The Department of
Wood Science & Forest Products
at Virginia Tech

Volume 5 Issue 3 – April 2010

INSIDE VT WOOD

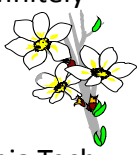
News from Audrey Zink-Sharp, Interim Department Head

•***College of Natural Resources Showcase April 6, 2010, Latham Ballroom, the Inn at Virginia Tech.*** Plan to attend the First Annual College of Natural Resources Showcase that promises to be a major event for undergraduate students on the VT campus. You can interact with donors, friends, and agency personnel, and come together across our college to learn about activities in other departments and centers in CNR. We will have our departmental and faculty posters, as well as our student clubs present during the day to interact with students. There will be a presentation of scholarships and awards in the evening. For more information, see the flyer at the end of this issue and http://www.cnr.vt.edu/cnrshowcase/

• **Congratulations to Dr. Kevin J. Edgar** who was recently named a Fellow of the Cellulose & Renewable Materials Division of the American Chemical Society at their annual meeting held in San Francisco last month.

•**Congratulations also to Dr. Tom Hammett** for being the 2010 winner of the Virginia Tech Alumni Award for Excellence in International Education. The Selection Committee noted that Dr. Hammett's efforts were "very impressive and notably sustained throughout his entire career".

•**Lastly, CONGRATULATIONS to Kenny Albert** on his upcoming retirement after 35 years in our department. While we know Kenny is looking forward to his retirement and we wish him all the best, we will definitely miss him. Kenny's last day in the office is April 6th .



the soon-to-be retired, Kenneth Albert

Other news in the department and around campus:

Bob Bush

A Memorandum of Understanding has been signed between Virginia Tech and the Galway-Mayo Institute of Technology (GMIT), Galway, Ireland. The primary participants in this agreement are expected to be the Department of Wood Science and Forest Products and the Letterfrack campus of Galway-Mayo Institute of Technology. The collaboration is to advance international learning, discovery, and engagement in the areas of wood and wood product science, manufacturing, and technology. Pictured here are (seated, left-right), CNR Dean Paul Winistorfer, GMIT President Marion Coy, Dr. Robert Bush, Professor, VT, (standing, left-right), Dr. Patrick Tobin, Program Coordinator GMIT-Letterfrack, Mr. Michael Hannon, GMIT Assistant Registrar, and Mr. Dermot O'Donovan, Head of Department, GMIT-Letterfrack.

Jonathan Post Presents to Packaging Class

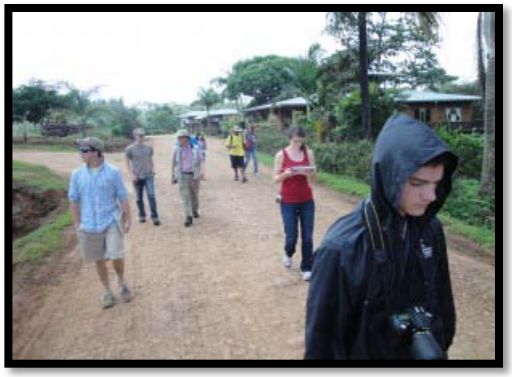
Alex Hagedorn

Jonathan Post, a graduate of Wood Science and Forest Products, presented to Dr. Alex Hagedorn's Wood Pallet, Container, and Unit Load Design Class on March 17th. Jonathan is currently employed by Carolina Inspection Services, where he ensures phytosanitation compliance for wood packaging. His presentation focused on the process for compliance for new and recycled wood products used in distribution packaging. Even though Jonathan was not in the packaging option at VT, he claims that the two packaging courses he took have assisted him greatly in his current career.

Virginia Tech students visit vertical-integrated wood products facility in Costa Rica

Henry Quesada

As a part of the study abroad course, Global Issues in Sustainability, taught jointly by Professors Henry Quesada and Tom Hammett, a group of 10 Virginia Tech students visited the company, Maderas Cultivadas de Costa Rica, located in the north region of the small Central American country on March 10, 2010. The company has been operating since early 1980 when it started planting *Amelina arborea*, a tropical hardwood species. In the beginning, the company only focused on planting trees on their own land or also renting land from other farmers. A few years later the company realized that the installed production capacity of the local sawmills was not a good fit for their long term strategy so the firm invested in developing their own value-added processes. Today the company owns more than 10,000 ha of plantations in Costa Rica and Nicaragua. The firm produces plywood, lumber, pallets, and engineering lumber and employs more than 400 people through the whole supply chain.



