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BORDER GLASS • ACOUSTICAL GLAZING • MATERIAL HANDLING

Going south in a good way

Border Glass finds Canadian glazing practices export well.

Alex Gluskin programs the automated CNC multi-tool workstation. Border Glass has invested in staying on pace with the much larger competitors. Photo credit: Anna Borys



AT A GLANCE | Border Glass

Year established: 1967

Number of employees: 80

Location: Winnipeg, Man., and Phoenix, Ariz.

Facility: 37,000 square feet

Products: Installed curtain wall and commercial storefront

Main markets: Manitoba, Saskatchewan, Alberta and Arizona

Celebrating 47 years of in the glass industry, Border Glass is proud to be a successful, third-generation family-owned business. Correction, a successful, third-generation, professionally managed family-owned business.

Originally founded in 1967 in Selkirk, Man., by Don Borys, a long-respected member of the Manitoba glass and aluminum community, Border Glass is now owned by Don's sons David and Paul, who have relocated and expanded operations with offices and manufacturing facilities in Winnipeg and Phoenix, Ariz.

"We're a professionally managed, family owned business," says Paul Borys, president, CEO and co-owner of Border Glass. "Ten years ago, as we were looking to a young third generation coming on board, we felt the need to bring on a group of skilled management professionals and I believe we have succeeded in building a very solid team. They are virtually running the company now, and that's very gratifying considering how much we've invested into our people."

"We have approximately 75

employees," says co-owner and director of sales David Borys. "Our biggest and most important asset are our people. The culture of family permeates everything we do. I do not get tired of saying that, because it's a fact. We have second- and some third-generation employees. We often have employees bringing their kids and/or nephews here because it's a great place to work. That's what we're all about."

"All three of my kids, and two of Paul's kids work for Border Glass in very responsible roles," says David. "Our brother Tim is Border's director of production. We have a lot of excellent people here that do a very good job for us."

Border Glass serves low- to medium-rise curtain wall customers across western Canada but primarily in Manitoba and Alberta. The company boasts a long list of flagship projects including malls, office buildings, arenas and airports. Some of the projects Border Glass has completed include MTS Centre (home of the Winnipeg Jets), the Manitoba Remand Centre, the Winnipeg Police Services building, the University College of

the North (UCN) located in northern Manitoba and the interior portion of the "double skin envelope" of the Manitoba Hydro Building. Border is wrapping up the interior portion of the Canadian Museum of Human Rights and is currently working on Heritage Landing on the Assiniboine river which is a 28-storey, \$70,000,000 tower. The company is also installing the curtain wall for the podium at the mixed-use, 200,000-square-foot Centrepoin in downtown Winnipeg which includes residences, a boutique hotel, two restaurants and offices.

"For a big project, we might

Some examples of Border Glass' work. Top right is the Optical Science Building at the University of Arizona and bottom is the MTS Centre in Winnipeg, home of the Winnipeg Jets. Border Glass has found its familiarity with high thermal specifications has given it an advantage in the southern U.S. Photo credits: Anna Borys

see competition from Toronto and Vancouver," says David, "but Winnipeg is, relatively speaking, not that big of a city. It's not that attractive a market for them. The true high rise towers don't exist here. The tallest are typically 30 floors and we've been in Manitoba for 47 years which makes it a challenge for out-of-town competitors to compete for the bigger jobs."

According to David, Border Glass has grown where it can easily handle anything in Winnipeg, however they also reach out into Saskatchewan, Alberta and even south of the border as well.

"We've been in the United States for 12 years now, primarily in Arizona, however we've completed projects in Washington and North Dakota as well," says Paul, who lives and works out of the company's Phoenix location. Paul frequently travels to Canada fulfilling his role on both sides of the border.

"We were met with open arms in Arizona," says Paul. "Contractors and developers saw how we performed in the first few years and our reputation and business grew by word of mouth from there. In Canada, the building codes are based mainly on thermal performance, debatably more so than air and water, and we brought that standard of performance to the southern U.S. Heating isn't much of a concern in the Phoenix area but energy costs for cooling are an issue so the thermal performance of our walls in the U.S. is an important consideration."

