



Forest Products Laboratory's

Newsline

2011
SPRING

Mixing Style with Substance—Low-Carbon Design Strikes an Eco-Friendly Balance

In late 2010, APA–The Engineered Wood Association posed a “Carbon Challenge” to Florida home designers with one basic question: Who can design a home with the lowest carbon footprint? Entries were filed, suspense mounted. The tension broke on January 13, 2011, when the Grand Prize Design Award was presented to Damon Roby of True Design Studios in Jacksonville, Florida. Roby and five other winners were recognized for their inventive work at the 2011 National Association of Home Builders (NAHB) International Builders Show in Orlando, Florida.

“We were so impressed with the level of innovation shown in the Grand Prize winning design, as well as the other finalists,” said Mike Ritter, Assistant Director of the Forest Products Laboratory (FPL). Ritter was on hand at the January ceremony representing FPL’s Advanced Housing Research Center, a co-sponsor of the event. “These designers really demonstrate how to use wood-frame construction to design homes that optimize our forest resources and minimize our impact on the climate,” said Ritter.



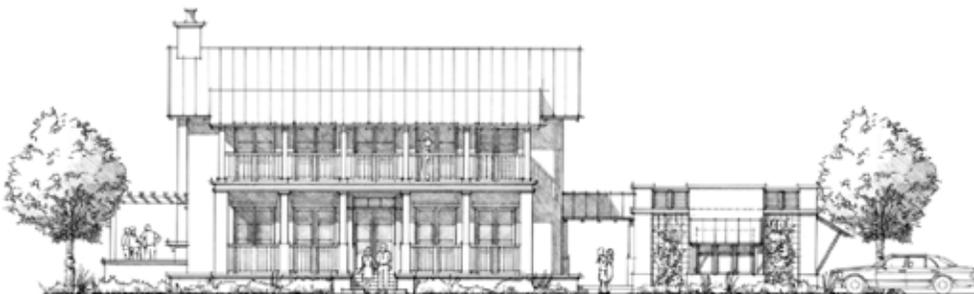
Carbon Challenge Grand Prize Winner: Damon W. Roby, True Design Studios

Cash prizes totaling \$15,000 were awarded to the top three finalists and the winners of three design categories: Best Use of Wood Products, Best Curb Appeal, and Most Cost-Effective Design. All six winning designs were displayed at the ceremony.

“The winners really put a lot of thought into the carbon footprint and operational energy of these homes, as well as proper design and constructability,” said APA Senior Engineered Wood Specialist Bob Clark. “If any of these six designs was built, it would have a positive impact on the carbon footprint of home construction today.”

Roby’s design featured a raised wood floor with a closed conditioned crawl space and advanced framing, including 2×6 wood framing with wall studs spaced 24 inches on center—a method that provides extra space in the wall cavity for added insulation.

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Best Curb Appeal: Russell Ervin, Ervin Lovett and Miller



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Upcoming Events

11th International Conference on Wood & Biofiber Plastic Composites

May 16-18, 2011, Monona Terrace Community & Convention Center, Madison, Wisconsin, USA

This conference and symposium seeks to bring together industry, government, and academia to share perspectives on what the future holds for wood and biofiber plastic composites. Topics for the conference include additives and formulating, advanced reinforcements, biopolymer matrices, enhanced performance, future applications, nanotechnology, and new processing/recycling. You can view conference information at www.forestprod.org/woodandbiofibercomposites/overview.html.

FPL Hosts Open House on Earth Day 2011

April 22, 2011, USDA Forest Service, Forest Products Laboratory, Madison, Wisconsin, USA



The Forest Products Laboratory is inviting the public to visit our facility during an open house on April 22, 2011. Visitors will have the opportunity to learn about FPL's impact on society as they tour our new Centennial Research Facility, speak with researchers about current projects, and view displays on the accomplishments made over the past century. The event will also feature activities for children and a visit from our friends Smokey Bear and Woodsy Owl. Watch for more information on our website at www.fpl.fs.fed.us

Forest Products Society 65th International Convention

June 19-21, 2011, Doubletree Hotel Lloyd Center, Portland, Oregon, USA

The International Convention is the premier event for professionals in the forest products field. Convened annually by the Forest Products Society, the International Convention brings together hundreds of scientists, design professionals, managers, decision-makers, and others from academia, government, non-profit, and private industry sectors to discuss the state of forest products research and learn about innovations in the field.

