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OSB expanding beyond commodity sheathing applications

MARKHAM, Ontario – Oriented strand board (OSB) is now coming close to capturing nearly all of its core market. Seventy-five percent of North American homes built annually are sheathed with OSB floor, wall and roof panels. Further growth in this market is still possible, but limited due to a very small minority of home builders and owners who will use plywood despite the advantages OSB offers over plywood.

"In order to see the sort of growth that OSB experienced from the early 1990s when it began to overtake plywood in the residential construction market, OSB makers will need to focus on developing value-added specialty products, and most importantly, expand into new non-residential markets," says Mark Angelini, CEO and president of the Structural Board Association, a trade association representing OSB manufacturers.

Because OSB is an engineered product, it is uniquely suited to be adapted for new specialty applications requiring lighter weight, smoother surfaces, durability and moisture resistance. Made of tree strands that are oriented horizontally or vertically in different layers that are pressed into structural boards with waterproof resins, the strand or flake orientation, dimension and length of flakes, and resin content can be adjusted to develop more flexible or stiffer panels that are suited for different applications.

More resin, for example, increases stiffness, durability, load tolerances and resistance to edge swelling. Specialty OSB panels for flooring have a higher resin content. Research findings have also shown that panels with longer, thinner strands will improve most board properties by providing more actual contact area and better stress transfer.

The recent spread of specialty OSB products also coincides with marketing advances in which several products incorporating an OSB member or panel are sold and promoted as a single, branded package. The most successful specialty OSB product introduced nearly 10 years ago was the I-joist, made of wooden or engineered lumber flanges connected by an OSB web. I-joists now are combined with OSB panels and marketed as complete flooring systems. Additional packaged OSB specialty products, providing greater value than separate panels, parts or members, are making a strong mark. They include:

High Performance Subfloor Sheathing
More producers are penetrating the subfloor market by offering products with better durability, thickness tolerances and longer warrantees against material imperfections such as delamination and edge swell. These high performance subfloor sheathing or single floor OSB panels are now in direct competition with similar plywood panels, and are becoming more readily accepted by most builders and designers.

Treated OSB
Several products are now on the market for areas that are prone to insect infestations such as termites. Panels are treated with borates or copper based preservatives that are highly efficient as insecticides, while at the same time imparting a higher moisture tolerance than untreated commodity OSB panels. Their improved mold- and fire-resistance qualities are also claimed as added benefits.

Thermally reflective overlaid OSB
A number of companies, such as Langboard Inc., have developed a decking product in which foil is overlaid on OSB boards. The result is a radiant barrier sheathing that significantly reduces heat transfer through the roof; reduces attic temperatures; prolongs the life of heating/air conditioning systems; helps hold heat during the winter; and cuts energy costs.

Overlaid OSB
Companies, such as Kronopol, have also pioneered innovative flooring systems for basements. There are other various brands but the concept is the same: OSB or waferboard subflooring tiles glued to polyethylene cleats, high density polystyrene or corrugated plastic are placed on the cement basement floor, typically without nails or glue. Airflow is created between the cleats and the floor, deterring mold and allowing for moisture to be channeled away to a central drain. Various types of flooring (laminate, vinyl and engineered hardwood) can be placed over this sub-floor system. The result is a warmer, drier, less dusty and generally more comfortable basement for users of this innovative product.

Rim Boards
Several producers offer these specialty OSB products as part of a package, installed as perimeter beams in I-Joist floor systems. They consist of thick OSB, usually 1 1/8" or 1 ¼" thick, that have higher compressive properties to resist vertical gravity loads from the walls above.

Stairs
At least one OSB manufacturer markets an engineered stair system combining OSB treads, risers and stringers, which is marketed as a single branded package that eliminates squeaks and provides solid dimensional stability.

Siding
Another OSB manufacturer's panel siding combines OSB with a paint-based overlay that creates a cedar grain texture. It doesn't look like OSB but a natural wood product. Keys to its weather- insect- and moisture-resistance capabilities are due to its resin-saturated composition, borate-based treatment and edge and groove coating. This product signals OSB gaining a larger share of the siding market in which sales last year were dominated by stucco and related non-brick masonry materials, vinyl and then wood.

Aside from applications for new residential construction, there is significant potential for OSB products to tap the remodeling and industrial markets, respectively the largest markets for OSB following residential construction. OSB already is being used for packaging and crating, chair seats and backs, decks and platforms, furniture frames, trailer walls and shelving and display racks. The aim for manufacturers is to develop OSB products with greater value benefiting business users and consumers. This has begun in some key categories that many found difficult for OSB to succeed in.

Concrete forms
The largest obstacle to OSB penetrating this market was finding a reliable and cost-efficient means to combine OSB with an overlay to avoid imprinting OSB's strand surface on concrete and to develop a board that was resistant to damage over multiple pours. One company has tapped this market with an OSB concrete form that has a higher concentration of resin, creating strength and durability. The board also has a smooth medium density overlay – properties that put it on a par performance level with competing fir concrete forms. This also marks OSB's deeper entry into the concrete form market.

Oriented strand lumber
At least one firm, Grant Forest Products, is marketing oriented strand lumber for use in molded upholstered furniture frames. OSB used in furniture applications is generally developed under the same principles as ordinary structural OSB except that longer strands all oriented in one direction are utilized with more resin to create thicker wood members. Oriented strand lumber replaces solid wood for furniture parts including stress rails, arms and backs.

The future
Additional breakthroughs are expected in molded OSB for furniture and oriented strand lumber for lumber framing. "These products are likely to enter the market within the next five years," says Angelini. The impact will be considerable. According to Angelini, OSB will not only match or better non-engineered wood products in these categories in terms of price or product performance. "It will also have an environmental advantage over traditional wood products because OSB uses all parts of the tree and is harvested from fast-growth tree species or plantation thinnings – factors that help promote environment management and efficiency."

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The Structural Board Association (SBA) represents manufacturers of oriented strand board (OSB) around the world and is headquartered in Markham, Ontario, Canada. For more information about OSB and the SBA, visit our Web site: www.osbguide.com.