INSIDE: Find Your Green Glass Options at the 2014 Greenbuild Expo

USGlass

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Who's The Greenest of Them All?

Announcing the 2014 Green Design Award Winners

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Lean, Green Building Machines

USGlass Magazine's 2014 Green Design Award Winners

Winners of this year's **USG**lass Green Design Awards are serious about high-performance, energy efficiency—and they did it with glass as a key component. Over the next few pages you'll see projects covering the U.S., from the west to the east, each bringing unique design elements and all designed with energy savings in mind. Most are LEED certified; another is striving to meet the Living Building Challenge. They all show that architecture can incorporate glazing as a significant building material and thrive in the "battle for the wall."

And for their Green Guidance ...

Special thanks to the judges who assisted in the selection of this year's winners.

Tom Culp

Kerry Haglund

Arlene Stewart

Tom Culp, owner of Birch Point Consulting in LaCrosse, Wis., and code consultant for the Glass Association of North America.

Kerry Haglund, owner, Haglund Design Inc., LEED AP BD+C, based in the Minneapolis-St. Paul area.

Arlene Stewart, president of AZS Consulting Inc. in Gainesville, Fla.

Photo: PPG Industries/ Tom Kessler

The Bullitt Center in Seattle is striving for Living Building Challenge certification.

Bullitt Center, Seattle

Architect: Miller Hull Partnership LLP
Glazing Contractor: Goldfinch Brothers Inc.
Glazing Systems Manufacturer: Schüco USA
Glass Fabricator: Northwestern Industries Inc.
Glass Supplier: PPG Industries
Thermal Spacer Systems Manufacturer: Technoform Glass Insulation

It's "The greenest commercial building in the world," according to the Bullitt Center's website. And judges of **USG**lass magazine's 2014 Green Design Awards agreed. Located in Seattle, Bullitt Center is a six-story office building designed by the Miller Hull Partnership. The 50,000 square-foot facility has been dubbed a model of sustainability that demonstrates how buildings can function as completely integrated, self-sustaining, living organisms,while serving as a place for people to gather and learn about green building and urban sustainability. Hundreds of sustainable building products enabled the Bullitt Center to execute its core performance functions while generating or renewing 100 percent of its energy, water and waste management functions onsite.

The sophisticated high-performance curtainwall assembly, designed by Schuco USA and fabricated by Goldfinch Brothers, features PPG's Solarban 60 solar control, low-E glass.

The system incorporates triple-glazed insulating glass units fabricated by Northwestern Industries with center-of-glass U-values of 0.12. Early in the project's development, Goldfinch Brothers collaborated with Northwestern Industries to assist with performance calculations, color selection and other architectural support. Northwestern fabricated the glazing system using Technoform Glass Insulation's (TGI) spacer for the curtainwall and operable window systems. According to TGI, Bullitt Center's operable windows capitalize on natural ventilation coupled with a heat-recovery system and weather-responsive shading system. Prior to fabrication and construction, computer

Evidence Based Design Explained

Evidence-based design is the process of using the best available scientific research to make building design decisions that can positively impact healthcare outcomes. It is a certified architectural practice overseen by The Center for Healthcare Design.