Attended by Forest Products Society members and non-members, the annual International Convention is the perfect venue to build new professional connections with top researchers from around the world and reconnect with colleagues and friends in the field. With over 170 technical presentations and 120 scientific posters, the International Convention is the place to learn about the latest developments in forest products research and application. For more conference information visit www.forestprod.org/ic65/.

Toward a Common Goal—Researchers and Students Team Up to Market Inventions

By Rebecca Wallace, Public Affairs Specialist

Scientific research is inherently slow. Once the studies are complete, patenting the resulting discovery is a milestone that marks the culmination of many years of research. But once the patent is awarded, a common question often arises: Now what?

“Filing a patent can seem like the end of a research project, but in some respects, it’s just the beginning,” says Janet Stockhausen, patent advisor for the USDA Forest Service’s Patent and Licensing Program.

Turning research results into marketable products for the benefit of society is the ultimate goal of a facility like the Forest Products Laboratory. But getting there presents a challenge.

“The patent process can take years, and by the time it’s complete, researchers have often moved on to new projects,” says Stockhausen, whose office is responsible for all Forest Service patents, guiding inventors through the process and overseeing the licensing of patents. “And the patent office just doesn’t have the resources to pursue marketing for the many technologies developed by Forest Service scientists.”

Aware of the USDA Agriculture Research Service’s success in working with university students to market their research, Stockhausen contacted Jack Heinemann, director of the Wisconsin Security Research Consortium (WSRC). As part of the Wisconsin Technology Council, WSRC focuses on matching federal research developments with businesses that can use them.

“Our goal is to commercialize technologies developed by federal laboratories by getting them into production at an existing company or by starting a new company altogether,” says Heinemann. “By working with university classes to develop business

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Students from the University of Wisconsin–Whitewater are getting real-life marketing experience by working with the USDA Forest Service. Two inventions patented by USDA Forest Service scientists, explained below, are the focus of the project. The students are conducting market research, identifying potential licensees, and developing business plans for each of the inventions.

Environmentally Friendly and Cost-Effective Weed Control

U.S. Patent 7,121,040

This combination foliage compaction and treatment method for applying fluids such as herbicides to plants uses a large heavy roller that is pulled across a field of plants, compacting the targeted weed species to the ground. A height-adjustable applicator nozzle following the roller allows fluid to be released very near the plants, which increases the amount of fluid transferred to the plants’ surface and lowers the amount of fluid sprayed into the atmosphere. This reduces the amount of fluid required to treat a given area. The “crush and spray” invention results in reduced fluid costs and waste, improved environmental impact, and increased treatment effectiveness.



Rotary Water Pump Eases Use for the Disabled

U.S. Patent 6,694,862

This rotary hand pump requires less force than traditional pumps to draw water from underground wells. The force to operate the pump is about one-third less than the force required to operate a traditional lever-operated pump due to its counterbalance design. This feature, in addition to its accessible height, make the pump ideal for installation at public parks and other recreational facilities to increase ease of access to potable water.





Stockhausen and Heinemann met with a group of college juniors and seniors enrolled in a course titled “Consulting for Entrepreneurial Companies.”

plans and marketing tools, students get the opportunity to work directly with researchers and scientists, an aspect of marketing they may not have experienced yet. Creating a dialogue between the business folks and the technology folks is key to successful marketing.”

Heinemann was able to connect Stockhausen with Bud Gayhart, University of Wisconsin–Whitewater professor and director of the Small Business Development Center (SBDC) on campus. Gayhart then arranged for a group of students to conduct market research, identify potential licensees, and develop a business plan for two patented Forest Service technologies.

In January, Stockhausen and Heinemann met with the group of students, juniors and seniors enrolled in a course titled “Consulting for Entrepreneurial Companies.” Stockhausen and patent technician Linda Schramer explained the patent process and discussed the technologies the students

are tasked with marketing. The students also got a chance to talk directly with the scientists and learn first-hand what their inventions had to offer.

Abbie Murphy, a junior majoring in entrepreneurship, appreciates the chance to be a part of the project. “I’m thrilled to have this opportunity,” says Murphy. “I personally find a lot of benefit in applied learning and think the best way to gain real-world skills is to practice what you’ve studied in the classroom.”

According to Gayhart, such collaborations are widely beneficial. “There is so much intellectual property coming out of federal labs and universities that is just sitting there,” says Gayhart. “We’re looking to accelerate the process of finding pathways to the marketplace, while also affording students the opportunity to actually become consultants and practitioners and learn first-hand the challenges that small businesses face.”

