

Architects' Guide™ TO GLASS & METAL

Volume 24 • Issue 1

January/February 2010

Designing with High-Performance Glass

Free Subscription Form on Page 16

Also Inside:

- New Products
- Project Spotlights
- Industry-Specific Educational Opportunities



Project: Weill Cornell Medical College in New York, NY Architect: The Polshek Partnership

Glazier: W&W Glass, LLC Product: SuperLite II-XL 120 in CW Framing

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On the Cover
Designed by architectural firm RMJM, Goucher College Athenaeum in Baltimore recently won the 2009 Accomplishment Award from the Maryland USGBC. The building, which features high-performance glass, opened last September and is seeking LEED Sliver certification from the USGBC. Turn to page 8 to read more about working with high-performance glass and glazing materials. Photo courtesy of Jeffrey Tryon/RMJM.

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News

New CPSC Rules on Labeling Glass Take Effect

The U.S. Consumer Product Safety Commission (CPSC) recently published a final rule as part of its Federal Register, 73 Fed. Reg. 68328 that addresses the conformity certification required for consumer products, including architectural glass used in hazardous locations, which are subject to safety rules under CPSC jurisdiction. In its ruling, the CPSC addressed a number of areas including how the certificate will need to be filed, including electronic formats, and the information that must be included in the certificate.

As a result of numerous requests and comments regarding the need to have a means for electronic certificates as an alternative to paper certificates, the CPSC now allows certifications to accompany the product and be furnished to distributors and retailers electronically.

"In my opinion, the CPSC regulation changes seem to bring the certification requirements for safety glazing officially into the modern age. The new regulations formally allow for use of an electronic certificate for safety glazing," says Julie Schimmelpenninck, architectural applications manager with Solutia Inc., who is also actively involved with a number of industry organizations focused on safety glazing. "In the past the glazing used in doors and door leaves as outlined in CPSC 16 CFR 1201, or safety glazing required in hazardous locations as defined in the model building codes, either had to have a permanent mark on the glazing indicating performance compliance to CPSC 16 CFR 1201 or a paper certificate that went along with the glazing. Now, with this regulation change, the documentation may be electronic."

Another change brought forth by the regulation is the amount of information that must be included on the certificate. The required information includes:

- Identification of the product covered by the certificate;
- Citation to each CPSC product safety regulation to which the product is being certified;
- Identification of the importer or domestic manufacturer, including the importer or domestic manufacturer's name, full mailing address and telephone number;
- Contact information for the individual maintaining records of test results, including name,

e-mail address, full mailing address and telephone number;

- Date (month and year at a minimum) and place (including city and country or administrative region) where the product was manufactured;
- Date and place (including city and country or administrative region) where the product was tested for compliance with the regulation(s) cited above; and
- Identification of any third-party laboratory on whose testing the certificate depends, including name, full mailing address and telephone number of the laboratory.

Another regulation change involves accessibility to the certificates by both the customers and CPSC.

"What this means to the glazing industry is potentially the development of a transparent tracking and certification system and access to those records for any glazing deemed as a 'safety' product. This may mean the development of online access or some other form of data acquisition that can be designated to allow review as necessary for the products that are sold as safety glazing," Schimmelpenninck says.

MIT to Host Glass and Glazing in the 21st Century Conference

Technology & Conservation, the MIT Department of Architecture's Building Technology Program and the Boston Society of Architects/AIA's Historic Resources Committee will host a conference and training program titled "Glass & Glazing in the 21st Century." Scheduled to take place March 20-21, the conference will focus on developments in architectural glasses for structural, energy saving and decorative uses in new building facades, envelopes and monuments, as well as their application in the restoration and upgrading of existing structures.

Topics to be discussed include: the basic material properties of glass; the role of thermal, mechanical, structural and chemical properties on performance and durability; the effects of environmental conditions; how these material characteristics and interactions need to be considered in specifying glass for

continued on page 4

PEOPLE ARE TALKING

“Oldcastle Glass® Vistawall® understood our sustainability requirements and helped us achieve 43% more energy efficiency than Oregon requires.”

—Kent Duffy, FAIA, Design Principal—SRG Partnership



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News

new designs and many others.

