

Serious materials is building a greener future, one superinsulated window at a time.

**Author** Rod O'Connor **Photography** Courtesy of Serious Materials, Inc.



Image – Courtesy of Serious Materials, Inc.

**A DOZEN YEARS AGO**, Tony Malkin, the environmentally conscious owner of the Empire State Building, installed 6,514 dual-thermal-pane windows in his iconic skyscraper. Over time, he was disappointed to find they were only marginally more energy efficient than the single-pane versions they'd replaced.

So last year, when the building became the test subject for a \$500 million upgrade program with the goal of reducing energy use by nearly 40 percent, Malkin carefully considered his options. Replacing all of the windows again—this time, with triple-glazed glass—would reduce the heating and cooling costs. But at \$2,200 per window, they'd be too expensive to achieve the desired return on investment.

Among those bidding on the job, only Serious Materials, a Sunnyvale, California-based maker of green building materials, had a tenable solution: retrofit the existing glass. "Other windowmakers said, 'No, you can't reuse the windows,'" says Kevin Surace, the company's founder and CEO. "In fact, you can."

Today, he has a team working around the clock in a 5,000-square-foot processing space on the building's fifth floor. They take glass from existing frames, separate it and clean it. Then they insert new spacers, a suspended coated film and special gas before reinstalling the now superinsulated glass back into the frames. The new windows provide almost four times the thermal resistance of the old versions, contributing to a reduction in energy costs to the tune of \$400,000 per year.

The process is the first of its kind. It's also a perfect example of what Surace calls "disruptive innovation," a swing-for-the-fences approach to business typically associated with rock stars like Apple's Steve Jobs. That attitude defines Serious Materials, an eight-year-old company that's become a poster child for the opportunities—both in terms of reducing carbon and increasing profits— that exist in building green.

According to the U.S. Energy Information Administration, buildings are a huge culprit when it comes to carbon emissions. The operation of residential and commercial buildings accounts for a whopping 40 percent of the world's carbon dioxide emissions. While we've been preoccupied with raising fuel efficiency standards and developing alternative energy for vehicles, we're still building with essentially the same materials we've been using for decades.

Serious Materials has developed dozens of patents in a bid to improve these numbers. They've won awards for products such as EcoRock, a gypsum drywall alternative made of recycled waste, and been selected as a 2010 Technology Pioneer by the World Economic Forum. Along the way, Surace has been applauded by President Obama and been named *Inc.* magazine's Entrepreneur of the Year.

But perhaps the company's greatest accomplishment is bringing a rapid-fire, Silicon Valley mentality to a sector resistant to change. "As slow as the car industry is, the people who make building materials are ten times slower," says Surace, 48, chatting on his way to a meeting. "Most of us are from the tech world. We came to the industry and said, 'There's change on the horizon, and the change is around saving energy in buildings. If we can rapidly bring the best products in the world in that space, we should be a major supplier.'"

Over the years, the commoditization of building materials has sapped any motivation for R&D, Surace believes, and now "you have 2,400 windowmakers and they all make the same darn window." In just a few years, Serious Materials has shot up to the top five percent in the residential window category, he says.

"Windows are one of those things that have been lacking," notes Blake Bilyeu, co-owner of Bilyeu Homes, Inc., an Oregon-based building company that focuses on high-performance residential construction. He says that before Serious Materials came into the market, high-performance windows were available only from Europe, Canada or small domestic boutique shops.

Surace hasn't always been green (he admits he used to drive an SUV), but he's always been an entrepreneur. After ventures in wireless, handheld communications and online shopping, in 2002 he reconnected with a former colleague and took over a company that made a liquid polymer to soundproof automobiles. When potential customers called about using the product on their walls, he invented QuietGlue, a substance that dampens sound when spread between layers of drywall. That product evolved into the soundproof drywall sheets still sold by Serious Materials, called QuietRock.

It wasn't until 2005 that Surace became interested in climate change. And when he saw *An Inconvenient Truth* in 2006, he says, "It woke me up, and we turned all of our R&D toward saving energy." Even so, he's as passionate about the bottom line as he is about the issue. "We have a rule: Green has to mean dollars," he says. "You have to show a return on the customer's investment. Once you accomplish that, it doesn't matter if you're selling to the staunchest Republican in the world. Saving money isn't a red or blue issue— it's a purple issue."

"The great thing about Serious Materials is this is a real business," says Malkin. "They have real capitalization— and a real ability to execute. We're not sitting here with a bunch of starry-eyed, garage-based venture capitalists."

The political winds are also in Serious Materials' favor, with about \$20 billion in U.S. federal stimulus dollars dedicated to the renovation and construction of government buildings and low-income housing. With so much cash available, Serious Materials now has staff like Robin Roy, a vice president of projects and

policy, actively meeting with stakeholders on the local level to spread the gospel about the benefits of the company's high-performance products.

On a recent summer day, Roy, a fiftyish man with a salt-and-pepper beard and shirtsleeves rolled above his elbow, leads a group of Illinois policymakers on a tour of the 270,000-square-foot Serious Materials window factory on Chicago's Goose Island—an industrial corridor just northwest of downtown. The site is the former home of Republic Windows, a company that made national news after its 2008 bankruptcy, when 250 workers staged a sit-in. After striking a deal with the local union, Serious Materials scooped up Republic in early 2009 (along with another shuttered window factory in Vandergrift, Pennsylvania) and has been in the process of bringing back employees as work ramps up.

During the tour, workers are busy filling an order made possible by funds from the Department of Energy's Weatherization Assistance Program, which helps improve the energy efficiency of low-income homes. Large sheets of glass are lowered onto an airflow table as a computer-directed machine punches out glass sizes, which line employees snap at the designated score marks and place into racks.

At the moment, the plant is operating far from peak capacity, but those on hand seem likely to be joined by their former colleagues very soon.

**ROD O'CONNOR**, a freelance writer based in Chicago, doesn't do windows.

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