Source: SageGlass

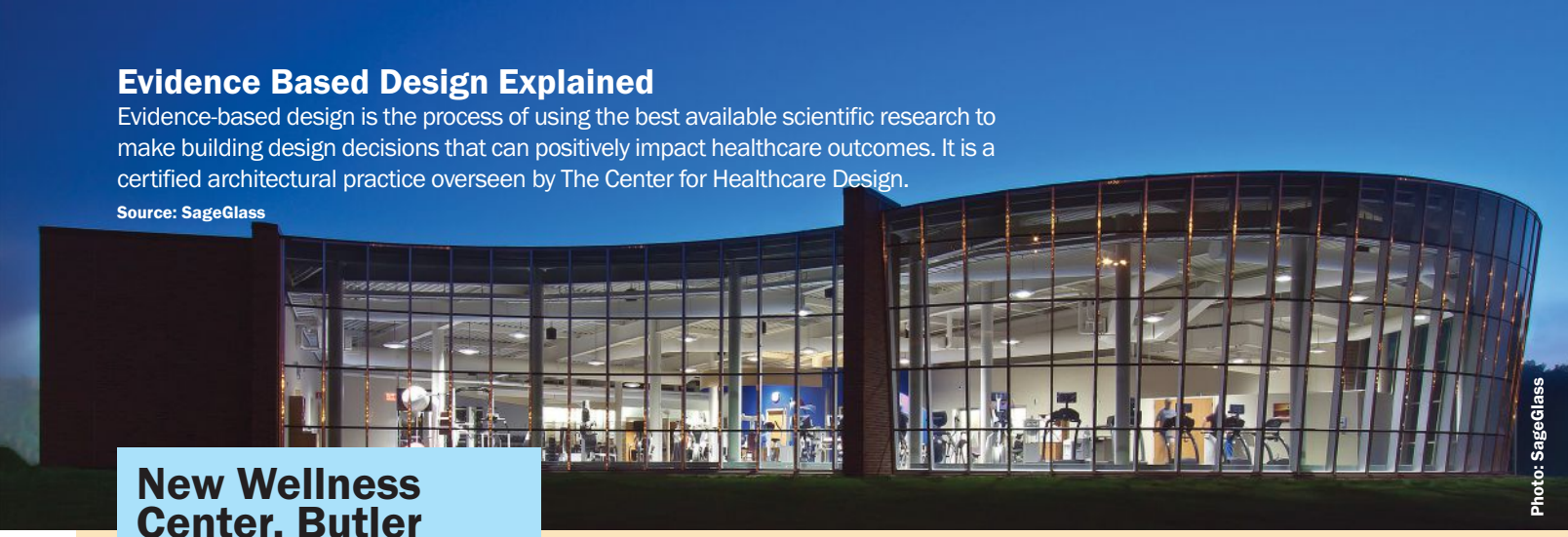

Photo: SageGlass

SageGlass was used in the 3,000-plus square-foot curtainwall within the Butler County Health Care Center.

New Wellness Center, Butler County Health Care Center, David City, Neb.

Architect: Visions in Architecture, Douglas Elting
Contract Glazier: City Glass Company
Glass Suppliers: SageGlass (fabricator and coater); Cardinal (primary glass supplier)

The Butler County Health Care Center is helping improve patient outcomes, save money and create a better work environment for staff by employing evidence-based design (EBD) in new construction and renovation projects *(see inset above for more on EBD).*

Architect Doug Elting of Visions in Architecture, a certified expert in EBD, completed a major renovation and a new wellness center project for the hospital, where he applied EBD principles to solve a variety of building challenges. Using a combination of scientific research, software and advanced building technologies, his designs have helped improve the safety of patients in the hospital's acute care unit, reduced the infection rates of the surgical unit and created a more health-promoting indoor environment, among other benefits.

A key design objective for the new wellness center was preserving the views to the outdoors while maintaining an open-air feel for the community. The wellness center features a unique, curved south-facing butt-glazed curtainwall that offers beautiful views of a park and golf course. Due to the complex curvature of the curtainwall design, mechanical shades would have been problematic. They would have also blocked the views and presented ongoing hygienic and maintenance problems for the wellness center due to dust and germ accumulation, according to SageGlass.

The addition was sited on the south-facing end of the hospital, creating a significant sun glare and heat gain problem.

Preserving the openness and transparency of the glass-enclosed facility was an important marketing feature. The new wellness center also served as a showcase project in this small rural community, offering the town a modern health club facility in addition to its advanced therapeutic services. The owners wanted to keep the design bright and open so that people could see inside the facility.

SageGlass was installed in the south facade to control the sun and heat gain while preserving the openness and transparency of the glass-enclosed facility. The glazing allowed the facility to increase overall energy efficiency while reducing HVAC requirements.

The new wellness center features a unique 3,000-plus square-foot curved glass curtainwall that extends up to 22 feet high, offering views of a park and natural surroundings. Elting designed the building structure in 3D using building information management and sun tracking analysis software that aimed to create a comfortable healing environment, while also preserving a connection to the outdoors.

Since dynamic glass can provide cost savings benefits through energy efficiency, the hospital was able to use a smaller, less expensive size heating and air conditioning unit.

simulations modeled daylight illumination for different window configurations and ceiling heights to optimize energy efficiency. Large windows, together with high ceilings, enable the Bullitt Center to draw 82 percent of its lighting needs from the sun, according to PPG.

One unique feature of the project is called the "irresistible stairwell," featuring Starphire ultra-clear glass by PPG. The stairwell, which provides panoramic views of Seattle and Puget Sound, is designed to promote energy savings by enticing occupants to climb steps instead of riding an elevator.

Net-zero energy performance is achieved through a photovoltaic array that generates 230,000 kilowatt-hours of electricity per year, a ground-source geothermal heat exchange system, and radiant floor heating and cooling systems, which combine to reduce energy use by 83 percent compared to a typical office building in Seattle.

Completed in April 2013, the Bullitt Center is seeking to become the first urban commercial office building to earn certification through the Living Building Challenge.

