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Environmental Building News
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BuildingGreen Announces Top-10 Products for 2015

Transformative products eliminate toxic chemicals and fossil fuels, and improve building and site performance.

By Brent Ehrlich, Paula Melton, and Alex Wilson

Correction: The line of USAI luminaires with Color Select is called BeveLED 2.0. We regret the error.

Photo: Ekla Home

BuildingGreen, publisher of *EBN*, has announced the winners of its annual Top-10 Green Building Products awards. The 13th annual awards recognize green building products that make fundamental transformations to "business as usual" in the design and construction industry.

This year's picks include products that have eliminated halogenated flame retardants, a longstanding health and environmental issue, along with a highly effective air- and weather-barrier system, chairs made from a new biobased plastic, and high-efficiency chillers using near-frictionless compressor rotors.

Johns Manville ENRGY 3.E Halogen-Free Polyiso Insulation

Virtually all plastic foam insulation products include halogenated flame retardants—but not this one. With its ENRGY 3.E, Johns Manville is the first manufacturer to release a polyisocyanurate roofing insulation that has been reformulated to eliminate TCPP, or Tris (1-chloro-2-propyl) phosphate, the halogenated flame retardant (HFR) that is used in other polyiso and spray polyurethane form (SPF). The product meets Class A fire-rating requirements using a non-halogenated organo-phosphonate monomer, and the company claims ENRGY 3.E has a higher R-value and better compressive strength than its standard polyiso.

Organic Furnishings from Ekla Home

Foam cushions are another building product in which halogenated flame retardants are ubiquitous. Ekla Home offers organic sofas and chairs with cushions made from natural latex, which requires no chemical flame retardants. Despite the "Home" in the company's name, it has contracts with large corporate clients such as Google and Starbucks in addition to its residential offerings. The company's environmental focus goes beyond eliminating halogenated flame retardants: Ekla manufactures its furnishings with certified organic fabrics, wood certified to Forest Stewardship Council (FSC) standards, and Greenguard Gold-certified adhesives.

KI Chair with AirCarbon Plastic

In 2015, commercial furniture manufacturer KI will offer its Strive and Grazie chair lines made from a petroleum-free polyhydroxyalkanoate (PHA) plastic called AirCarbon. Made by Newlight Technologies, the AirCarbon plastic used for KI's chairs is a breakthrough in plastic technology. The raw materials used to make AirCarbon are taken from agriculturally sourced methane rather than petroleum, sequestering the carbon from this powerful greenhouse gas and making the chair carbon-negative, according to the company. The plastic used in KI chairs is engineered to be durable and cost competitive with—or cheaper than—conventional plastic. The Strive and Grazie lines will be the first products to use AirCarbon and will be available as stacking chairs and stools and in other styles.

FocalPoint Bioretention System

Untreated rainwater leaving a developed site is effectively a chemical spill—but densely developed urban areas don't typically have space for classic *low-impact development (LID)* stormwater filtration strategies like bioswales. FocalPoint is a high-flow-rate biofiltration system designed to provide the performance of natural stormwater filtration on a very small footprint.

Photo: Design Workshop

Although early LID adopters believed that the slow infiltration rate of natural stormwater management systems was central to their performance, users soon discovered that slow flow does not always work in cities and that stormwater management needs can often be more effectively met through intensive, high-flow filtration. FocalPoint fosters root systems that are super-efficient at processing key pollutants, helping urban projects meet local stormwater standards in tiny spaces.

Multistack Magnetic Levitation Chillers with Danfoss Compressors

Multistack MagLev centrifugal chillers provide cooling for offices, schools, and other large commercial buildings using Danfoss Turbocor compressors that have shafts supported by magnetic levitation. With almost no friction, variable-frequency drives, and the company's FlexSys controllers, these chillers work well at partial loads, are energy efficient, and eliminate the need for mechanical seals, gears, pumps, and many other conventional components. They are also smaller and quieter than conventional chillers and require almost no maintenance, including avoiding the use of lubricating oil that often contaminates refrigerant and reduces efficiency. Multistack has several models of MagLev chillers, including modular versions that are small but can be combined into larger units, and the larger, second-generation MSF Gen II, both of which can fit through standard 36-inch doorways, making them ideal for retrofits.