Virginia Tech students walking towards the cloning tree process at Maderas Cultivadas de Costa Rica

The firm has carried on extensive research to learn how to grow trees that best fit customer requirements. After trees have been planted, the company uses different forestry management practices to grow and select the best trees. The best trees are used for veneer for the plywood process. Second quality logs are used for lumber and pallet production, and the other logs are used for their engineering products. Because most of the logs are considered small diameter logs, special equipment was developed to mill these types of logs.

Today the company continues its growth by acquiring more land in Nicaragua because the land in Costa Rica has become very expensive compared to the neighboring country. Besides having a vertical integration from forestry through end customer, the company is recognized as a success story in the wood products industry in Latin America.

Virginia Tech students walking through the manufacturing process at Maderas Cultivadas de Costa Rica

Dr. René Aernoudts leading Monday's seminar

Lean Management Week at Department

Urs Buehlmann

Faculty and students of the Department of Wood Science and Forest Products took the visit of adjunct faculty Dr. René Aernoudts from March 22 to 26, 2010, as an opportunity to focus an entire week on Lean Management practices and theory. Dr. Aernoudts led Monday's departmental seminar with a simulation demonstrating the power of lean thinking. All seminar participants were kept busy producing paper boats, first employing conventional batch production methods.

Impressive productivity improvements were achieved when the production set-up was switched to a one-piece flow system employing principles of lean thinking. Along with productivity improvement increases, improvements in quality and decreases in work in process inventory (WIP) levels were observed.

A group of students and faculty used Tuesday for a visit of BMW's South Carolina manufacturing facility. On 1,150 acres, BMW produces the X5 Sports Activity Vehicle and X6 Sports Activity Coupe and employs about 5,000 people. Recently, BMW opened a new 1.2 million square foot assembly facility adjacent to the original factory to produce the next generation X3 vehicle. Inside the plant, rows and rows of robots are welding together the bodies of vehicles, followed by a spot-clean assembly line. BMW relies on a network of external suppliers for its parts that have committed to deliver their products just-in-time (JIT). The supply system has been worked out so well, that BMW only needs to keep about four hours of parts at hand from every supplier.

Wednesday was used to visit Masterbrand Cabinets in Martinsville, VA. Masterbrand's Martinsville facility is in the middle of a lean transformation effort and the VT Lean Team was impressed to see the progress on implementing lean in the facility

Thursday and Friday were used by the VT Lean Team to benefit from Dr. Aernoudts considerable lean experience. The team worked on individual research projects or on lean transformation projects supported by the VT Lean Team. We look forward to having Dr. Aernoudts back for one week in the Fall 2010 semester!

Left to right, Christian Fricke, Dr. René Aernoudts, Kevin Knight, Johanna Madrigal, Angela Zhou, Adrienne Andersch, and Chao Wang at the Spartanburg, South Carolina, BMW assembly plant

Virginia Tech faculty offered a workshop in Costa Rica

Henry Quesada

During the first week of March 2010, Professors Robert Smith, Brian Bond, and graduate student, Scott Lyon participated as speakers in the workshop entitled "*The Future of the Wood Products Industry in Costa Ric*a" in Costa Rica. The workshop was organized jointly by Henry Quesada, also a faculty member at Virginia Tech, and Roger Moya, associate professor at the Costa Rica Institute of Technology (Costa Rica Tech).