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Lean, Green Building Machines

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John and Frances Angelos Law Library, University of Baltimore, Baltimore

Design Team: Behnisch Architekten and Ayers Saint Gross Inc.
Façade Design/Engineer: Wheaton & Sprague Engineering Inc.
Façade Consultant: Stutzki Engineering
Contract Glazier: National Enclosure Company
Glass Fabricator: Tecnoglass
Glass Supplier: PPG Industries
Photovoltaics/Solar Systems: Energy Systems Group
Shading Systems: Advanced Technology Group

Completed April 30, 2013, the project design team determined in advance that the John and Frances Angelos Law Library would be LEED-certified with an emphasis on energy efficiency. LEED Platinum certification is being pursued.

Featuring a high performance curtainwall system, the project was constructed through a design assist process, starting from an architectural concept and utilizing custom dies and design for the unitized curtainwall system.

The office-classroom volume façade is a custom unitized curtainwall comprised of vision glass, operable vent, and composite metal panel infills. The entire office-classroom wall system included a rainscreen glass surface offset from the exterior face by approximately 8 inches. The unitized curtainwall system was designed not only to support the weight and loads imposed from the rainscreen glass but the added weight of an automated venetian blind system that was installed in the cavity between the wall and rainscreen and automated operable vents.

The library volume façade is a custom unitized curtainwall comprised of silkscreened vision glass, spandrel glass and operable vent infills. The library wall system was designed to meet all of the same performance criteria as the office-classroom wall system with the added challenge of extending up at the roof to become a screen wall to hide the building's mechanical systems.

The atrium volume façade is a custom site-built curtainwall veneer attached to architecturally exposed structural steel (AESS) with vision glass, operable vent infills, and an exterior brise soleil sunshade system. At one location the AESS had to free span almost 60 feet vertically and at another it had to span more than 50 feet horizontally.

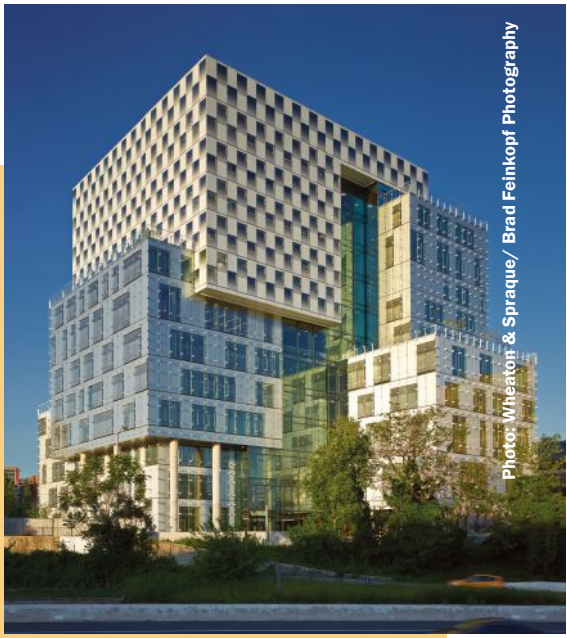

Photo: Wheaton & Sprague/ Brad Feinkopf Photography

The John and Frances Angelos Law Library was designed with an emphasis on energy efficiency.

Honorable Mention
Pinnacle Bank Arena, Lincoln, Neb.

Architects: DLR Group and BVH Architects
Contract Glazier: Glass Edge Inc.
Glass Fabricator: Manko Window Systems
Glass Manufacturer: Guardian Industries

Completed in August 2013, the Pinnacle Bank Arena was designed by DLR Group and BVH Architects to fit its historic location and showcase the city's commitment to sustainable design through a high level of energy efficiency and energy-savings measures. The arena is an ENERGY STAR-certified building, using about 35 percent less energy than non-certified buildings; it was built to LEED Silver specifications.

The design features a multi-story, glass-fronted lobby that not only gives passers-by a peek at the activity taking place inside on all levels of the building, but also allows patrons inside to look out to the new development, the Haymarket, downtown Lincoln and Nebraska's famed state capitol beyond.

Guardian SunGuard SNX 62/27, which has 62 percent visible light transmission with a low 0.27 solar heat gain coefficient and a light-to-solar gain ratio of 2.30, was used to help keep excessive heat out while letting the sun shine through. The glass was used to help the center's high-efficiency heating and cooling equipment maintain the space, contributing to the building's energy-saving measures.

Photo: Guardian Industries/ Ryan Robertson

The Pinnacle Bank Arena incorporates high-performance glass and is an Energy-Star certified building.