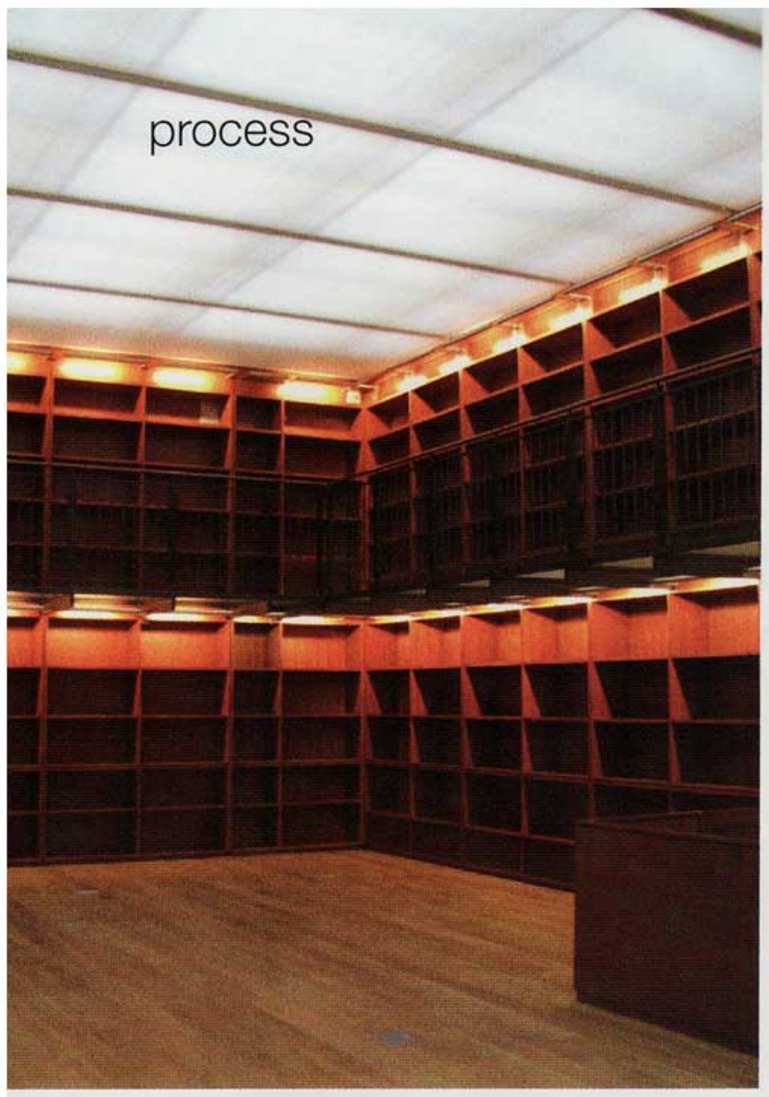
contract
inspiring commercial design solutions

DMD

June 2008



The Cube room at The Morgan Library in New York City (above), houses an original Gutenberg Bible in the Clare Eddy Thaw Gallery, which is illuminated by a multilayer skylight control system.

let the sun shine in

The art of successful solar control in museums and galleries

By Frits Nijs

Not long ago, solar control in a museum setting was difficult, if not impossible. However, due to strict curatorial standards, insurance requirements, and priceless collections, proper solar control has become an art form in itself.

Solar control in museums and galleries has faced a number of challenges, including architecture, building location, solar angles, depth of space, unpredictability of natural light, and the fragility of what needs to be lit. Over the past few years, museums have embraced solar control to harness the energy and dynamism that sunlight can bring to paintings, sculpture, and historic documents.

While effective heat and light management also increase the comfort factor of those inside, the amount, duration, and intensity of UV rays can put tremendous strain on art and historical documents. "Museum design is no longer dictated by the lowest common denominator," says Christopher Meeks, associate professor of architecture at the University of Washington, and lead daylight analyst at the Seattle Daylighting Lab. "Solar control is really about three things: controlling the light at the aperture, at the work itself, and the automation or control of the system managing it."

Today, with the help of complex and intelligent solar control systems, natural light can become a welcome guest in any institution. One particularly interesting example of solar control is The Morgan Library in New York City. Recently expanded by Renzo Piano—one of the most recognized leaders in museum design today—The Morgan houses an original Gutenberg Bible in the Clare Eddy Thaw Gallery, a room normally lit by a huge skylight. Direct exposure here would be disastrous. The solar control system is a multilayer skylight control system that prevents any direct sun penetration, maintains light levels within defined parameters, and provides a clean finish while diffusing the light. Using this solar control system, The Morgan has successfully achieved in excess of 99 percent light exclusion.

Here are other examples of solar control used in prestigious museums throughout the country:

The Museum of Modern Art in New York City

Created by architect Yoshio Tanaguchi with support from the firm of Kohn Pedersen Fox (KPF), MoMA's design balances pure internal spaces with striking external views. Using a specially designed system of glass, mullions, and solar shades, the architects created openings that temper and control the light going into and out of the museum's galleries and educational spaces, especially on the upper level. Solar control is achieved during the day, with blackout capability at night to control light pollution in the surrounding residential area. The dual system aligns with LEED standards.