Fluid-Applied Cat 5 Air Barrier System from Prosoco

Liquid-applied air barriers have emerged as a high-performance alternative to sheet goods, and Prosoco's Cat 5 system represents one of the best in the class for a variety of reasons. The parts of the system (air barrier, flashing, and two filler products) are all based on the same high-performance "hybrid" polymer chemistry, which has no solvents or isocyanates, and the company has improved on the basics by removing phthalate plasticizers—a move that makes the materials eligible for use on Living Building Challenge projects.

In addition, Cat 5 can be applied to damp surfaces, and the color-coding and other contractor-friendly features make application and quality assurance nearly foolproof, according to users. The company offers technical support during both design and construction, and has been a leader in disclosure of ingredients, with this and other products carrying a Health Product Declaration (HPD).

Photo: John Stamets. CC BY-NC 2.0.

Clean Energy Collective

Most people in the U.S. can't own photovoltaic (PV) panels because they rent their homes, can't afford an entire system, or own properties that are shaded, have poor solar orientation, or lack the space. Clean Energy Collective (CEC) develops locally sited PV facilities across the U.S. and engages with local utilities so that people with meters on those utilities can purchase and own PV panels within a shared array. CEC uses utility-grade panels and inverters—installed in optimized locations—and manages the maintenance, operations, permitting, insurance, and other costs. The company's RemoteMeter software is the brains of the system, automatically crediting the owner's utility bill and allowing owners to monitor system performance and access account information. CEC currently has 30 MW of community PV installed across the U.S. and is on track to add another 100 MW in 2015.

Cascadia Clip Thermal Spacers

The Cascadia Clip is a fiberglass spacer designed for installing cladding over insulation, reducing the thermal bridging through the insulation significantly when compared with conventional attachment methods. Offered in a range of dimensions to accommodate various thicknesses of insulation (depths of 2", 2.5", 4", 5", and 6"), the Cascadia Clip offers support for cladding, an air space that provides a rainscreen, and a thermal break for all-weather exterior insulation applications in horizontal or vertical installations. Cascadia Clip can only be used with noncombustible insulation such as mineral wool, which also compresses slightly against the clip to minimize thermal losses. The Cascadia Clip has been used on prominent green building projects, including the Bullitt Center in Seattle, yet it is cost-effective when compared with most systems used to comply with the continuous-insulation requirements of ASHRAE 90.1.

Marvin Windows with U.S. Passive House Certification

Marvin is the first major U.S. window manufacturer to offer a Passive House Institute U.S. (PHIUS)-certified window. (Alpen Windows, a much smaller company that makes only high-performance windows, was the first to win the certification, while two small California manufacturers have achieved certification under the International Passive House Institute program.) Available in Ultimate Casement and Direct Glaze models, these wood windows are available with FSC-certified wood and come with an exterior aluminum cladding. Glazing options include either Tripane Cardinal Insulated Glass or glass plus two layers of suspended Heat Mirrorfilm from Eastman that creates a triple cavity. Marvin's PHIUS windows have whole-window U-values as low as 0.15, yet have similar thickness to their standard offerings to simplify installation. These windows can also be selected with Marvin's exterior roller shades integrated into the windows; the shades' motorized openers can be programmed to operate automatically based on time of day or controlled by occupants as needed from a building control or mobile device.

USAI Lighting Color Select Tunable Lighting

The relationship between lighting and health is gaining increasing attention in sustainable design, but few products have responded so far to the demand for better light quality. USAI's Color Select technology blends the efficacy of LEDs with the ability to provide occupants full control over the color and intensity of their indoor lighting. Available in color temperatures from 2200K to 6000K and dimmable from 100% to 0.1%, Color Select lighting can be fine-tuned to fit different applications, times of day, or occupant moods, and can even be used in place of lighting products purchased separately. It can produce cool, bright daylight in the morning for alertness, or warmer light in the evening to aid natural circadian rhythms and minimize sleep disturbances. This product has implications for retail, restaurants, healthcare, education, hospitality, and more. Color Select is available in a variety of BeveLED 2.0 luminaires, providing anywhere from 600 to 6,000 lumens and making it appropriate for wall washing to high ceilings. Color Select lighting can also be integrated into most daylighting systems.