

Architects' GuideTM TO GLASS & METAL

Volume 30 • Issue 2

Summer 2016

Dynamic Trends

Where Electrochromic
Glass is Headed

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A Dynamic Market

The Six Biggest Trends in
Electrochromic Glazing

by Nick St. Denis

Photo: © Jeffrey Totaro, 2015



Saint-Gobain's new North American corporate headquarters, located in Malvern, Pa., features 17,000 square feet of Sage electrochromic glass.



Dynamic glass isn't considered mainstream yet, but it's proving to be more than just a niche technology.

Electrochromic glass, which adjusts light transmittance electronically to control sunlight, reduce energy consumption and eliminate glare without blocking the view, continues to build momentum as architects and building owners realize its potential—in a variety of applications.

Jobs are getting bigger, and new sectors are implementing the technology.

Things are changing, and manufacturers in the industry would say for the better.

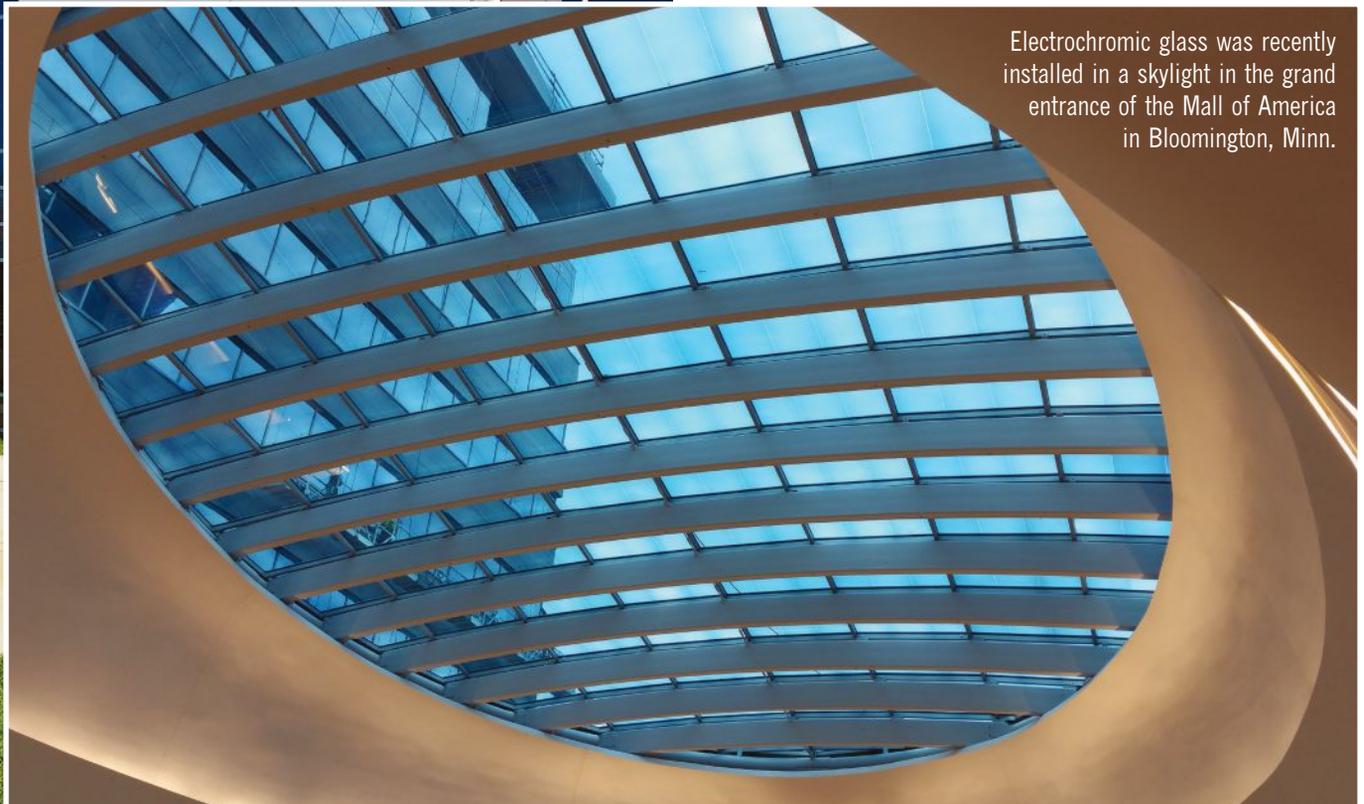
1. Segment Growth

A report released by industry analyst n-tech Research last year indicates materials used in smart windows—including electrochromic and thermochromic glass—will grow to approximately \$760 million by 2020.

More recently, another report from the firm focusing on electrochromic glazing projected the smart window market will grow from \$40 million to nearly \$500 million by 2019. That's just a fraction of the \$3 billion in revenue projected for the electrochromic glazing industry as a whole.

Both SageGlass and View, manufacturers of electrochromic glass, reported doubling their pipelines in the past year.

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Electrochromic glass was recently installed in a skylight in the grand entrance of the Mall of America in Bloomington, Minn.

