



Ecovative's Mushroom Tiny House was built using its patented Mushroom Insulation

ECOVATIVE DESIGN

“You...grew a house?” That’s the question Ecovative Design Co-Founder and Chief Scientist Gavin McIntyre gets asked the most, and perhaps the one he’s most enthusiastic to answer. Yes, his team grew a house, but even more impactful than manifesting an abode from mushrooms (yes, mushrooms), is the exciting implications this experiment has on our planet.

Phase III Success

Revenue has quadrupled since 2011 stemming from the commercial sales of its Mushroom® Protective Packaging, Mushroom® Insulation and MycoBoard™. Customers include Dell Computers, Stanhope, and Gunlocke Furniture.

Agencies

EPA, NSF, USDA

Snapshot

Founded in 2007, New York-based Ecovative Design developed a game-changing innovation that is replacing harmful chemicals found in plastic foams (packaging) and resins (engineered wood); grew from 2 employees to 80 and sources only local supplies.

Ecovative Design

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Ecovative’s Mushroom® Insulation is at the heart of this innovation. The New York-based company uses mycelium (mushroom “roots”) to bond together agricultural byproducts like corn stalks to create a material that can altogether replace plastic foam. Although constructing a house was a new and radical way to test the durability of the material, Ecovative started off by selling its Mushroom Insulation as protective packaging to replace Styrofoam and other harmful, chemically produced protectors.

“We knew the world needed better materials,” reflected McIntyre. “There are plastic foams everywhere, and they are all derived from fossil fuels. They are filling up landfills and they’re getting more expensive to manufacture. We needed something stable and more environmentally conscious. Our a-ha moment came when we recognized mycelium binding wood-chips together and found it created a natural adhesive.”

Although McIntyre believed his newfound discovery had a niche in the commercial marketplace, pitching a brand new concept to venture capitalists isn’t an easy endeavor. That’s when he applied for a Small Business Innovation Research (SBIR) award through the Environmental Protection Agency (EPA). The company won its first award in 2008 and began focusing on rigid board insulation products. This technology was aimed at replacing foam for the insulation of large, commercial buildings, which was being consumed in increasingly large numbers. However, since part of the SBIR work focuses on identifying markets, the company decided to switch gears in order to gain a more advantageous entry point.

“It was too ambitious to go right into the construction industry,” says McIntyre. “So during our SBIR project, we started to identify market opportunities that had lower barriers of entry.



A closer shot of Ecovative's Mushroom Insulation that replaces traditional chemically produced foam insulators



We started to assess which industries were using this foam, and that's when we decided to tackle the protective packaging industry. Through additional SBIR projects with the National Science Foundation (NSF), we were able to successfully penetrate that market."

The resulting Myco Foam™, or "Mushroom® Packaging," was Ecovative's answer to the plastic foam epidemic and saw huge demand once potential customers saw the benefits it provided. With lower price points than its harmful alternative, Myco Foam was a no-brainer for many companies.

By the time Ecovative had won its subsequent Phase II SBIR award, the company had received its first customer – and a Fortune 500 one at that. The customer was Steelcase, which wanted to explore alternative packaging methods for its furniture. Ecovative got to work on designing and developing protective corners for bookshelves and tables. The additional revenue from the sales allowed the company to scale up and the team purchased some used food processing equipment from a

dealer in Rochester, New York in order to use recycled farm waste in their materials. During a follow-on Phase IIB project with NSF, Ecovative partnered with Sealed Air Corporation, the largest protective packaging giant in the industry. Four years later, they are still active partners, and Ecovative is able to sell its product line directly through Sealed Air.

That brings us to the Mushroom Tiny House. An evolution of its Myco Foam, Mushroom® Insulation works the same way. It grows into wood forms over the course of a few days, forming an airtight seal. After the drying process, which takes about a month,

an airtight wall is left that is extremely strong and well insulated. The material is naturally fire-resistant without the addition of harmful sprays and chemicals. No studs are needed like with normal drywall, saving the user on material costs. The Mushroom Tiny House received praise and internet glory when it was unveiled in 2014, and opens up the potential for what can be grown using this patented process.

Today, Ecovative Design is busy manufacturing its replacement for harmful resins used particleboard and fiberboard, which is found in many furniture pieces you buy today. Formaldehyde based harmful resins are the norm to use in particleboard, but Ecovative's Myco Board takes a different approach. Rather than use harmful resins, the particles are binded together with the natural adhesive borne from mycelium. To compete with the "convenience" of plywood, Myco Board is molded in shapes or large panels, and also available in thin ply materials that are more flexible.

Ecovative may be masters of growing things themselves, but their success has conversely helped their local New York economy flourish as well. By manufacturing everything in house, and using materials supplied by local farmers, the company is injecting some critical capital into the state. Although Ecovative was founded with just two employees, they currently employ 80 workers within three large facilities. This includes a high speed molding center, and press lines in Troy, NY.

"We love the diversity of businesses that exist in New York State," adds McIntyre. "We do a lot of business to business sales, from local furniture shops, to providing protective packaging within the financial sector, which is the center of the world here in New York. Our vision is to be a materials science company for the 21st century – and we're achieving that right here, right now."

"We knew the world needed better materials"

GAVIN MCINTYRE
CO-FOUNDER &
CHIEF SCIENTIST

