Startups Following Serious Materials Into Green Walls

Now that drywall is groovy, a number of other companies are jumping into the market to make interior walls.

by: Michael Kanellos
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Think of it as the grass hut of the 21st Century.

E2E Materials, a spin-out from Cornell University, has developed an ecologically friendly version of particle board that consists of natural grass fibers and soy resins. Right now, the company sells it to skateboard manufacturer Comet Skateboards, but the company also recently completed validation testing so that its products can be used to build office furniture.

This coming August, contractors on a LEED project in Syracuse, New York will incorporate it into a building.

"The process uses two-thirds of the energy of manufacturing regular particle board," said CEO Patrick Govang. "Think of the difference in the energy to process wood chips versus blades of grass."

Three years ago, green building materials was a sideshow. Now, Silicon Valley and other tech centers seem to be exploding with companies that want to make countertops out of recyclables (BottleStone), building block out of earth (Integrity Block) and insulating concrete forms from old plastic (Arrx). Some of these companies are brand new while others have been around but now getting more attention.

Several factors – the relatively quick payback on products aimed at energy efficiency, the popularity and rising values of LEED-certified buildings, building codes that will mandate "net zero energy" homes in California by 2020, tax credits (homeowners can qualify for up to $1,500 for putting in energy efficient windows now) and the sheer boredom VCs must feel after reviewing 832 business plans focused in incremental improvements in solar – have contributed to the rise.

But the influence of Serious Materials, which began to tout its low-energy technique for creating drywall in 2007, is also definitely a factor. The company, and CEO Kevin Surace, have popularized the Department of Energy statistics that 12 percent of the total energy in the U.S. gets used in construction. Along the way Serious also raised over $50 million in VC funds, laid out plans for solar-powered manufacturing, and opened up factories in depressed areas of the country. The company is ramping up production on its environmental drywall products and has branched out into windows (see Serious Materials Shopping for Acquisitions in Bankruptcy Court).

President Obama also recently hailed the company's products and efforts to open plants, marking the first time a world leader paid so much attention to household amenities since Nikita Khrushchev toured the Kitchen of the Future with Richard Nixon. ("Your capitalistic attitude toward women does not occur under Communism," he said.)

As a result, the options for wall materials and floors are expanding. Like Serious, many of the companies are going green by reducing the energy required in the manufacturing process and/or insulating better.

In E2E's case, the raw materials – i.e., grasses like flax – require less heat and pressure to get them to conform to board shapes than wood chips. Industrial urea is also swapped out for greener binding chemicals. The fibers of the raw material also add some structural integrity to the final product, Govang added.

Costs are kept down by concentrating on waste products. Some of the soy adhesives derive from biodiesel processing, he stated.

Aspen Aerogels, meanwhile, is combining drywall with installation customarily employed to insulate undersea oil pipes to get into the home market. Aerogels are a type of insulation permeated with air pockets. Aerogel is so efficient that a person can touch one side of it while a blowtorch is blasting away at the other side and not feel anything.

In the housing push, Aspen takes a 10 millimeter thick sheet of aerogels and tops it with drywall. The entire sheet is then installed over the top of walls in low-income housing projects made from bricks, cinderblocks, or cement. The insulating material, called Spaceloft, also works in hipster lofts. The additional walls eliminate about a half-inch of floor space on each side of the room, but the material provides an insulation value of R10, according to CEO Don Young. Pink fiberglass often results in a far lower R4 insulation rating.

"In the U.K. there are 6.5 million solid wall dwellings," he said. "We take a minimal amount of space and are in and out in a day or two."

The company will soon focus on the U.S. because of the mega-stimulus bill and its provisions on retrofitting and energy efficiency. The material will also get into the market through Serious: The thermal properties of its ThermaRock come from a layer of Aspen's materials.

"A lot of schools in the northeast are Baby Boomer era stuff," he noted.

It also has some upscale offerings. For stucco and plaster homes (still common in older homes in San Francisco), the company sells external sheets that can go on the roof or outside of a home. His own older Boston-area home was originally insulated with horsehair and newspaper.

And then there is Microposite. The company has a waterproof outdoor siding project that requires less energy-intensive manufacturing. The Auburn Hills, Michigan-based outfit is also hoping to revitalize factories in the state as well. And it has better insulating properties than traditional materials like wood, adds CEO Marc Carlson.

Wait, one more: CleanBoard makes drywall with old-fashioned materials (gypsum) but uses solar thermal energy to cook it. Thus, it reduces energy by swapping power sources than chemical constituents. The company doesn't solve the problem of gypsum mining, but spews less carbon dioxide than traditional makers (see CleanBoard Turns the Sun's Heat to Drywall).

Although the products these companies work, the big challenge for all green wall makers remains convincing customers and contractors to adopt them. Contractors are notoriously conservative, which, if you have to build products to last 50 years, is probably a legitimate posture. Architects and structural engineers like Bruce King also often note that designing a building from the ground-up with energy efficiency in mind can cost less and conserve more energy than green materials.

Cost of course is a big issue too and everyone is trimming accordingly. In Aspen's case, it uses an aerogel in the home market that doesn't have to withstand heat in the 200 and 350 Celsius range.