Dr. Brian Bond (left picture) and right, Dr. Robert Smith during their lectures at the workshop

The workshop had an attendance of over 65 people coming from the industry, government sector, and non government organizations. On March 4, the first day of the workshop, speakers covered issues such as the status of the Costa Rican wood products industry, use of wood in construction, and basic concepts of wood drying. This last lecture and discussion was led by Associate Professor Brian Bond. During the second day, Professor Robert Smith and graduate student Scott Lyon explained to the audience principles of international marketing and the potential use of Appalachian Wood Products in Central America. Henry Quesada lectured on this second day too on Lean Applications for the Wood Products Industry. At the end of the workshop, Assistant Professor Henry Quesada led a discussion to draw the key variables for the future of the Costa Rican Wood Products and Forestry Industry. The attendees ranked the workshop very highly, making emphasis of the collaboration between Virginia Tech and Costa Rica Tech and how both institutions should keep working together to help increase the value of the wood products industry not just in Costa Rica but in the Central American region.

National Student Jamboree a huge success

Bonnie Maccubbin

The National Student Packaging Jamboree, held March 25-27, 2010 at Virginia Tech, attracted students and faculty from Michigan State, Wisconsin-Stout, Clemson, and Virginia Tech. The event was sponsored by the Center for Unit Load Design, the Institute of Packaging Professionals (IOPP) and the Packaging Machinery Manufacturer's Institute (PMMI), with members of all organizations in attendance. Jim Bisha, Ph.D. candidate in Virginia Tech's packaging program and president of the Virginia Tech IOPP chapter, planned and coordinated the national event. Friday's speakers included Virginia Tech's Ralph Rupert, Dr. Alex Hagedorn, Ji Youn Yoo, Jim Bisha, and Dr. Marshall White. A special welcome from Dean Paul Winistorfer on behalf of the College of Natural

Resources and the university was appreciated by all. Industry speakers for the Jamboree included Dr. Ed Brindley of Industrial Reporting and keynote speaker, Lt. Colonel Robert Barnes, Director of the Joint Culinary Center of Excellence US Army Quartermaster School, who addressed the logistics of feeding our military troops. Special emphasis was given to the numerous packaging challenges, including making the food tamperproof from the enemy as well as scorpions and other bugs.

Lt. Col. Robert Barnes addressing the group

The attendees were quite surprised when Lt Col. Barnes' presentation was followed by a lunch consisting of military MREs (meals ready to eat). A highlight of the day was a presentation by Erin and Brian Lundy, who gave insights into the preparation and hazards of eating MREs, drawing from their own experiences in the U.S. Army.

Wisconsin-Stout students wonder if the MREs are edible?

Winning team for egg drop competition

An egg drop competition concluded the jamboree on Saturday. The ten teams, each consisting of a blend of all universities, were given a piece of 19"x19" corrugated board and paperboard of the same size and 2' of tape. Of the ten teams, four team's eggs remained intact after a drop from 12'. The winner was decided by the lightest weight structure at only 2.5 oz. The winning design was quite innovative, consisting of two corrugated platens and two paperboard tubes, with the egg suspended in the middle.

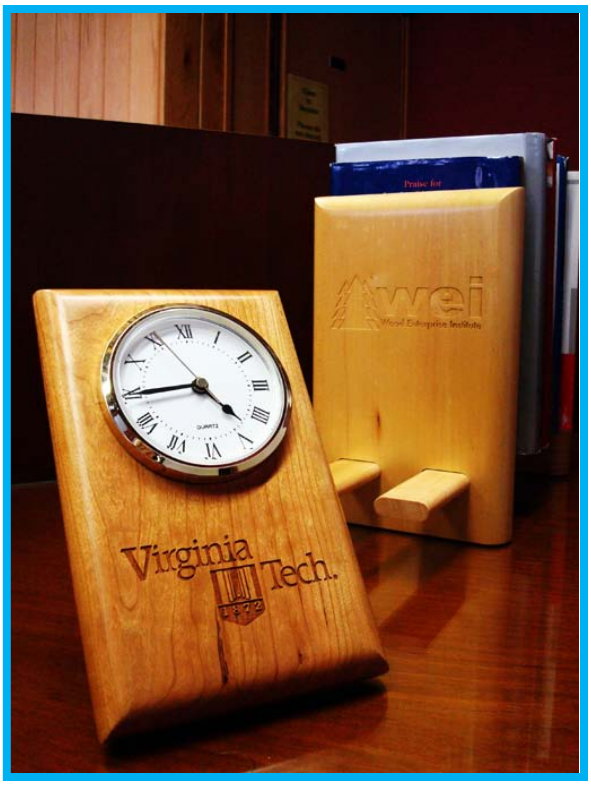
Special thanks for a successful event go out to the Virginia Tech chapter of IOPP and especially to Jim Bisha and James Lassiter for their commitment in making this event such a memorable experience for all.