Among the scheduled conference speakers are James Carpenter of James Carpenter Design Associates Inc. presenting on "The Structure of Transparency: Light in the Public Realm;" David A. Wennekamp, project executive for Ipswich Bay Glass Co., offering an "Installer's Viewpoint;" Christopher Barry of Pilkington speaking on "Manufacturing Developments and Fabrication Techniques/Limitations;" Viracon's Don McCann's presentation on "Coatings on Glass and Fritting;" and a talk on "Energy and Sustainability Aspects of Glass/Glazing: Realistic Expectations" from Stephen Selkowitz of Lawrence Berkeley National Laboratory. **AG**
→ committees.architects.org/hrc/hrc_news.htm

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New Product Focus



glass Vitro America™ Products Available in BIM

Architects, specifiers, glaziers and other building industry professionals can now access Vitro America's library of Building Information Modeling (BIM) objects. BIM product models are available for the company's Envision™ glass systems, including all-glass entrances; sliding, stack-

ing, and clad doors; glass walls; handrail systems; and shower enclosures. Vitro America will continue to add other architectural products to its library of BIM models. The company's BIM models are available in a range of file formats such as Autodesk® Revit®, Google™ SketchUp and Bentley Architecture.

→ www.vitroamerica.com

Built for Energy Performance

The YOW 350 XT is the newest addition to YKK AP America's enerGfacade product line. Designed to ensure high performance and operation, the architectural grade window offers thermal resistant properties and barriers to minimize energy loss.

The YOW 350 XT utilizes the company's MegaTherm technology, composed of low conductive polyamide strips, which separate exterior metal from interior metal, providing a continuous thermal barrier to reduce condensation and conserve energy.

Enhanced accessories, such as specialized gaskets, are incorporated into the system to create smaller air cavities, designed to break the convection of energy within the glazing pocket for a warm interior metal surface. Operable sash gasket designs allow it to insulate air cavities between the frames.

In addition to thermal resistant properties, the window provides balanced sight lines to optimize daylighting and is tested in accordance with the American Architectural Manufacturers Association 101 Standard/Specification for Windows, Doors and Unit Skylights.

→ www.ykkap.com AG



architectural metals Aesthetic Transformation

As one way to help architects transform the look of a building façade while still offering protection from the sun and intense rays, C.R. Laurence Co. Inc. (CRL) is now manufacturing and distributing perforated panel and architectural wire cloth systems for exterior as well as interior building enhancements. The perforated panel systems are available in a number of finishes and perforation patterns, and can be retrofit to a building without major structural reconfiguration. Strategically placed panels can also provide a new look to older structures, while increasing the efficiency of the cooling systems.

The perforated panels are available in steel, galvanized steel, stainless steel and aluminum, as well as a variety of finishes including mill, powder paint and KYNAR®.

The architectural wire cloth systems can be used on exterior designs, as well as interior projects, in areas such as ceilings, wall paneling and railing infills. Several different meshes to cover a wide variety of applications are available. Tensioning systems with edge detail can also be incorporated to ensure the wire cloth remains taut.

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Unlocking the Energy Key

Architects Discuss the Role Glass Can Play When Designing a Sustainable Structure

by Charles Cumpston



Glass used in RMJM's Okhta Center in St. Petersburg, Russia, helps the structure achieve energy efficiency with more than 50 percent savings compared to a typical Russian building.



e

nergy usage and efficiency are pillars of the economic recovery plan. How architects design structures is at the core of effective energy usage and efficiency. How does the architectural community see the role of glass in this equation?

The Right Fit

According to Richard King, senior associate and a technical design leader at architectural firm RMJM's Princeton, N.J., office, there are varying degrees of performance for glass systems that can provide very good energy efficiency.

"Early on in a project, our primary effort in determining energy savings is more a question of how much glass and where, rather than what kind. We generally keep our glazing at a maximum of 40 to 50 percent of the building exterior skin to maximize the aesthetic impact of the glass, while balancing that against potential savings on energy and construction costs," he explains.

"With some clients we are able to discuss more advanced systems such as high-performance climate wall technology," he adds. "We have developed this for our Okhta Center project in St. Petersburg, Russia, among others, where the concept is an all-glass, crystalline form with exceptional energy performance. The design achieves energy efficiency with more than 50 percent savings when compared to a typical Russian building, which has only a small area of window. High-performance glazing systems offer excellent opportunities for energy savings, coupled with interesting aesthetic potential for the design."

Going a step further, he explains, "We have also investigated interesting alternatives

for this project, including heated glass systems and glazing systems, which include phase change materials to provide insulation only at certain times of the year, when it is needed most."

