

BENEFITS OF Daylighting

 SERIES

The 5th Wall and High-Performance Ambient Daylighting of Spaces

Sunoptics®, the leader in integrated daylighting solutions, presents this educational series on the benefits of daylighting where we live, work and learn.

For centuries, daylight was the only efficient resource available as a primary source of lighting in the built environment. The architecture of the day was dominated by the desire to penetrate usable daylight deep into enclosed spaces by creating openings, from above the floor as well as outer walls, large enough to distribute daylight to building interiors.

The 5th Wall

In the late 19th Century, before daylight was supplemented by electric lighting, consideration of good daylight strategies was essential. Much of the designs through time were done through a building's roof, or 5th wall, as the roof has the greatest exposure to the sun. As architecture in the early 20th century began to grow vertically, and electric lighting became the standard for interior lighting needs, so did the focus on architectural vertical daylighting solutions versus top lighting through the 5th wall of the building. However, the visual connection to the outdoors is a critical building consideration as it provides both light and human connection to the outdoors, providing valuable human productivity connections. In deeper spaces for large buildings, on top floors, or single-story buildings, the available light penetration through the 5th wall provides the best quality, most available quantity, and excellent light distribution solution.

Typically, the depth of daylight penetration through vertical fenestration (windows) is approximately 2.5 times the distance between the top of a window and the sill. Using a 6' high window, the daylight could penetrate about 15' into the space, with light that falls angularly downward from the top of the window. Unlike properly diffused and dispersed top lighting, this distribution creates lighting contrast from dark spots in the upper areas of the space. It diminishes lighting performance as one moves inward from the vertical illumination. This isn't rocket science, but it is lighting science.

Consider High-Performance Daylighting in Your Lighting Design

In most commercial/industrial spaces, where do lighting designers typically place their luminaires for ambient lighting? They place primary electric lighting overhead due to the ability to distribute light into the space efficiently and effectively. Complementary electric lighting solutions are used in these areas for visual effect (much like windows are used for the visual connection to the outdoors). As with electric lighting, designers and specifiers should keep high-performance daylighting in mind as they determine the application's most effective and efficient illumination.

With the latest technologies in lighting and controls, the 5th wall can be used in combination to create a more efficient and pleasing space to work and live under. Today, we have design tools that allow us to formulate the amount of light offered with daylighting and lighting, allowing the design to meet the footcandles needed in the space. By combining daylighting, lighting, and controls as a hybrid solution, they can offer additional longevity with LEDs, saving energy and allowing the building's occupants a touchpoint to the outside world.

As architects and specifiers are designing to provide the ultimate, human-performance, net-zero lighting solution, they should consider 'looking up' and taking advantage of the 5th wall. High-performance top-lighting solutions can provide all-day exposure to nature's free, efficient, and most productive way to light a space.



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The 5th Wall *continued...*

The Sunoptics Difference

Since 1978, Sunoptics® has been a trusted partner for providing superior natural light and leak-free products for roofers, architects, and building owners. To ensure high-grade products, Sunoptics extrudes its own plastics using high-quality materials. This allows for total quality control of the manufacturing process and optical quality of the lenses.

As part of the Acuity Brands® portfolio, Sunoptics® offers the advantage of providing holistic daylighting product solutions consisting of skylights, LED luminaires, and advanced lighting controls from one source.

The Sunoptics Advantage: Sunoptics® products are tested and certified by independent third-party organizations to ensure compliance with safety, quality, and performance standards. Third-party test results are available on Sunoptics.com.

At Sunoptics®, we believe,
There's No Greater Efficiency Than Off!®



About the Author:

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