes de séchage pour la sérigraphie
Siebdruck-Trockensysteme
Sistemas de secado para la serigrafía

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► ACIDING GLASS EQUIPMENT AND PLANTS

*Machines et installations pour la
gravure à l'acide*
Ätzmaschinen und -anlagen
Máquinas e instalaciones para vidrio al ácido

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ARTISTIC GLASS PRODUCTION

FABRICATION DE VERRE

ARTISTIQUE PRODUCTION
VON KÜNSTLERISCH
GESTALTETEM GLAS

PRODUCCIÓN VÍDRIO
ARTÍSTICO

► CHAMBER ELECTRIC KILNS

Fours électriques à chambre
Elektrische Kammeröfen
Hornos eléctricos de cámara

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► ACCESSORIES

Accessoires divers
Sonstiges Zubehör
Accesorios varios

Helios Italquartz

MISCELLANEOUS

MELANGE
SONSTIGES
VARIOS

► AUTOMOTIVE GLASS QUALITY CONTROL

*Contrôle qualité du verre
pour véhicules*

Kontrolle der Glasqualität
für Kfz-verwendungen
*Control de calidad del
cristal para auto*

Bando Kiko
Bystronic glass

► DEIONIZING AND WATER SOFTENING EQUIPMENT

*Deionisateurs et
adoucisseurs d'eau*
Entionisierungs-Anlagen
und Wasserenthärter
*Instalaciones deionizadoras
y ablandadores del agua*

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► FLAT GLASS QUALITY CONTROL DEVICES

*Systèmes de contrôle de qualité pour
plaques de verre*
Qualitätskontroll- Systeme
für Glasplatten
*Sistemas de control de calidad para
hojas de vidrio*

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► FURNACES

Fours
Schmelzöfen
Hornos

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► FURNACES / OXY FUEL RECUPERATIVE

Fours/ Oxy-carburant or récupération
Schmelzöfen/Oxy-fuel oder
Rekuperativ
*Hornos/ Oxy-combustible or
recuperación*

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► GASES

Gaz
Gase
Gases

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► GLASS COATING AND TINTING

Revêtement et coloration du verre
Filmtechnologie und Färbung des
Glases
Revestimiento y teñido de vidrio

WP-Digital

► HEATING EQUIPMENT - STANDARD (GAS FIRING, BURNERS, AIR GAS MIXERS, SAFETY DEVICES, ELECTRICAL RESISTORS)

*Equipements pour le réchauffement
(brûleurs, mélangeurs d'air et de gaz,
mécanismes de sécurité, résistances
électriques)*
Heizungsausrüstung (Brenner, Luft-
Gasmischer, Sicherheitsvorrichtungen,
elektrische Widerstände)
*Equipos de calefacción (Quemadores,
mezcladores de aire y gas,
mecanismos de seguridad,
resistencias electricas)*

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► INFRARED TUBES

Tubes à infrarouge
Infrarot Röhren
Tubos infrarrojos

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► KILNS

Fours
Kammeröfen
Hornos

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► LEHR ROLLS

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► METAL ACCESSORIES

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Metall-Zubehör
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► OPTICAL DISTORTION ANALYSERS FOR AUTOMOTIVE GLASS

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pour verre destiné à l'industrie
automobile*
Optische Verzugs-Analysatoren für
Glas für die Automobilindustrie
*Analizadores ópticos de distorsión para
vidrio para la industria automovilística*

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► QUARTZ EQUIPMENT

Quartz machines
Quartz Maschinen
Equipos de cuarzo

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► REFRACTORY MATERIALS

Matériaux réfractaire
Feuerfest Material
Matrial resistente al fuego

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► SIC HEATERS

SIC appareils de chauffage
SIC Heizgeräte
SIC Calentadores

Helios Italquartz

► SOFTWARE SYSTEMS FOR PRODUCTION CONTROL

*Systèmes de logiciels pour le contrôle
de la production*
Software-Systeme für die Kontrolle
der Produktion
*Sistemas de software para el control
de la producción*

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Optima

► SORTING SYSTEMS

Systèmes de classification
Klassifizierung (für Glasplatten)
Clasificadores

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► UV LAMPS

UV lampes
UV Lampen
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► UV PORTABLE MACHINES

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Quality certifications: Turnover from glass:%

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1) Address
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5) Address

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.....
.....
.....

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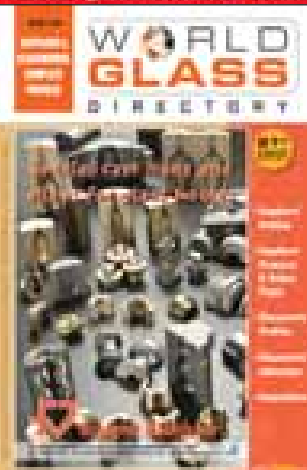
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