

GREENPRINT FOR THE FUTURE

The Green Nature of WINDOWS

By Paul Andrew Haselhuhn, AIA, LEED AP



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The fact of the matter is we spend up to 90% of our lives indoors. Most of us however, are driven to be outdoors. Whether we realize it or not, we physically and emotionally benefit from nature and the sun. It's been said that the best place to find religion isn't in a church building, but by taking a walk in the woods. Architect Alden B. Dow embraced this idea in not only his design of places of worship but in architecture as a whole. The element Dow often used in his designs to connect the interior with the exterior, was glass.



Glass, seen here at the Hemlock Semiconductor Administration Building in Hemlock, is one of architecture's most sustainable elements.

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Architect Alden Dow used glass to connect the interior with the exterior in places of worship and other structures. Midland's First Methodist Church Chapel is seen here.

Glazing, that transparent component of a building's envelope, which connects our environments, is one of architecture's most sustainable elements. It impacts energy usage, ventilation and occupant health. In many ways, more so than any other sustainable feature a building can engage.

Prior to the addition of mechanical and electrical systems, openings in the building's envelope, whether infilled with glazing or

not, were the primary source of light, ventilation, cooling and even helped to heat a building's interior. There was a time when architects used to take advantage of these features. But over the last century, with some exceptions, we have largely ignored the benefits of a building's glazing. With the advent of electric lighting and HVAC systems we've become accustomed to muscling the heating and cooling into a building, forcing fresh air in and contaminated air out,

and artificially lighting the interior to make spaces usable.

The way we treated a buildings glazing became worse during the energy crisis of the '70s, when alot of reaction by architects and building owners focused on glazing as the primary loss of energy in a building. And it was an easy target. Existing buildings, K-12 schools being a prime example, saw large expanses of single pane glazing systems replaced with EIFS infills and small double hung replacements. Many of those schools, when they were designed, used large amounts of glazing for light, ventilation and connecting the occupants with the exterior. Additionally, new buildings were designed with a focus on more energy efficient walls. While a positive step for architecture as a whole, since glazing technology was much further behind, in many cases the windows were a forgotten element. It was a knee-jerk reaction; the fundamental building elements in architecture were changing and we were going through some growing pains.

In recent years, low-e technology has greatly improved, double pane, argon filled insulated glass has become the norm, and warm-edge spacer technology has thrust glazing efficiently forward to catch up with the remainder of the building envelope. Choosing a higher performing glazing for a building, even though it may have a higher initial cost, can also have a quick payback, in some cases as little as just a couple of years. Having said that, a building's glazing is still its weakest point for energy loss.

Fortunately, many of today's architects are returning to the principals of sustainable design they have used for centuries. No longer do we shy away from glazing, but we embrace it. Through understanding its added value to a building's space, implementing time-tested principles of how to control solar gain and energy loss by how a building is oriented on its site, and through the use of properly designed overhangs, light shelves and sunshades.

About the Author:

An architect and LEED accredited professional, Paul Haselhuhn is an associate with the firm of Wigen Tincknell Meyer & Associates, Inc. Haselhuhn has been a project manager on a wide variety of projects for the firm and now specializes in higher education, healthcare and commercial facilities. In addition to sustainable/green architecture, his focus lies in design and construction documents for the firm's clients. ♦♦



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