

# HEAT TREATMENT

ARBOR WOOD HOPES TO BECOME  
"THE KLEENEX OF MODIFIED WOOD"

BY PATRICK LAPINSKI

**A**rbor Wood Company of Duluth is turning heads as a world leader and player in the field of thermally modified wood, and with an expansion in progress, is poised to be at the head of the pack in North America. Arbor Wood Co. started in 2012 as a spin-off of



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Duluth-based Intectural, essentially on a suggestion given to them from their colleagues at the Natural Resources Research Institute (NRRI).

In conversations with Intectural, a wood product distribution company, researchers at the NRRI

thought this emerging technology coming out of northern Europe called thermal modification could be a good fit as a potential product line within Intectural's distribution network. Intectural knew how to create good branding and how to generate

a sales pipeline, and could wrap elegant marketing and branding around a given product line.

"You should consider developing a product line around thermally modified wood. That's kind of how Arbor Wood Co. came to be," said



PHOTOS COURTESY OF ARBOR WOOD.



CEO and co-founder Jon Heyesen.

"I think the NRRI's mission is really to support good stewardship of and economy around Minnesota's natural resources," Heyesen said. "Some of the scientists at NRRI were actually involved with the Finnish government in a consulting capacity to help them really commercialize the technology. The NRRI guys were involved on a global scale. I think for

modified wood, so that people just call it Arbor Wood. That's kind of a lofty ambition here, but it's always been a brand name."

#### AN EMERGING INDUSTRY

As an industry, thermally modified wood (TMW) is relatively new to the United States. The process of wood modification was first developed by the VTT Technical Research Centre of Finland. 1994 is considered the birth year of thermally modified wood. It continues rising in popularity across Europe for use as exterior

modify wood. The modified wood was then sent to a milling partner in Duluth to profile the rough stock into deck boards, siding and dimensional lumber prior to sale.

"We held the brand, and had it produced for a specification, but it was also outsourced domestically," said Heyesen, who noted that early on there were few other players in the space. He says it was very ad hoc, "all very small; little bit of the wild, wild west."

They scaled up production as demand increased, garnering newsworthy success when Arbor Wood was used for the exterior of the Bell Museum on the University of Minnesota's St. Paul Campus. Arbor Wood Co. is now busting at the seams, and is taking their production in-house. The firm is in the process



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JON HEYESSEN, ARBOR WOOD CEO AND CO-FOUNDER

them it's time this type of sustainable wood product, which is becoming mature in Europe, has landfall here in North America."

They have been in business for 10 years now as Arbor Wood Co. Heyesen said, but "Arbor Wood was a brand name that we were taking to market through Intectural (prior to the company officially forming). We would refer to the material proper as Arbor Wood. More agnostically, it would be considered thermally modified wood. We refer to it as Arbor Wood," Heyesen said. "We're on this mission to make it the Kleenex of

decking material. Acceptance in the U.S. has been slower, but the use of thermal wood is gaining traction in the decking and siding markets, and is popular among a group of select architects. Market indicators show this industry ready to explode.

The early years at Arbor Wood Co. proceeded at a measured pace, with all the production outsourced to a handful of "domestic partners" who handled specific portions of the process. It sounds almost like Prohibition days with stills hidden in the woods, but in this case, random owners of kilns that can thermally

of installing a new, state-of-the-art kiln and opening a finishing plant as part of a major expansion in Bagley, Minnesota.





Kelly Bartz, Arbor Wood COO and co-founder

"We're going to be fairly unique in that we have a brand name that is gaining in its foothold throughout the United States, and have complete control over quality control, and innovation over the product."

Arbor Wood Co. has their sights on a clearly defined market. Andrew Ellingson, Director of Sales and Marketing, sees a bright future for their Arbor Wood. "People are looking for a real wood, all-natural product that is chemical free, and has that natural beauty of real wood. Because at the end of the day, that is what our product is, it's just wood, modified using only heat and steam. There are no chemicals involved and nothing that can leach out."

### THERMALLY MODIFIED WOOD, WHAT IS IT?

Arbor Wood is a material generally known as thermally modified wood. TMW is the result of a natural process that increases the outdoor stability of wood, across a variety

of wood species, and increases the aesthetic look of the wood. Architects and builders are seeing some beautiful aesthetics in the wood when used with stone and other landscaping materials.

The process to thermally modify wood is called hydrolysis. It requires three main ingredients: wood, heat and water in the form of steam. In the early stage, the heat breaks the bound water naturally stored in the hemicellulose layer of the wood. "At a cellular level you're actually modifying the walls of the plant to remove the water and to eliminate the wood's ability to absorb moisture going forward," Heyesen explained.

The three-stage process happens inside the kiln. "It's also where you get

the thermal expansion and contraction," Heyesen said. "So, in addition to thermally modified wood being rot resistant – decay resistant – it is also dimensionally very stable. That's a really important point for people who are using it in architectural or manufacturing applications."

The three primary species Arbor Wood Co. prefers are white ash, red oak and Southern yellow pine. Most of the ash and the oak they source from the Midwest, Michigan, and Indiana, some from Wisconsin, but most of it comes from Tennessee and Kentucky. The favored Minnesota woods are Eastern white pine, basswood and poplar.

As noted, Arbor Wood Co. uses a specialized kiln that modifies the



wood at a very high temperature, in the range of 180 to 200 degrees Celsius. The kiln was manufactured in Denmark by WTT, specialists in technology for industrial wood and timber treatment. This is only the second one of these kilns in North America.

