

Turning Heads

Five Ways the Glass Industry is Making Architects Take Notice

by Megan Headley

Glass keeps re-inventing itself in new ways that tantalize architects and designers. New technology also has opened a unique variety of options in new areas. While we at USGlass are sure the creative product engineers out there are far from done with setting trends and

breaking ground, we have a peek at some of the big ways glass is standing out in architectural designs today.

More, More, More Glass

With all of the exciting developments in glass technology and products, it's no wonder that architects and building

owners are demanding larger-than-ever expanses of glass. Large lites, massive windows and even disappearing indoor/outdoor walls are much in demand these days.

"I think it's going to be a prominent trend," says Max Perilstein, vice president of marketing for Arch Aluminum and Glass in Tamarac, Fla. "Architects want to build with light and obviously part of the equation is a high-visible-light type of product, but then the other part of the equation is they want a big span to show the light. That's where the bigger is better is coming through."

Not just bigger windows—architects are encouraging the use of "oversize" lites of glass.

"The trend toward oversized glass continues," agrees Christine Shaffer, marketing manager for Viracon in Owatonna, Minn. Last May, Viracon responded to the growing demand for larger glazed openings by expanding its fabrication capabilities to meet the need for oversized coated glass. The company now is able to fabricate a standard width of up to 84 inches and a standard length of up to 144 inches.

Barber Glass Industries in Guelph, Ontario, has made plans to secure a new facility in part so that it can focus on producing lites as large as 130-by-240 inches.

"Current trending in the European market involves greater use of oversize products and we are beginning to see more architectural use of such products over here in North America," says Michael Wellman, vice president of sales and marketing of Barber Glass.

Is it just that architects have finally caught on that glass makes the project? Shaffer explains a more likely possibility: "The trend toward oversized glass is aided by the increased availability of domestic fabricators who can supply



Viracon officials feel their supply of glass for World Trade Center Tower 7 could be marked as the unofficial starting point of a trend toward floor-to-ceiling glass (or slab-to-slab glass) with glass heights more than 140 inches.

dimensionally larger glass. In the past, capabilities and supply were limited in the United States and designers were often required to seek product elsewhere, typically from European fabricators. Today, designers have more choices for quality fabrication of customized, large glass panels.”

With more options available, this trend is no longer limited to large-scale construction projects. “Initially the interest for this design remained with high-rise building construction, but has since evolved to low and mid-rise structures,” Shaffer says.

Why stop there? In some cases, high-end residential homeowners are adding curtainwall products to their homes to increase their views (see *January 2008 USGlass*, page 42).

Of course, there are some challenges to consider in this trend toward ever-bigger lites.

“Glass is a dangerous product and, with bigger sizes, you have handling issues and you have safety issues—and it’s just not as simple,” Perilstein cautions. “An architect can draw on a piece of paper but it’s a lot different when you have to produce it.” (See “From the Fabricator” in the *January 2008 USGlass*, page 10, for more on these challenges.)

Point-Supported Glass

When going for as much unencumbered glass as possible, point-supported systems certainly make a statement. By attaching the glass using bolted fittings directly connected through holes in the glass, architects can further improve a building’s transparency. It’s a trend that has really taken off in recent years (see *September 2003 USGlass*, page 46), and remains popular today.

“We see it as a big, big level of interest from architects,” says Jeff Haber, managing partner of W & W Glass LLC in Nanuet, N.Y. “Even though the concept has been around for awhile, I think that architects and developers are trying to find new ways of bringing in nat-

ural light and big open expanses. This tends to wind up going back to that point-supported glass concept. Typically, you can get much more free area in facades and skylights with that than you can with conventional mullion systems.”

Mike Niklas, architectural sales and marketing manager of J.E. Berkowitz in Pedricktown, N.J., agrees that this trend hasn’t slowed.

“I think it will continue on,” he says. “I’ve seen it used quite extensively in other parts of the world; it’s just starting to really go up more often here in the United States.”

What’s driving architects here to adopt these systems in an increasing number of projects?

“The architectural community sees it as an impressive feature on a

building—it makes a statement on a building,” Niklas says. “And I think that here in the United States the architectural community is starting to feel a greater comfort in using glass in these structural-type applications.”

New and improved fabrication technology in the United States brings more architects on board with this trend. As Haber notes, the technology available has evolved so that buildings don’t have to sacrifice high energy performance for expansive views, for example.



Green isn’t just a color option for decorative glass mulch; products like these are often the result of glass manufacturers’ recycling efforts.

“A lot of manufacturers have come up with ways of putting high-performance solar control coatings on the glass that you can now drill, which gives architects more flexibility if they’re trying to go for a LEED system or get a certain energy rating,” Haber says. “They can go ahead and use these products without sacrificing performance on a big piece of the building skin. I think that’s a big deal.”