Questions Answered

Denise Beneke, an architect with MarmonMok Architecture in San Antonio, says, "When we design a building such as the library project I just finished, which has lots of glass—in this case floor-to-ceiling glass—the first questions we typically get from clients are 'Isn't it going to get hot in there?' and 'Is that going to be expensive to air condition?'"

Another question that she says seems to come up a lot is whether operable windows are efficient.

"There are mixed opinions in San Antonio from both architects and engineers as to whether they really provide any energy savings since our climate is so hot and opening the windows and turning off the air conditioning isn't an option for most of the year," she explains.

Architects say that there are a number of ways that they can respond to these questions and any concerns when it comes to architectural glass and energy efficiency.

According to Beneke, "Our response to the first question about too much glass getting hot and being expensive to condition is that, first, we will typically provide adequate shading of the glass on the south and west and even the east sides of the building; second, because north facing windows are the best, we like to

The use of shading can help keep glass structures cool by not allowing in too much heat, such as in this CitiBank project.



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Unlocking the Energy Key

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The Athenaeum at Goucher College in Baltimore features glazing in both overhead and vertical applications. The project is seeking LEED silver certification.



have lots of that glass to let light in and provide views of the outside, while still not having the solar gain that the other facades of the building have; and third, with better options for glass available [such as some of the high-performance glass products now on the market], which we typically use on most commercial projects, that is also helping.”

She continues, “The pros of glass usage, such as the views and daylighting it can provide, are so great that if the cons of the heat gain can be mitigated through the use of glass or a shading element, I think architects shouldn’t be afraid to use it. It does have to be done correctly, though. I’m speaking from personal experience; I work in an all glass high-rise that has no shading devices, which results in an office that is always hot on the south side and cold on the north side.”

King says the fact that glass products have evolved over the years and become more energy efficient has made the material much more attractive for use in architectural projects.

“Glass today is much more energy efficient than years ago and we have successfully managed to reduce mechanical equipment sizes because of

these advances," says King. "Metal and ceramic coatings are now offering us even greater design latitude where sun control is more critical. We are also using more laminated glass systems, because they offer excellent flexibility for translucent glass as well as improved safety and structural capacity."

King continues, "Advanced computer modeling to compare the various wall and glazing options is essential, especially when trying to maximize energy savings from daylighting. We are working on rainscreen wall systems that integrate glass panels in more of a spandrel application, so that we can achieve the appearance of glass with the energy savings of a solid wall."

The LEED Role

With energy efficiency becoming a pillar of architectural design, glass is one material that plays a prominent role in helping create a high-performance structure. And today, with more and more architects designing and submitting projects with the goal of attaining Leadership in Energy and Environmental Design (LEED) certification, architectural glazing materials can also fill a significant part in reaching that criteria.

"LEED requirements," explains King, "are no longer a significant issue for us as the requirements are now such an integral part of our design process. We have become more precise in how and where we use glass systems as a result. We use glass and metal systems together to control daylighting and glare, especially in controlling strong southern exposures. We often take advantage of how well-integrated glass framing systems are with various sunscreen systems to achieve these savings."

Beneke points out, "One of the biggest parts of LEED and where you can get the most points is energy efficiency. That is where some start to worry about using too much glass and requiring too much conditioning of the space. However, energy doesn't just come from the HVAC systems. These energy savings can come from using more efficient lights and fewer of them, which can be done by using more daylight. Other ways to save on energy efficiency is by using better HVAC systems. If you're looking just at energy efficiency alone, then yes, glass will make it a little more difficult;



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but, when you look at LEED as a whole, you can see that by having windows you are also eligible for points because you are providing views and daylight."

As glass and glazing materials continue to evolve and as the importance of creating energy-efficient, sustainable structures continues, so, too, will the architectural community's use of these products. **AG**

Charles Cumpston is a contributing editor for the *Architects' Guide to Glass & Metal*.



Learning Opportunities

The Architects' Educational Forum Returns to Suburban Chicago

Architects looking for new ways to earn the credits necessary to maintain their American Institute of Architects (AIA) status will have an opportunity March 17 during the Architects' Educational Forum, organized by the *Architects' Guide to Glass & Metal* magazine. The event, created exclusively for architects, will feature several AIA-accredited presentations designed to provide education and insight into a variety of glass and glazing topics.