Photo: SageGlass



Higher education is a big user of dynamic glass. The Lory Student Center at Colorado State University, for example, features nearly 3,000 square feet of glass manufactured by View.

2. Increasing Project Scope

Helen Sanders, vice president of technical business development for Sage, says project sizes are getting much bigger, and quickly.

Her company, in fact, recently announced its glass will be installed at the 3.0 University Place in Philadelphia, the world's first commercial office building pre-certified LEED V4 Platinum by the U.S. Green Building Council. The building's 189,000-square-foot façade will feature 50,000 square feet of SageGlass.

"That's a massive project," she says, "and pretty significant in the electrochromic world."

Sage vice president of marketing Derek Malmquist says current projects are five to ten times larger than what his company would've considered a good-sized project three years ago. The company's product has been on the market for more than a decade.

"People now recognize that this is a way to design with more glass without taking an energy penalty or a comfort penalty," he says.

3. New Sectors Involved

Since its inception, electrochromic glass typically has been geared toward owner-occupied office spaces and higher education. During the last few years, the healthcare sector has gained momentum as the industry recognizes the positive impact occupant comfort and daylighting can have on patients.

The electrochromic sector has seen another new trend as other corners of the market begin to understand the value dynamic glass can provide.

"We're seeing more interest from high-end developers," says Malmquist. "These Class-A office buildings need to be greener and more comfortable, and that is driving developers to invest more in the technology."

View has also witnessed a notable rise in interest from this sector, according to Erich Klawuhn, vice president of product management.

"A technology such as electrochromic glazing that focuses on return-on-investment and long-term savings compared to baseline—that's perfect for owner-occupied buildings. They're the ones that have been adopters of dynamic glass up until this point," he says. "But what we're starting to see now is tenant-occupied buildings or developers."

The electrochromic market is also targeting the airport sector, which offers big opportunities due to its use of large, expansive applications of glass, says Klawuhn. "There is a lot of building and investment going into airports, and dynamic glass is a great fit for it."

Residential highrise projects are another key prospect for dynamic glass. In Washington, D.C., View was specified in the penthouse amenities space of a couple of large residential structures, and it's now doing an installation of an entire building.

4. Integration a Key

Companies have developed new technologies that allow more pinpointed solutions for the occupants. Sage, for example, developed LightZone, which enables sections of a lite of glass to be tinted at different levels. It further expanded the technology and can now produce customized shapes.

Another way in which electrochromic glass has been able to grow is its ability to be integrated with other technologies to form a unique solution for the end user.

Sage recently partnered with MechoSystems, a manufacturer of automatic shading devices,

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to integrate its SolarTrac technology. With SolarTrac, SageGlass light transmittance levels adjust according to a predictive sky analysis and user-defined heat-load and solar-penetration thresholds.

“When you look at shade control and electrochromic control, you’re looking for the same signals—cloudy and sunny,” says Malmquist. “The same predictive and control inputs are needed. That was a very interesting partnership.”

Adds Sanders: “We’ve been putting these kinds of collaborations together for many years. We do it because it’s important to our customers that we can integrate with other systems in the building to provide full functionality.”

5. Solution to Unique Challenges

Electrochromic glazing combined with optimized air flow, an efficient HVAC system and renewable energy, among other variables, can help a project meet net zero energy. Sometimes, even space can be a factor.

“They may want clear glass and a big façade, but they don’t have the room for an HVAC system that is required to make the occupants comfortable,” Klawuhn says. “So they look to electrochromic glass. We’re hearing that more and more in the design and engineering phase.”

The ability of the manufacturer to stay connected with the end-user has also been a major positive for the electrochromic market.

If a zoning change is necessary or an error must be addressed, View can log in remotely to a customer’s system and make an update.

6. More Shapes and Sizes

Klawuhn says market research six years ago showed most of the commercial sector would be satisfied with 5-by-10-foot glass. Those dimensions became the standard large size because the interiors of commercial buildings are typically designed in five-foot increments.

However, View anticipated demand for larger glass in certain market segments, and it debuted its 10-by-6-foot version late last year.

View has worked on some retrofit projects that fit the bill for these larger sizes.

“One, for example, had widths beyond five feet,” he says. “They committed to a dynamic glass retrofit for the entire building, but with five-foot-wide glass, they would’ve had to reconfigure the mullion. It significantly saved them a lot of glazing labor and aluminum framing cost.”

Perforation Perfection

I-Drive 360 Parking Deck, Orlando, FL
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Architect: Finrock, Apopka, FL
General contractor: Finrock, Apopka, FL
Installing contractor: Mulletts Aluminum Products, Sarasota, FL
Profiles: 7.2 Corrugated perforated
Color: Musket Gray

“Petersen can provide a nearly endless combination of perforation hole sizes and patterns to meet virtually any architectural design need.”
Dave Landis, architectural/technical sales manager, Petersen Aluminum

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Dynamic glass has also enabled designers to go bigger with bending facades.

“We can do complex shapes and curves ... in places you couldn’t otherwise shade mechanically,” says Sanders, “... A lot of these kinds of things are enabling architects. And with our improved exterior aesthetic, it is actually allowing the architect to feel comfortable they’re going to have a nice-looking building outside.”

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