2010 National Student Packaging Jamboree participants

Wood Enterprise Institute
Chris Rider
The Wood Enterprise Institute, W.E.I., is a hands-on learning environment for Virginia Tech students through a concept-to-market business venture. Our vision is to develop a positive student learning environment that fosters innovation, creativity, and entrepreneurship.

The 2009-2010 W.E.I. team goals are to bring a student designed, manufactured, and marketed hardwood desk clock to the VT community. Over the past two semesters, we worked to design a high quality product that you can customize! We offer the product in three species: cherry, soft maple, and beech. There are a total of six logos, four clock faces, and two orientations that offer a total of 28 different options to choose from.

Please take a moment to look over our brochure at the end of this issue and support this year's W.E.I program.



Examples of W.E.I. products

VT Wood Students create laser engraved faceplate for the Martinsville Speedway trophy clock

Earl Kline

Nick D'Amico, a student in this year's Wood Enterprise Institute (WEI) class, led a project to laser engrave the faceplate for the Martinsville Speedway race trophy clock. The trophy clock, a grandfather clock built by high school and community college students in the Product Design & Development program at the Southern Virginia Higher Education Center (SVHEC) in South Boston, VA, is an original work of art that showcases SVHEC students' abilities in design, engineering, and advanced manufacturing. The trophy clock needed a unique and distinguishing wooden faceplate and our students were able to deliver! The trophy clock is now with Denny Hamlin, the winner of the Martinsville Speedway race on March 29.

Above, Denny Hamlin, winner of the Martinsville Speedway race on March 29 and trophy clock built by students at SVHEC

Right, faceplate designed and engraved by the WEI class, Virginia Tech

Virginia Tech and SVHEC Host International Intern

Earl Kline

The Department of Wood Science and Forest Products at Virginia Tech and The Southern Virginia Higher Education Center (SVHEC) at South Boston, Virginia is hosting Paul Heneghan, an intern form the Galway-Mayo Institute of Technology (GMIT) in Letterfrack, Ireland. Paul is a third year GMIT student studying Furniture Design and Manufacturing and is in the middle of a five-month internship within the SVHEC's Product Design & Development program.

While at the SVHEC, Paul is working on a supply chain study with Virginia Tech students in this

year's Wood Enterprise Institute (WEI) class. One of the projects of WEI is for students to gain experience with outsourcing production and supply chain logistics. Using a decorative clock as the product focus, WEI is outsourcing certain machining aspects of the product to the SVHEC facility under Paul's coordination. "I'll look at manufacturing the clock from the CNC (Computer Numerical Control) side, they'll manufacture it using classical machining, and we'll compare costs", Paul said.

Paul Heneghan programming the CNC machine in SVHEC's Product Design & Development facility

With Paul's help and the support from SVHEC, WEI students will be comparing out-sourced versus in-house costs to understand the advantages and disadvantages of each from a business viewpoint. The results and experience from this project are important for students who will soon have to make outsourcing decisions in the businesses and supply chains they will manage someday.

Advanced Lean Thinking Continuous Flow Systems workshop series

Earl Kline

"Advanced Lean Thinking – Continuous Flow Systems", the first in a series of workshops on *Lean Thinking*, was held at the Wood Education and Resource Center in Princeton, WV on Friday March 26, 2010. The workshop covered principles and practice for improving flow of materials and information for businesses in the wood products industry. Ten (10) participants, including business leaders, consultants, and graduate students, learned about advanced lean thinking concepts. Then by using a hands-on manufacturing business simulation, the participants transformed the

organization from a traditional batch process to a streamlined single-piece flow process. Business performance resulted in nearly a 4 times more profitable value stream because more orders could be completed on-time and error-free with fewer resources after deploying lean thinking strategies.