This year's Architects' Educational Forum will take place at the Renaissance Hotel & Convention Center in Schaumburg, Ill., and will

be held in conjunction with Glass Expo Midwest, a long-standing event managed by Key Communications, publisher of the *Architects' Guide to Glass & Metal* magazine.

Glass industry companies and organizations taking part in the event will discuss a number of relevant topics. In addition to the seminars, Forum participants will also have networking time during coffee breaks and a lunch, which will be sponsored by Chicago-based contract glazing firm MTH Industries. Other event co-sponsors include Edgetech I.G., YKK AP and J. E. Berkowitz.



This year's presentations include:

9:30 a.m. - 10:30 a.m.	Coated Glass 
	<p>Presented by the Glass Association of North America</p> <p>This course includes a study of the manufacturing process for coatings on glass, the performance values and a case study on cost savings.</p> <p>Learning Objectives: Participants will learn why glass is coated; glass surface terminology; coatings for optical and solar performance; understand solar and thermal performance; common terminology; cost savings using coated glass; surface modifying coatings; coating processes; sputtering; pyrolytic; and a review of other uses of coated glass.</p>
11:30 a.m. - 12:30 p.m.	Sustainable Glazing Systems and the LEED® Green Building Rating System 
	<p>Presented by YKK AP</p> <p>This seminar will review the environmental benefits of curtainwall and storefront design and how proper selection and applications of these systems can enhance green building performance. Using the 2009 LEED Green Building Rating System Version 3.0 as a template, the presentation will explain how fenestration design can contribute to enhanced energy performance, on-site renewable energy, recycled content, thermal comfort, daylighting and views to the outdoors.</p> <p>Learning Objectives: Select the proper glazing system based on performance criteria. Integrate sunshades and light shelves into fenestration designs. Employ proper daylighting and views to the outdoors strategies. Calculate recycled content of curtainwall and storefront.</p>
1:30 p.m. - 2:30 p.m.	How Structural Silicone Spacers Contribute to Sustainable Window Design 
	<p>Presented by Edgetech I.G.</p> <p>The program focuses on utilizing the latest silicone technologies for commercial facades. The primary focus is on achieving optimal/green building design through improving energy efficiency, long-term durability and waste reduction.</p> <p>Learning Objectives: This program will shed light on insulating glass history with a focus on silicone foam spacers and their significance to energy efficiency and sustainability design in glazing. At the end of the program participants will be able to identify at least three characteristics of flexible foam spacers that promote durable/sustainable glazing design.</p>

Architects' Educational Forum at



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Convention Center
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(Suburban Chicago)

In addition to the AIA-accredited presentations, those participating in the forum will also have access to the Glass Expo Midwest trade show, where exhibitors will be featuring some of their newest products and developments for the architectural glass and glazing industry. Some of the exhibitors include U.S. Aluminum, Dlubak, Prelco, as well as Forum presenters/co-sponsors Edgetech I.G. and YKK AP.

Additional information and registration is available online at www.glassexpomidwest.com/archforum.php.

Projects

Glazing Plays Key Design Role in Van Andel Institute Expansion

A ribbon cutting ceremony took place December 8, 2009, to celebrate the \$170 million phase II expansion of the Van Andel Institute (VAI) in Grand Rapids, Mich. The project, designed by architect Rafael Viñoly, was completed two months ahead of schedule and within budget. The new medical research and education facility is 242,000 square feet on eight levels and triples the lab space

The VAI expansion project used glass extensively, in both interior and exterior applications.

for expanded basic and translational research.

Vos Glass Inc. was chosen by VAI to provide and install the unique glass features of the expansion project. Vos Glass and its team of fabricators and installers collaborated with Viñoly on the project to fulfill his vision for the glass walls, windows and interior elements.

Interior glazing details include, among other features, 10,000 square feet of glass entrances and ½-inch floor-to-ceiling glass partition walls; custom Kawneer frames with two pieces of ½-inch thick glass to create a 4-inch airspace as well as a high STC rating for the working environment; custom glass handrail systems with bent radius glass on the second and third floors; exterior ¾-inch custom glass handrails installed on the sixth floor for a conference room balcony; and fire-rated glazing in most fire-rated doors.

Exterior features include a Kawneer 7500 system installed for the strip window framing portions of the building with fully captured glazing



and two-sided structural glazing at designed locations and Viracon 2-inch, triple pane, insulating glass units with high performance coatings and 5/8-inch argon-filled air spaces.

The VAI Phase II building expansion has been submitted for LEED certification.