Gayhart explains that the businesses benefit as well. Small business owners aren’t always aware of the services available to them or how to connect with those services to help them move forward.

The students will spend the semester working with the inventors to learn about their products, verifying market needs, and researching market trends and feasibilities. They will also identify potential licensees and develop business and marketing plans for each of the inventions. The project will wrap up with the students reporting back to the inventors on the overall business potential of their product, and ideally, with useful Forest Service-developed technologies becoming available to consumers.

Wood You Believe

- Over 75 million acres of forests are reserved for non-timber use, such as parks and wilderness areas.
- Almost 50% of timber in the United States is over 50 years old; 5% is more than 175 years old.
- Forest planting in the United States currently averages about 1.8 million acres per year.
- The average volume of growing timber per acre is rising. In some areas, the volume per acre is nearly double what it was 50 years ago.

From USDA FS Forest Inventory and Analysis National Program



Learning to Love the Land—Fostering an Appreciation for Nature in Today's Youth

By Rebecca Wallace, Public Affairs Specialist

Research at the Forest Products Laboratory focuses heavily on the tangible, marketable products that can be derived from wood. At the same time, scientists strive to find sustainable ways to use wood because they understand the importance of conserving forests for the many other benefits they provide, such as clean air and water, wildlife habitats, and opportunities for recreation and education.

The Forest Service's Conservation Education program helps people of all ages understand and appreciate America's natural resources and learn how to conserve those resources for future generations. Learning about the environment enables people to realize how natural resources and ecosystems affect each other and how resources can be used wisely.

Through conservation education, people develop the critical thinking skills they need to understand the complexities of ecological problems, and are encouraged to act independently to conserve natural resources and use them in a responsible manner.

Here are some resources available to help instill a love of nature in young people everywhere:

For Kids: www.discovertheforest.org Kids can locate forests and parks in their area and find plenty of activities for adventure, learning, fun, and discovery. Learn how to use a compass,



Public Affairs Specialist Sue Paulson talks to a class of elementary school students about the importance of conservation.

identify animal tracks, and discover “where the other you lives.”

For Parents and Educators: www.findingmyforest.org This website offers a free conservation curriculum for grades 3–8 that inspires students to get outside and encourages a new understanding and redefinition of “forests,” from schoolyards to national forests. Parents and educators will also find an interactive map to help locate forests in their area, games and activities to play while outdoors, and many links to other online learning experiences, citizen science programs, and field guides.

Researcher Honored with Early Career Scientist Award

Forest Products Laboratory (FPL) researcher Samuel Zelinka was awarded the 2010 Research and Development Deputy Chief's Early Career Scientist Award during ceremonies on February 1, 2011, in Washington, D.C.

This award recognizes scientists who are at the beginning of their research careers and have demonstrated, through personal accomplishments, outstanding capability and exceptional promise for significant future achievement.

Zelinka is a research materials engineer in FPL's Durability and Wood Protection Research unit. He conducts fundamental research on how wood reacts to water and also studies the corrosion of metals in wood. Zelinka has also developed several accelerated test methods to evaluate how metal fasteners react in new preservative formulations for treated wood.

In a letter to Zelinka, Forest Service Deputy Chief Jimmy Reaves stated that the award is in recognition of Zelinka's “outstanding research productivity, major contribution and impact

on science, and excellent efforts in science delivery.”

As a recipient of the early career scientist award, Zelinka is now an automatic nominee for the 2011 Presidential Early Career Awards for Scientists and Engineers competition, the highest honor bestowed by the U.S. government on science and engineering professionals in the early stages of their independent research careers. These awards, established by President Clinton in 1996, are coordinated by the Office of Science and Technology Policy within the Executive Office of the President. Winning scientists and engineers receive a research grant for up to five years to further their study in support of critical government missions.



Samuel Zelinka, Research Materials Engineer

– Continued from page 1 – **Mixing Style with Substance**



Second Place: Greg Beere and Jason Fisher, Content Design Group



Third Place: Mark Straite, Mark Straite, Architects, Inc.



Most Cost-Effective: Nicholas Renard, Cote Renard Architecture

Additional energy enhancements included radiant barrier roof sheathing, raised heel roof trusses (also known as energy trusses), and spray-foam insulated crawl space walls.

“I was just honored to be here as one of the finalists,” said Roby. “I looked around the room when I arrived and knew that all of the designs were really good.”