This workshop series continues with "Advanced Lean Thinking – Pull Systems" on April 14, 2010. See www.woodscience.vt.edu/workshops/pull-systems/ for details on this upcoming workshop.

Before: Limited flow in a batch production process

After: 1-piece flow cell with high process stability

Many thanks to – *Wood Education and Resource Center (WERC)* for funding and facility support to develop and deliver curriculum and the *Hardwood Market Report* for coffee and refreshments.

The College of Natural Resources at Virginia Tech is on the move. *www.cnr.vt.edu*

Students of the World Wanted

The World is changing and so is the College of Natural Resources

We are expanding and adapting curriculum to put students on the cutting edge for the 21st century. We are a college that engages in personalized teaching, broad extension and community outreach, and world-class research in natural resources and the environment. And it's all about sustainability.

We are educating a new generation of managers of sustainable resources for...

- Analyzing ecosystems
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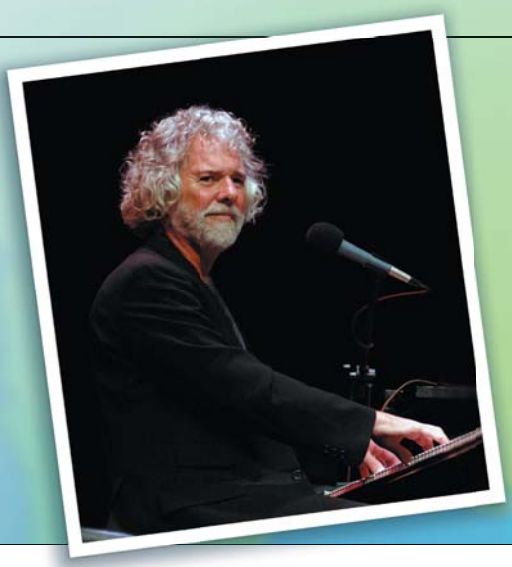
- Protecting endangered species
- Assessing fisheries and wildlife populations
- Blazing new frontiers in ecotoxicology
- Using forest fire to manage and restore ecosytems
- Conserving biological diversity
- Improving water and soil quality
- Protecting and restoring habitats
- Improving forest productivity through genomics and biotechnology
- Forecasting weather
- Studying climate change
- Mitigating stormwater runoff
- Mapping landscapes to create tools for decision makers
- Developing revolutionary renewable building materials
- Using GIS and remote sensing to manage resources
- Providing land use tools for urban planning
- Examining human impacts on the environment
- Minimizing impacts in natural resource recreation
- Studying human geography and natural resources policy
- Engineering with green goals



The College of Natural Resources invites students to its dynamic Showcase of Programs with special friend,

Rolling Stones keyboardist

Chuck Leavell

Tuesday, April 6, 10 a.m. - 3 p.m.

The Inn at Virginia Tech Latham Ballroom

Chuck Leavell be signing copies of his book, *Forever Green: The History and Hope of the American Forest,* 1 – 3 p.m. The college will make a limited number of copies available free of charge.

VirginiaTech *Invent the Future* College of Natural Resources

College of Natural Resources

Our majors and options are multidisciplinary. If you are interested in...

Business? *Try*

- Forest Products Business • Forestry Operations and Business • Urban Forestry
- Conservation and Recreation Management • Natural Resources Conservation

Computers and technology? *Try*

- Forestry • Geospatial and Environmental Analysis • Natural Resources Conservation

Education? *Try*

- Natural Resources Science and Education • Environmental Education • Natural Resources Conservation

Engineering? *Try*

- Wood Materials Science • Forest Operations and Business • Packaging Science
- Watershed Management • Residential Wood Structures • Natural Resources Conservation

The Environment? *Try*

- Conservation and Recreation Management • Wood Materials Science
- Culture, Regions, and International Development • Environmental Resources Management
- Fisheries Science • Forest Resource Management • Geospatial and Environmental Analysis
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- Residential Wood Structures • Environmental Education

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- Natural Resources Conservation • Packaging Science • Wildlife Science • Watershed Management
- Residential Wood Structures

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- Fisheries Science • Forestry • Geography • Natural Resources Conservation • Wildlife Science
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Our graduates are highly sought by industry, government, and nongovernmental organizations.