Extensive Glass Details Featured in New Marine Mammal Center

The Marine Mammal Center, which opened in late 2009 at the New England Aquarium, features an outdoor exhibit area that's surrounded by wood and glass, creating an ideal environment for the aquarium's new addition. The exhibit is surrounded by a glass windscreen and glass panel system that was fabricated by JE Berkowitz LP. The new exhibit space was custom designed by McManus Architects of Cambridge, Mass.

JE Berkowitz and glazing contractor, Tower Glass of Woburn, Mass., worked together to fabricate the glass enclosures for the Marine Mammal Center. This included protective glass panels around the mammal pool with custom C.R. Lawrence (CRL) hardware and clamps. The glass windscreen encapsulating the perimeter was secured in place with custom CRL heavy spider fittings, mounted to stainless steel posts. All the glass consists of 1/4-inch clear tempered glass with .060 SentryGlas® interlayer by DuPont and 1/4-inch clear tempered glass. **AG**



Glass is the dominant design feature of a recently completed exhibit at the New England Aquarium.

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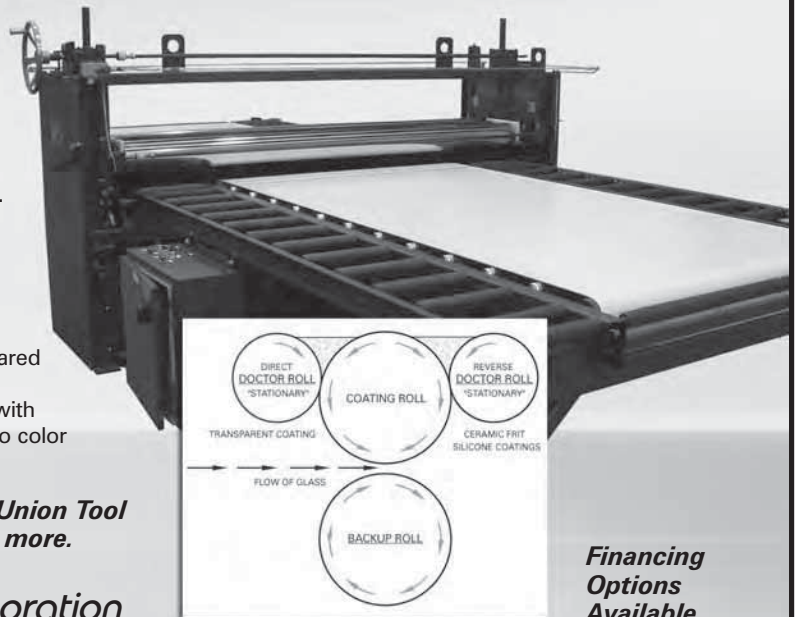
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AIA Continuing Education Update

Designing for Safety and Security

Building projects that require impact-resistant materials are becoming increasingly common. For many in the architectural and design fields, working with these products can be a new experience. To help navigate through such projects a number of organizations have created AIA-approved continuing education courses.

security issues in blast and progressive as they relate to the capital program. Objectives include: presentation of the badging requirements and process for capital projects; a summary of the ISC updates and their impacts on projects; and an overview of the risk assessment process for security. → www.gsa.gov

ISC Security Blast/Glass Fragmentation/Progressive Collapse/HSPD-12 (Homeland Security Pres. Dir.)
GSA Office of the Chief Architect

Learning Units: 1

GSA projects are required to meet the Interagency Security Committee (ISC) Security Design Criteria for New Federal Office Buildings and Major Modernization Projects. Developers created this course to highlight some of the major

Blast Mitigation Through Windows and Glazing Construction Specifications Institute

Learning units: 1

This course was created to help architects and designers understand how their designs can help protect people and property from blast loads. Participants will learn what charge weight is; the impulse/pressures/duration relationships; as well as ISC design criteria for protection.

→ www.csinet.org AG

If your company offers an AIA Continuing Education Course please let us know about it by e-mailing erogers@glass.com

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 Other (please specify): _____

3. Number of employees: 1-4 5-9 10-19 20-49 50-99 100+

4. Please check all the products or services your company designs with or specifies:

Windows/Window Hardware Plastic/glazing alternatives Storefronts/curtainwall systems
 Doors/Door Hardware Sealants/adhesives Insulating glass
 Architectural Metals Shower doors/tub enclosures Bent, etched, beveled glass
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