Los Angeles County Museum of Art (LACMA)

The lighting standards in multiple parts of the museum require different lighting conditions. Renzo Piano positioned vertical shades on the north side of each of the angled metal sunshade panels. When deployed, these panels help control light penetrating below to the third floor gallery. Both the roof and façade shades are equipped with fabric and hardware, durable to withstand any unstable weather. The control system also allows the museum to schedule the opening and closing of the shades at different times during the day, maximizing or minimizing the amount of light penetration.

Art Institute of Chicago

The gallery is extremely sensitive to the impact of light on the paintings located within the museum. Renzo Piano chose specialty motorized shades with a sun-tracking system to monitor light levels, ensuring that lighting standards were met, with different types of fabric used for the different façades. Orientation depends on the openness factor, transmission, and reflectance properties; shades are motorized. A sunshade, or "flying carpet", was specifically designed for the building's location to garner ideal light conditions for the upper galleries during the day. Automatic adjustments are made by an interior lighting system. There is as a double-window front wall, which provides light and ventilation. The AIC also installed solar panels on the roof of its current building 10 years ago.

Overall, a fully integrated system of dynamic and passive solar control systems allows today's architects and designers to tailor the intensity and direction of light entering into some of the world's most prestigious museums. Many modern operable motorized systems now also include sun tracking capabilities and software for complex scheduling systems that detect where the daylight is and how to tailor it to the museum's needs. In addition, these systems eliminate all light during times when the gallery is closed.

Frits Nijs is president of Hunter Douglas' NYSAN Solar Control division, based Calgary, Alberta.

Give us your feedback on this story at www.contractmagazine.com/contact.

contract
inspiring commercial design solutions

ONLINE Edition

DMD

June 2008

Process: Let the Sun Shine In

June 6, 2008

-By Frits Nijs

The Cube room at The Morgan Library in New York houses an original Gutenberg Bible in the Clare Eddy Thaw Gallery, which is illuminated by a multilayer skylight control system.

Not long ago, solar control in a museum setting was difficult, if not impossible. However, due to strict curatorial standards, insurance requirements, and priceless collections, proper solar control has become an art form in itself.

Solar control in museums and galleries has faced a number of challenges, including architecture, building location, solar angles, depth of space, unpredictability of natural light, and the fragility of what needs to be lit. Over the past few years, museums have embraced solar control to harness the energy and dynamism that sunlight can bring to paintings, sculpture, and historic documents.

While effective heat and light management also increase the comfort factor of those inside, the amount, duration, and intensity of UV rays can put tremendous strain on art and historical documents. "Museum design is no longer dictated by the lowest common denominator," says Christopher Meeks, associate professor of architecture at the University of Washington, and lead daylight analyst at the Seattle Daylighting Lab. "Solar control is really about three things: controlling the light at the aperture, at the work itself, and the automation or control of the system managing it."

Today, with the help of complex and intelligent solar control systems, natural light can become a welcome guest in any institution. One particularly interesting example of solar control is The Morgan Library in New York City. Recently expanded by Renzo Piano—one of the most recognized leaders in museum design today—The Morgan houses an original Gutenberg Bible in the Clare Eddy Thaw Gallery, a room normally lit by a huge skylight. Direct exposure here would be disastrous. The solar control system is a multilayer skylight control system that prevents any direct sun penetration, maintains light levels within defined parameters, and provides a clean finish while diffusing the light. Using this solar control system, The Morgan has successfully achieved in excess of 99 percent light exclusion.

Here are other examples of solar control used in prestigious museums throughout the country:

The Museum of Modern Art in New York City

Created by architect Yoshio Tanaguchi with support from the firm of Kohn Pedersen Fox (KPF), MoMA's design balances pure internal spaces with striking external views. Using a specially designed system of glass, mullions, and solar shades, the architects created openings that temper and control the light going into and out of the museum's galleries and educational spaces, especially on the upper level. Solar control is achieved during the day, with blackout capability at night to control light pollution in the surrounding residential area. The dual system aligns with LEED standards.

Los Angeles County Museum of Art (LACMA)

The lighting standards in multiple parts of the museum require different lighting conditions. Renzo Piano positioned vertical shades on the north side of each of the angled metal sunshade panels. When deployed, these panels help control light penetrating below to the third floor gallery. Both the roof and façade shades are equipped with fabric and hardware, durable to withstand any unstable weather. The control system also allows the museum to schedule the opening and closing of the shades at different times during the day, maximizing or minimizing the amount of light penetration.

Art Institute of Chicago

The gallery is extremely sensitive to the impact of light on the paintings located within the museum. Renzo Piano chose specialty motorized shades with a sun-tracking system to monitor light levels, ensuring that lighting standards were met, with different types of fabric used for the different façades. Orientation depends on the openness factor, transmission, and reflectance properties; shades are motorized. A sunshade, or "flying carpet", was specifically designed for the building's location to garner ideal light conditions for the upper galleries during the day. Automatic adjustments are made by an interior lighting system. There is as a double-window front wall, which provides light and ventilation. The AIC also installed solar panels on the roof of its current building 10 years ago.

Overall, a fully integrated system of dynamic and passive solar control systems allows today's architects and designers to tailor the intensity and direction of light entering into some of the world's most prestigious museums. Many modern operable motorized systems now also include sun tracking capabilities and software for complex scheduling systems that detect where the daylight is and how to tailor it to the museum's needs. In addition, these systems eliminate all light during times when the gallery is closed.

Frits Nijs is president of Hunter Douglas' NYSAN Solar Control division, based Calgary, Alberta.