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Hawthorne: LEED vs. Passive House - What's the difference?

by Monique Lee Hawthorne Guest Commentary

The qualities of Passive House get lost in translation

As a Leadership in Energy and Environmental Design (LEED) accredited professional, I readily defend LEED's standard and certification to critics who question its alleged greenness and whether it lives up to its hype.

"You get points for including bike parking spaces?" they protest. "C'mon!"

Nonetheless, I stand by the usefulness of LEED certification and believe it serves a useful purpose even if it only increases dialogue and awareness about sustainable building.

With that said, recent conversations have led me to explore other types of sustainable building standards and methods. I have been very impressed with Passive House (aka Passivhaus), a building standard from Germany that is an exciting option for builders, homeowners and developers.

Passive House's basic premise is to lower energy loads by using building mass with the goal of eliminating building systems.

"Passive" does not refer exclusively to passive solar heating, often a component of Passive House. The standard goes beyond and requires very high levels of insulation with minimum thermal bridges and thorough consideration of the utilization of solar and internal gains. Passive House looks to exceptional levels of airtightness, which differs from other building techniques. Contrary to what some may think about airtightness, all Passive House buildings boast first-class indoor air eminence because most of them use heat-recovery ventilation systems.

Unfortunately, Passivhaus is victim to a poor translation. The German word "haus" is not limited to single-family residences. For example, a "gasthaus" is an inn or hotel, not literally a "guest house" as a direct translation might imply. The Passive House standard can be used for all types of buildings, as is the case in Europe.

However, in most cities, there are but a few lonely Passive House projects in sea of LEED-certified buildings. Why are there so few Passive Houses?

LEED seems sexier. It focuses on broad categories that can showcase features to the general public. There are five areas assessed in LEED: water efficiency, sustainable sites, materials and resources, indoor environmental quality, and energy and atmosphere.

Passive House is easier to explain, but its features are not easily displayed. Its primary focus is energy efficiency, which isn't particularly sexy when all that can be shared with someone is what type of foam insulation is being used (and that ends up being hidden behind walls). However, actual energy savings can be demonstrated, such as through a \$5 electricity bill for January.

Also, photovoltaic sunshades or roof-mounted wind turbines are definitely showier versus Passive House's goal to achieve energy efficiency so great that solar arrays, wind turbines or other complex systems are not needed.

Perhaps another reason that Passive House has not caught on is that the standard is location- and climate-specific. LEED does not change based on geographic location. Although the U.S. Green Building Council says LEED is moving

toward climate-specific certification, its current point system awards the same points for projects in any region, even though features' impacts may be completely different.

Builder preferences also heavily influence LEED points pursued. With Passive House, however, either the standard is achieved or it isn't.

So, which is better?

There is a strong argument that Passive House is the better standard for sustainable development. This is because a building's biggest impact is its energy usage, and building costs are about the same when compared to LEED buildings (although like all building costs, this depends on the builder and owner).

LEED buildings are found to use 25-30 percent less energy than non-LEED buildings. Passive House buildings can slash the heating energy consumption of buildings by up to 90 percent, and overall energy consumption by 60 to 70 percent.

LEED does not require any minimum air changes per hour, even though building leakage contributes greatly to energy loss. Passive House requires less than or equal to 0.6 ACH at 50 Pascal pressure, which is 10 times tighter than Energy Star.

All in all, the Passive House standard takes a big bite from a building's impact on the environment.

LEED and Passive House do not preclude each other. A building can obtain LEED certification and also meet the Passive House standard. Some have said LEED is ahead simply because it has been around longer.

To be serious about green building, we should encourage and utilize innovative new standards for sustainable development. Let's hope it does not take too long before other standards start gaining ground.

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