

Building Envelope Technologies

This category includes technologies which relate to the structure, assembly, protection, or thermal efficiency of the building envelope. Technologies are applicable to wall panels, roof and floor systems, and insulation.

Technology Scanning

One of PATH's major research support services is Technology Scanning. *Technology Scanning* tells us about technology developments in other industries, from other nations, from federal laboratories, and from other building sectors. PATH looks for breakthroughs in other industries that could be transferred and applied to housing. *Technology Scanning*-published by the U.S. Department of Housing and Urban Development/PATH and prepared by Newport Partners LLC-is updated as technology developments dictate.

This issue of *Technology Scanning* is one in a series. Each issue in the series falls into one of the following categories:

- Design and Internet Tools
- Safety
- Surfaces and Interior Finishes
- Building Envelope Technologies
- Heating, Ventilating, and Air Conditioning
- Energy/Power Systems Generation
- Basic Materials
- Information Technology
- Thermal and Moisture Protection
- Indoor Environmental Quality

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Trim-able Floor Trusses

Several manufacturers are producing or developing a trim-able floor truss that combines many of the positive features of I-joists or 2x lumber with an open web structure. The trim-able floor truss adds the flexibility of allowing the member to be shortened by as much as 12 inches on each end.

There are at least two types of trim-able floor trusses. The first type is a hybrid of truss and I-joist technology. The main part of the truss has steel webs with top and bottom cords made from Laminated Veneer Lumber or 2X lumber. The web material for a short distance on each end is made from OSB, effectively forming an I-joist on each end that can be trimmed as needed.

The second type of trim-able open-web floor truss is an all-wood truss. This product has a section of dimensional lumber on the ends as opposed to an I-joist. The cords and webs are connected using finger-jointing technology.

The trim-able end on each type of truss can be cut in the field to add flexibility to the product that does not exist with the typical open-web floor joist.

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Trim-able Floor Trusses are a hybrid of truss and I-joist technology.

Courtesy: Space Joist

Acrylic Pressure Sensitive Adhesive Tapes for Structural Purposes

The Center for Adhesive and Sealant Science at Virginia Tech is testing and evaluating the use of pressure sensitive tapes for use in the structure of homes. Scientists are developing a methodology for tape applications on construction sites. Virginia Tech has modeled and tested the performance of tapes for the construction of wall panels and plans to expand the program to other uses.

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Hurricane-Resistant Sealant for Glazing

National Starch and Chemical Company has developed a specialty sealant that will allow windows to be manufactured to better resist hurricane-force winds and impacts from wind-borne projectiles. Windows glazed with the PURFECT GLAZE polyurethane hot melt sealant have been subjected to ASTM tests for weathering, water resistance, structural performance, and impact under extreme conditions. The tests also followed procedures set by Dade County, Florida. Test data show that after 24 hours the strength of PURFECT GLAZE adhesives exceeds 400 psi, far in excess of current backbedding options. More than three quarters of this strength is realized within the first three hours.

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Solar Control Laminated Glass

Sekisui Chemical Company has introduced a film that is intended to reduce Infrared energy and UV from the sun while permitting high levels of natural light to pass into the building. The S-LEC PVB Film is laminated between two layers of glass. The manufacturer claims it does not interfere with wireless transmissions as do metal coating systems. They further claim that it provides the same safety and security of a traditional laminated glass.

Contact:

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Soy-Based Roof Coatings

Niemann Laboratories of Chicago, with funding from the United Soybean Board, is

researching a soy-based roof coating.

Natural Bitumen Jacket is a bright white product applied over bituminous substrates on flat-roofed buildings. It reduces the amount of energy absorbed from intense sunlight. Due to its ability to reduce the temperatures on the roof, Niemann Labs has gained an "Energy Star" approval, an Environmental Protection Agency-backed standard identifying superior energy performance.

The resin system is formulated to provide significantly greater life and durability compared to elastomeric acrylic products. It can be applied by brush, roller or by spray applicator. The manufacturer also claims it is 100 percent waterproof and, because of its excellent adhesion and flexibility, prevents UV-rays from drying and cracking roofing material, which can add years to the life of a roof.

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Sampling drums of ARCTIC infrared-reflective powders.

Courtesy: Shepherd Color Company

Heat-Reflecting Powders

Shepherd Color Company has introduced the ARCTIC brand of infrared reflective pigments. The powdered pigments are added to paints, plastics, and other materials to give them color. Unlike other products designed to reduce heat build-up, such as "cool" roofs, the color is not limited to white. According to the manufacturer, the ceramic pigments reflect infrared light and thus do not get as hot nor heat up as quickly as conventional materials. They have even introduced an infrared reflective true black pigment. The manufacturer claims corresponding energy savings while giving consumers a wide selection of roof colors. ARCTIC pigments are incorporated into roofing materials that qualify for an EnergyStar label.

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