Thirty-six single-family house designs were entered into the competition and evaluated by a panel of five judges. Winners were determined by a performance score based on a scientific life-cycle assessment, cost-effectiveness, and adherence to the architectural standards of a typical Florida development, among other criteria. The judges said that all the finalists were worthy of winning the Grand Prize Design Award and Roby’s design was chosen because it directly addressed the dual criteria of “energy awareness and aesthetics without compromising affordability.”

Clark and Ritter presented awards to the six finalists:

- Grand Prize Winner: Damon W. Roby, True Design Studios
- Second Place: Greg Beere and Jason Fisher, Content Design Group
- Third Place: Mark Straite, Mark Straite Architects, Inc.
- Best Use of Wood: David Pillsbury AIBD, Keesee and Associates, Inc.
- Best Curb Appeal: Russell Ervin, Ervin Lovett and Miller
- Most Cost-Effective: Nicholas Renard, Cote Renard Architecture

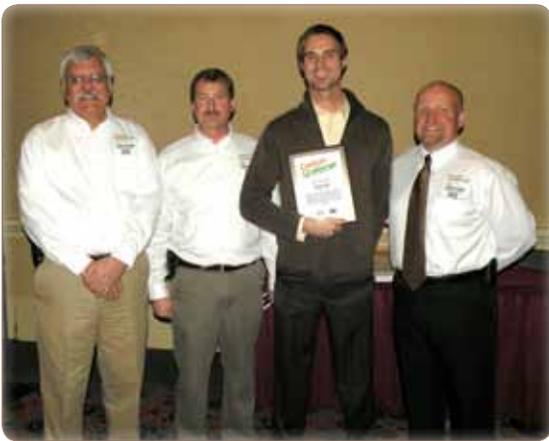
In addition to a cash prize, Roby’s design will be evaluated in a comprehensive life-cycle assessment study comparing the design in full wood-frame construction to construction on concrete slab with concrete block walls. The results of the study will be presented in a series of APA seminars this spring throughout Florida.



Best Use of Wood: David Pillsbury AIBD, Keesee and Associates, Inc.

The APA Carbon Challenge has been conducted in conjunction with the Raised Floor Living program, a cooperative promotion effort between APA and the Southern Forest Products Association. Other program sponsors include the Advanced Housing Research Center, Forest Products Laboratory; Forest Products Association of Canada; Cellulose Insulation Manufacturers Association; The St. Joe Company; NEFBA Wood Council; and the Florida Wood Council.

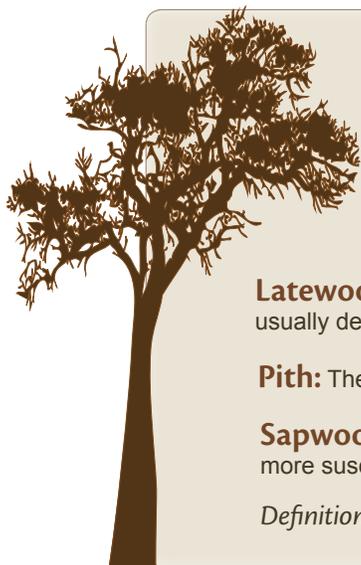
Ongoing Carbon Challenge information and updates are available online at www.apawood.org/CarbonChallenge.



LEFT: (From left to right) Mike Ritter, Assistant Director of the USDA Forest Service, Forest Products Laboratory; APA Senior Engineered Wood Specialist Bob Clark; Damon W. Roby, True Design Studios; and APA Engineered Wood Specialist C.W. Macomber. RIGHT: Roby accepting the grand prize award.



Wood Wise—Terms from the World of Wood



Earlywood: The portion of the growth ring that is formed during the early part of the growing season. It is usually less dense and weaker mechanically than latewood.

Heartwood: The wood extending from the pith to the sapwood, the cells of which no longer participate in the life processes of the tree. Heartwood may contain phenolic compounds, gums, resins, and other materials that usually make it darker and more decay resistant than sapwood.

Latewood: The portion of the growth ring that is formed after the early wood formation has ceased. It is usually denser and stronger mechanically than earlywood.

Pith: The small, soft core occurring near the center of a tree trunk, branch, twig, or log.

Sapwood: The wood of pale color near the outside of the log. Under most conditions, the sapwood is more susceptible to decay than heartwood.

Definitions taken from the 2010 Wood Handbook—Wood as an engineering material (FPL–GTR–190).



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