"Our approach is to focus on quality but at the same time get jobs closed in as quickly as possible. Much of our product is installed outside and for half the year our northern crews work in a very harsh climate. For that reason alone it seems we were geared for a better timeline on large projects than our local competitors in the U.S."

"The trend is very much towards energy efficiency," says David. "We often help out at the design stage of projects, which includes performance reviews, cost budgeting, and providing

advice for systems or details. We make ourselves available to owners, architects, and engineers to provide this service."

David continues, "The need is usually made up of three components: performance, price and delivery. We tailor-make our product and service to fit the job. If we only have three months to install it, we need to look at the supplier and the system. If there is a need for high performance, for instance a swimming pool or a tightly controlled environment, then we work with the designers to make sure the system is appropriate. If there are significant budget concerns, we can look at considering alternative suppliers."

"We know most of the architects

"We are like a breath of fresh air in the Phoenix market." – Paul Borys

very well," says David. "They will call us in and might have a partial idea of a glazing system, but a clear vision of what they are looking for and we'll say 'tell us what you want to do.' We will work with whatever product and/or supplier necessary to get the right solution. If necessary, we'll cut our own dies and do what we have to do."

There has always been a demand in Canada and the U.S. for security glazing in institutions such as penitentiaries, courthouses and detention centres which have high-end requirements on the interior. "We are very fortunate to have projects such as the Winnipeg Remand Centre and Sherriff Joe Arpaio's new home in Arizona as a significant part of our portfolio," shares Paul. "When we perform on the building envelope of a jail or a courthouse, we generally do all of the security glazing within. On the U.S. side, Homeland Security since 9-11 has imposed demanding design requirements on our industry, such as blast mitigation. There are some good specialty glazing opportunities available for glazing contractors in Canada and





Ryan Trombo, Border Glass production manager, reviews drawings for a current project.

the U.S. who want to expand outside the building envelope.”

Five years ago the economy crashed and the American division of Border Glass went into survival mode to pull through the tough times. “Several of our competitors are gone now and we are perfectly positioned to take advantage of the sleeping giant awakening,” says Paul. “And not just Arizona; we see signs of the entire U.S. coming back to life. We have invested a lot in maintaining a presence as well as staying on pace with the much larger competitors. We’re looking to expand our market size and volume in the U.S. in the next several years.”

“Border Glass as a whole has thrived in the last six or eight years largely due to the high standard and work ethic of our people” states Paul. “We’ve created a culture and working environment that good people want to be a part of. If you talk to the CEO of any successful company, they are going to tell you that a key to successful growth is to get the right people in the right seats. My job for the last eight years has been largely focused on accomplishing that. We have very little turnover in our company. There must be something about the way we treat our employees right from the day they arrive and lately we don’t spend a lot of money on help wanted ads.”

“We’re like a breath of fresh air when it comes to employers in the Phoenix market,” says Paul. “We don’t lay off very easily. If we find good people, we try to keep them busy. We paid for everyone to stay at home over Christmas. You have to spend money to make money and we’ve found that ‘our people’ is a very good place to invest. That’s been a win-win for many years now. We’re happy with the profitability and David and I hear from folks on a regular basis that Border Glass is a great place to work. That to me, is a big part of being successful in business.” •

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Border’s philosophy is to do what you have to do in order to find the right solution. All aspects of a project are considered and tailored to the customer’s needs. Photo credits: Anna Borys

SOUND ADVICE

by RICH PORAYKO

Eastern Canada's flagship fenestration event, Fenestration West, returned to the Delta Burnaby this past October. The event was created by the Fenestration Association of British Columbia (FEN-BC) following a merger of the non-profit Glazing Contractors Association of B.C. (GCABC) and the Window and Door Manufacturers Association of B.C. (WDMA-BC). Eligible for AIBC Core Learning Units, Fenestration West 2013 was sponsored by Apex Aluminum Extrusions.