The new confidence in the capabilities of glass—that comes with improvements in the fabrication



More architects are getting the “point” that point-supported glass is another way to achieve expansive views.

process—is motivating architects to turn to these systems. “I think there’s a better understanding of how glass is used as a structural element than in the past,” Niklas explains. “People have always thought of glass as a fragile element, not thinking of it as a structural component ... More and more

people are starting to understand the properties of glass and therefore you’re seeing greater use of it.” In point-supported glass applications, where the view is nothing but glass, that confidence is key.

“I think it’s greater access to hardware also,” Niklas adds.

And, according to Haber, it’s the hardware that can make these unique systems stand out. “Whether you’re cladding a glass fin or a steel beam or a tension cable, it’s still the idea of you’re going to take this high-quality glass and marry it to something with a point fitting, a bolt, patch, clamp, whatever. It really gives the architect a lot of flexibility to make that back-up structure exotic, complicated, unique,” he says. “That’s where the design intensity is really focused. It’s not so much on the outer skin—that concept, while it’s been around for a long time, it’s pretty much a tried and true way of doing it. Maybe the glass itself changes performance, but the back-up structure can really be versatile and expressive for the architect. That’s why a lot of them are using these high tech cable nets and tension systems.”

Of course, with increased use of these systems, comes new cautions. “Some of the concerns I see as a fabricator,” Niklas says, “is that greater access means more people involved with it and it still is an engineered-type application—people will need to understand it.” The mis-application of the available hardware is a concern about which these fabricators warn.

“I see e-mails everyday with hardware vendors around the world offering products,” Niklas continues. “What’s the quality of the product? Make sure you’re using tested, quality products.”

Is this trend expected to slow down the road?

“I don’t think it’s reached a saturation point,” Niklas says. “As long as the commercial construction market is healthy, I think you’ll see continued use of it.”

Think Small—Really Small

Large-scale views may be a big trend in the glass industry but, on the other end of the spectrum, nanotechnology—a branch of science that focuses on “tweaking” technology at the macromolecular level—is making big waves. Many major glass manufacturers are exploring nanotechnology as a way to improve their products. In 2003, Guardian Industries expanded its facility to focus on using nanotechnology “to make more energy-efficient glass at its Kingsburg plant.” As an article in *Small Times* magazine noted, “The process ... allows the glass maker to add 10 to 15 coatings in a stack that is $\frac{15}{100}$ the thickness of a piece of paper.”

Keep Glass Coming—and Now Keep It Beautiful

In February 2008, PPG acquired the assets and intellectual property of NanoProducts Corp., a producer of nanoparticle materials and a developer of nanoparticle technology. According to information from the company, PPG’s nanotechnology solutions include a number of patented innovations such as thin-film, optically clear nanocomposites for scratch and mar protection as well as the reflection of infrared (IR) and ultraviolet (UV) light from glass.

“With these new materials, PPG can offer its customers and development partners unique, high-value solutions,” says James A. Trainham, PPG vice president of science and technology.

Glass admittedly has some amazing technical properties, but there’s one unavoidable characteristic that makes it so in demand from the architectural community: it’s simply beautiful. Now, in addition to the new technology that allows for unusual and unlimited use of architectural glass, the use of decorative or embellished architectural glass products—for interior and exterior applications—is on the rise.

“Decorative glass is continuing to be on the upswing,” says Kris Vockler, mar-

keting manager for ICD High Performance Coatings in Vancouver, Wash., and chair of the Glass Association of North America's (GANA) Decorative Division. "Decorative glass has always been there but in the last few years we have seen it become more accepted in commercial design."

"We've seen ... the explosive use of—or desire to use—art glass, custom-printed glasses, in certain designs," adds Haber. "Whether it is products like SentryGlas® Expressions from DuPont, where they print on the interlayer, or some of these new inkjet printing capabilities that some of the European manufacturers have where you can actually print on the glass itself, or custom silkscreen and things of that nature—they bring a different level of artistry to these building facades."

"Decorative glass is permeating the whole gamut of applications, from metallic looking spandrel to more unique patterned or slumped glass," Vockler says. "Unique art glass pieces are seeing a greater acceptance in the market."

Part of that acceptance could be from the fact that new technology is allowing glass to take on decoration in areas it might not have before—and in addition to benefits that might not have been available before.

As Haber notes, decoration is not just for interiors anymore.

"That's where it started [interior applications], and that's where it's easy to apply, because it's limited scope, the loads are small so it's easier to do it—but we're seeing it translated into exterior building skins," Haber says. He adds, "Obviously budget is always going to be the driving force of whether or not these things really happen or not, but the desire certainly is there."

Like Haber mentioned with regard to point-supported glass, Vockler notes that products are now available to make decorative glass products higher performing than in the past. And as the trend has grown over the past several

years, developments have made the products easier to specify than in the past as well.

"The area of designing with decorative glass, I suspect, has been complex in the past, but today we see manufacturers making the process easier to specify for the architect," Vockler says. As she notes, "This is very important for an area of products that could use new chemistries in their creating, such as glass coatings for decorative use. Not all coatings or processes are created the same nor do they all work well in glass applications."