"The moisture of the wood is almost completely removed and added back to a precise amount. The natural acids and sugars are modified from the extreme heat, which changes the physical structure of the wood," Heyesen said. The wood's ability to absorb moisture is declined, making it less prone to rot and decay. The most apparent change is that the wood darkens throughout, giving domestic wood the look of desirable imported wood."

The acquisition of the new kiln will lead to further collaboration with

NRRI as well, believes Heyesen. A mutual area of interest is the development of national standards for TMW products. The standards will go a long way toward mollifying critics in the construction trade, as well as placing Arbor Wood Co. as a leader

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ANDREW ELLINGSON, DIRECTOR OF SALES AND MARKETING

in the development of the thermally modified wood industry.

"My business partner and I have a standing monthly call with NRRI and we just kind of have that in perpetuity to keep them up to speed on what we're doing, what we're seeing in the industry," Heyesen said. In turn, NRRI discusses what they're seeing from the academic and the research side of things."

## UPHILL CLIMB

The success of Arbor Wood Co. is a testament to the firm's leadership. That starts with CEO and co-founder Jon Heyesen, and his business part-



ner Kelly Bartz. Heyesen likes being out front, like the singer in the band. His background is in technology, sales and marketing.

"I grew up as a nerd and then my tech career pivoted to be a business development exec guy helping build tech companies through marketing



PHOTO COURTESY OF ARBOR WOOD



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PHOTOS COURTESY OF ARBOR WOOD.

and sales strategy. That's kind of what I brought to the table," Heyesen said. Bartz is more like the rhythm section, keeping the essential things going in the background, out of the spotlight.

For now, there is a lot of work ahead focusing on learning their new kiln and fine-tuning processes, and educating their potential customers.



"I think for right now, and for what we've built, it's largely been, let's understand industry precedent. Let's understand the species that work well, let's not try to build a better mousetrap today. Let's do a better job on education, awareness, quality, accessibility, stewardship, within that kind of world," Heyesen said. "As we move forward, I think we can start to marry a little more art with the science, and look at really driving innovation where we can take matters into our own hands."

Sustainability is not just a buzz word at Arbor Wood Co., it is the essence of the business. You can find Arbor Wood Co. timber for just about any building project you can imagine, commercial or residential. Thermally modified timber (TMT) can be found in exterior projects such as decking, windows, doors, siding – areas prone to moisture. TMT is moisture resistant, making it ideal for outdoor uses.

During the modification process inside the kiln, the equilibrium moisture content of the wood decreases. This means the swelling and shrinking of the wood material due to moisture variations can be reduced by up to 60 percent as compared to unmodified wood. Arbor Wood Co.'s decking material is ideal for any location.

Aging will cause modified woods to naturally fade over time. Arbor Wood Co. recommends the application of an exterior UV protective finish, or you can use paint or other clear coats. Drying time will increase because of the moisture-resistant nature of the Arbor Wood product. It plays nicely indoors too, with contractors using it for interior flooring, bathroom interiors, and of course, saunas. Arbor Wood Co. has partnerships across the country with foresters who harvest the various woods used in the TMT process.

### PRODUCT LINE AND MARKETS

As a manufacturer, Arbor Wood Co. produces siding, decking and a full line of dimensional lumber, from one-by-twos all the way to two-by-twelves. The dimensional lumber is primarily used for trim and millwork. The product line is divided into three families, or collections. The Natural Collection, which is unfinished ash and pine. This is best used for exterior decking. The Burnish Collection, which is pine board siding with a full open flame process on top of the already modified pine. It is modeled after a charred wood product developed in Japan called Shou Shugi Ban. Arbor Wood Co. offers



a Black Oil Burn, Brush Black Oil and a new product, Burned Brush Brown Oil. The final category is the Element Collection, a white and gray full pigmented siding. It is brighter, warmer and has more of a painted look, and is very popular along the East Coast.

Ellingson said Arbor Wood Co. is "focused on reaching the high-end residential, and modern to modern high-end residential. And, a lot of commercial when it comes to commercial or workplace; universities, hospitals, restaurants, sporting and entertainment, really all sorts of commercial."

Arbor Wood Co. wants to be "the" domestic manufacturer and producer of thermally modified wood.

"When we look at the market as a whole, we're competing with not only the composite manufacturers, but we're competing with a number of larger, more established European players." He is somewhat skeptical of U.S. companies who use the European kilns. "They're sometimes using North American timber that has to be cut down here, shipped overseas, modified, milled and then shipped back. So, the whole sustainability story really lacks an edge when you have two ocean-going vessels, just to be able to get your product to market."



#### BAGLEY EXPANSION

"Our sales are accelerating almost problematically right now. It's this delicate balancing act of kind of modulating the throttle there while we're getting our facility up and running." Jon Heyesen is ready to move forward but for now he has to be patient. Arbor Wood Co. and their investment partner, International Falls-based Voyageur Capital Group, had a bit of a struggle finding a location with plans falling through in both Eveleth and Grand Rapids before landing on the site in Bagley.

"The journey we're on is to build our facility, to become vertically integrated and to move all of that outsourced production paradigm under one roof, which will



PHOTO COURTESY OF ARBOR WOOD.



The founders of Arbor Wood Co. are excited about the future and small enough that they haven't come close to losing sight of the reason why they started this adventure. Jon Heyesen explains that it's their ideals and dreams that keep them going. "We are more than just trying to build a business and make money. We're really passionate about good design. We all love the outdoors, we're all skiers and runners and cyclists. We have an opportunity to build something that's really beautiful, and it performs really well. And it can be an ingredient in creating really cool buildings and cool communities. And it's gentle on the planet. And oh, by the way, that's kind of where the industry is moving. So maybe we can make a few bucks doing it, too." 

Patrick Lapinski is a freelance writer who grew up in Superior.