Topics from the sessions included dynamic electrochromic programmable glass,



Fenestration West delivers strong education.

specifying the energy performance of glazing products in B.C., thermal bridging for building assemblies and building a watertight door.

One of the standout presentations had to be “Acoustic Performance of Windows” presented by Briët (Brizi) Coetzer, from North Vancouver’s BKL Consultants. According to Coetzer, urban planners in most Metro Vancouver municipalities have requirements in place to ensure that new residential projects proposed for high noise environments will be designed to achieve acceptable interior noise levels. Although exterior walls, roofs, doors and ventilation will sometimes require upgrading, it isn’t a surprise, as Coetzer explained to the attendees, that windows are the controlling factor with respect to the interior noise levels.

Even where there are no specific requirements imposed by municipalities, designers are paying careful attention to the acoustic performance of windows where noise-sensitive buildings such as residences, hotels, churches, schools and hospitals are involved. Speaking on a very timely, technical topic, Coetzer provided an excellent introduction and clearly explained the basics of sound, magnitude, frequencies, decibels, noise types and how humans hear all of the above.

“Single number ratings such as Sound Transmission Class (STC) and Outside to Inside Transmission Class (OITC) are

both a weighted average of the performance of a product which can assist designers in evaluating the acoustic performance of two similar products to determine which one is better,” said Coetzer. “A single number rating is a single number that represents a whole range of frequencies. Can you really rely on one number to give you an accurate performance of the window? I would suggest not. It is helpful to make initial decisions; however, there is a lot of detail which gets lost in coming up with this single number. These numbers perform adequately over a range of generalized cases but perform extremely well in almost none.”

“OITC is more suited for applications where you are dealing with outdoor to indoor noise transmission whereas STC is more suited for indoor room to room noise transmission.” The STC classification system is based on the amount of attenuation required to reduce a standard household noise spectrum to be subjectively quiet. Noise sources used in generating this standard household spectrum consisted of loud speech, radio, television, vacuum cleaner noise and air conditioner noise. “So if that is the kind of noise that you want to mitigate, then STC is the appropriate choice,” said Coetzer.

Building envelope companies deal with outdoor to indoor sound transmission of traffic noise, for example. “That is a different frequency spectrum completely which has a much

ABOVE: Leonard Pinalto of RJC brought attendees up to speed on how to specify the energy performance of glazing components in B.C.’s new, more complicated regime under the Energy Efficiency Act. Photo credit: Rich Porayko

bigger low-frequency component that isn't easy to mitigate with windows," stated Coetzer. "So the STC rating is not going to give you an accurate indication of relative acoustic performance if you are trying to mitigate low frequency noise because the STC classification system is, by nature, principally controlled by mid-to high-frequency noise.

"The OITC test method came about during the late 1980s in response to a perceived need for a more robust rating system that performed adequately for low-frequency incident sounds," said Coetzer. "The OITC classification system performs well in situations where the incident sound is broadband in nature and is dominated by low-frequency sound such as typical vehicle, aircraft and railway traffic noise. This is more representative of the real situation in which designers would be trying to choose appropriate exterior fenestration products," said Coetzer.

According to Coetzer, the rule of thumb for glass thickness is the mass law, which says "for fixed incident frequency, the transmission loss across a barrier can be increased by approximately six decibels by doubling the mass per unit area." So if you replace three-millimetre lites with six-millimetre lites, for example, you could increase transmission loss by six decibels, which is the equivalent of allowing only one quarter of the noise energy incident on the glass to pass through to the indoor space.

However, this is complicated by the "co-incidence effect" and "mass-air-mass resonance." It is always a good idea to call in the acoustical experts to evaluate the performance of an assembly in the context of the proposed construction.

Airspace is also important. Coetzer explained to attendees that if you double the airspace, you could get an additional three-decibel increase in sound transmission loss. This rule of thumb seems to work well for STC ratings on assemblies with air spaces over 19 millimetres but is less correlated with OITC ratings.