As with any growing industry, there are companies looking to jump on the bandwagon without waiting to understand the technology and options. "In an effort to exploit this business there are many companies who jump into the business using printing technologies that are less than adequate for use as architectural glass," says Bernard Lax, chief executive officer (CEO) of Pulp Studio in Los Angeles. "These processes are sold without testing or supporting data to enforce the quality of what is being sold and many of them are processes we left behind because they would not perform. For a designer the selection of the right process can be rather dubious without a guide."

He adds, "In general this may be the biggest problem facing the industry of decorative glass."

Among the day-to-day issues is simply defining the types of decorative glass available.

"The issue that seems to be more of a moving target is what the industry defines as decorative glass," Lax says. "Some define this as purely color coating or fritting a piece of glass."



Decorative glass is still popular in interiors but is making its way outside too, as evidenced by these GANA Design in Glass Award winners (top: residential decorative glass winner; bottom: commercial tempered glass winner).

To decorative glass companies like Pulp Studio, the possibilities for creating decorative glass are nearly limitless.

Among the biggest movements within this trendy area, according to Lax, is graphic imaging.

The use of color is another growing trend within the decorative glass arena. And speaking of color, green is a color that is very popular in the glass industry these days ...

Going, Going, Already Gone Green

Maybe "going green" doesn't fit the definition of trendiness, as it seems to be here to stay—but glass producers and users are both still learning new ways their products can promote all things green.

"I definitely feel that it's a trend that will keep going," says Zach Weiner, CEO of Colonial Glass Solutions in Brooklyn, N.Y. "I don't think this is a flash in the pan-type idea, in three years from now we're going to say, 'Oh, do you remember that green initiative that was going on three years ago?' It's not going to be that way."

A question coming up more often as this trend continues is: "Just how green can you go?" While many product manufacturers and fabricators were looking at how to create products that are good for the environment, many companies are now paying attention to the way they produce these products, making their manufacturing processes greener.

"The good news for Colonial is that we are doing both," Weiner says. "Our products such as the OPACI-COAT 300 for SpanSteel and the TriSeal Super Spacer for InsulSteel are both good for the environment. So product-wise we have that covered; and then the way we make and produce these products is

also green. We recycle 100 percent of our glass, we have our cogeneration system—we generate [our own] electricity—so we're doing both."

At the recent Glass Week conference (see April 2008 *USGlass*, page 44) members of GANA were instructed to begin looking at standard methods for making production green.

"This is the future of our industry and I think has to be a part of GANA down the road," commented Greg Carney, GANA's technical director, during a Tempering Division meeting.

Each division was encouraged to examine green initiatives. Among suggestions mentioned was the use of recycled cullet during the manufacturing process. Taking that a step farther, many manufacturers are finding additional ways to recycle glass waste ... glass mulch anyone? Companies such as The Garden of Glass in Sedona, Ariz., take post-consumer and post-industrial recycled glass and use it to create sustainable landscaping products, among other things.

"We make it from recycled glass, so it's not just loose recycled bottles," says Carrie Lightfoot, owner of The Garden of Glass, of the company's glass "mulch." She adds, "It's from window manufacturers and different [companies] like that. It's waste glass that we then melted and remelted, and color is added and then it's crushed and tumbled to use as a landscaping product."

Lightfoot notes that this is yet another product that architectural designers are looking at for earning LEED credits.

"The larger landscaping business [we do] is through architectural designers and landscape architects," Lightfoot says. She adds that this is a trend that has "definitely" started growing. "The response has been really impressive."

Not to mention growing into other avenues. Many glass fabricators might recognize their

product installed on certain buildings, but would it be so easy to recognize glass scrap that has been recycled, colored, tumbled and then installed as siding upon a building? According to Lightfoot, they might have the opportunity to find out, once the company has completed its work with a client in Kuwait aiming to use the crushed glass as a glittering cladding material.

Of course, "greening" the manufacturing process may be further down the road for this industry.

"We all work real hard to produce green products but our manufacturing operations are pretty far from being green themselves," Perilstein says. "Right now all anybody cares about is the product."

"I think the industry is still working out the kinks," Weiner adds. "I think in a couple of years it's going to be clear cut: this is what is green, this is not. But right now it's really the early stages of this movement. I think it's going to get more defined as we go on but right now there's still a lot of gray area."

Perhaps someday down the road the manufacturing process will be contributing to the green trend, but in the meantime, architects seem well aware that the use of more glass—more appropriately called daylighting—is green in and of itself.

"The product is the focus," Perilstein continues. "That's where you're going to see the primary glass manufacturers to continue to improve the glass offerings and you're going to see improvements with spacers, with framing; every component is going to meet the needs of the green world." ■

the author



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Are You A Trendsetter?

Are you so "cutting edge" that you've found yourself on top of the next big trend in the glass industry? Tell us about it! E-mail your thoughts to mheadley@glass.com.