Another key takeaway from Coetzer's presentation was that laminated glass has constrained layer damping that significantly improves the transmission loss. "If you think of a sound wave moving through the glass, once it hits that constrained layer, there is a lot of energy that gets absorbed (transferred to heat). Laminated glass definitely helps. The

use of laminated glass with appropriate interlayer increases transmission loss by approximately five decibels."

Interestingly enough, if you add a gas such as argon to an insulated glass unit, it does change the shape of the transmission loss curve but usually does not result in any significant change to the OITC or STC rating.

Coetzer also explained that edge damping improves transmission loss; however, it's marginal and is really only in the lower and upper frequencies. Most of the transmission loss that is of benefit to human hearing is in the middle frequency range, which is not improved by edge damping. Triple glazing also performs no better than double glazing with the same total glass weight and the same overall section depth.

In order to improve acoustical performance, you want to focus foremost on glass thickness and airspace size, with consideration given to panel size, use of laminated glass and airtight installation.

"If you have a large panel of glass, it is more flexible and is able to vibrate more when exposed to a noise source. A more rigid, smaller panel of glass will improve

the transmission loss because the glass stiffness reduces the ability of the glass to vibrate. So it's better to have a smaller panel size if acoustics are a concern but it's very important to look at the TL data from the lab and know what panel size was used in the test which produced the STC/OITC rating," explained Coetzer.

Air leakage is another acoustic degrading factor that is most apparent at high frequencies. "Gaskets must seal positively when the window is closed," said Coetzer. "If you have air leakage around the edge of a panel, the high frequency performance is significantly degraded. If the window isn't sealed airtight, all of the efforts of extra glass thickness, laminated glass and increased airspace can be wasted. Double gaskets should be employed to provide sealing redundancy." •

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sedimentation are the most commonly used systems to clean the cooling water. The disadvantage of a centrifuge is the high operating cost of electricity, the comparatively high susceptibility to faults, the high maintenance cost and, most importantly, the fact that centrifuges cannot filter glass particles smaller than five microns. In contrast, water cleaning systems based on the principle of sedimentation can filter even the smallest glass particles almost entirely. By adding the correct amount of flocculant, nearly clear water is gained. Even oily residues are removed almost entirely.

Centralized water cleaning systems can be complex to set up and operate. Modern sedimentors, including Bohle's, have been designed to work in a decentralized configuration at the individual glass processing machine and are therefore more economic to both purchase and operate, less error-prone, more compact and more user-friendly.

In Bohle-style sedimentors, flocculant is added to the grinding water to bind fine glass particles which can then settle to the bottom and be discharged. The glass sludge can usually be disposed of

as normal residual waste. Flocculants are available that react exclusively within the sedimentor tank, making the waste water safe for disposal.

Bohle feels cleaning water using the bypass principle is superior to other methods. With this principle, part of the water is taken out of the water circuit, cleaned and fed back into the machine. Bypass cleaning systems can very easily be integrated with already existing glass processing machinery. Also, when planning new glass processing lines, bypass systems require relatively less space and low investment costs. Flocculant does not enter into the machinery circuit and soapy buildup on the tools is practically eliminated.

In in-line cleaning systems, all the cooling water is cleaned as it is circulated. This approach has benefits for some applications, which is why Bohle offers both. Apart from the larger space and investment requirements, the correct dosing of the flocculant in in-line systems is very complex. In-line sedimentation systems can achieve an even lower content of solids in the water, however this is normally not required.

Look for a water cleaning system manufacturer that offers systems for different sizes of glass processing machinery, from basic machines all the way up to cross-linked, double-sided, straight line edgers. Every plant and every project is different, so you need a company that can customize its system for your shop and grow as you grow.

To justify a water cleaning system, look at cost savings on fresh water use, disposal of waste water, cleaning labour and machine idle time. If you can, also consider the impact of better machine performance and longer tool life. A sedimentary water cleaning system should pay for itself in less than a year.

Bohle Sedimentor technology is in successful operation in many medium-sized glass processing companies but also in large enterprises such as Pilkington, Auer Lighting, Velux, Saint-Gobain, and Salgglas Automotive. •

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