For information on undergraduate programs, visit *www.cnr.vt.edu* or contact the Associate Dean's Office for Academic Programs: 540.231.5482, *vtcnr@vt.edu*

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Wood Enterprise Institute "Desk Clock" Order Form

Name _____

Phone _____

Address _____

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Total Quantity _____

Payment included ☐ Amount _____

Unit Price $40.00

*Make checks payable to Wood Enterprise Institute

Choose a species for your clock

☐ Beech ☐ Cherry ☐ Maple

Choose clock orientation and logo

† See reverse side for clock face and logo options

☐ Vertical

	Face A	Face B	Face C	Face D
Hokie Bird				
Athletic VT				
Hokie Tracks				

☐ Horizontal

	Face A	Face B	Face C	Face D
VT + Shield				
Athletic VT				
Invent The Future				
Wood Science & Forest Products				

or

Add a Personalized Logo for only an additional $15.00†

(email image to weilogos@vt.edu)

WEI Student Members:

Dabney Beahm Packaging Science	Mount Holly, VA Junior
Nick D'Amico Packaging Science	Williamsburg, VA Junior
Kyle Lownes Forest Products Business	Philadelphia, PA Junior
Anthony Muscatello Forest Products Business	Blacksburg, VA Junior
Chris Rider Forest Products Business	Blacksburg, VA Junior
Kevin Roberts Forest Products Business	Williamsburg, VA Junior
Tyler Schloen Residential Structure	Babylon, NY Senior
Yoocheol Seok Interior Design Wood Science	Incheon, Korea Sophomore

Faculty and Staff Advisers:

Dr. Earl Kline

WEI would like to thank our industry partners who can be seen at:

www.woodscience.vt.edu/wei/donors/

The WEI is made possible through the generous support of our donors.

For more information on donating please contact the WEI at: wei_clock@vt.edu

THE WOOD ENTERPRISE INSTITUTE AT VIRGINIA TECH

wei Wood Enterprise Institute

WEI 2010

WE OFFER YOU...

A FULLY CUSTOMIZABLE DESK CLOCK

Designed, Manufactured, and Marketed by Current Virginia Tech Students in the Department of Wood Science and Forest Products, College of Natural Resources at Virginia Tech

The Wood Enterprise Institute

The Wood Enterprise Institute is an experiential learning environment for Virginia Tech students through a concept-to-market business venture

Our vision is to develop a student learning environment that fosters innovation, creativity, and entrepreneurship as a complement to a strong technical foundation. As a nonprofit organization, we will create value and make a difference in the community

Our mission is to create a high quality product for high quality customers thorugh a nonprofit, educational and hands-on experience.

The Wood Enterprise Institute at Virginia Tech is a vehicle for students to develop higher-order learning skills — teamwork, problem solving, critical thinking, ingenuity, artistry, and entrepreneurship, all within the concept-to-market framework that students find in the real world.

This Quaility Centerpiece can be Yours For a Limited Time Only!

The desk clock is the perfect gift for an outstanding student, donor, or client while showing support for an innovative, experiential learning environment for Virginia Tech students.

Fully Customizable...
Choose your species of wood and clock faces:

Laser Engraving

or

Personalized Laser Engraving

Officially Licensed Virginia Tech Logos
*Color not represented in engraving

Virginia Tech + Shield

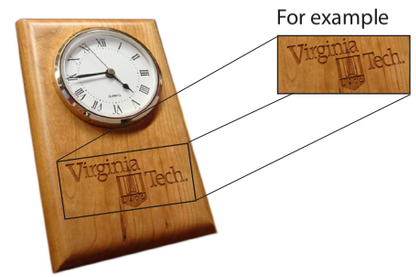
Virginia Tech Seal

Athletic VT

Invent the Future

Hokie Bird

Wood Science & Forest Profuct



Features

- Personalized, high quality clock.
- Precision manufacturing with American Hardwood.
- Material comes from sustainable sources.
- Engineered to fit your desk.

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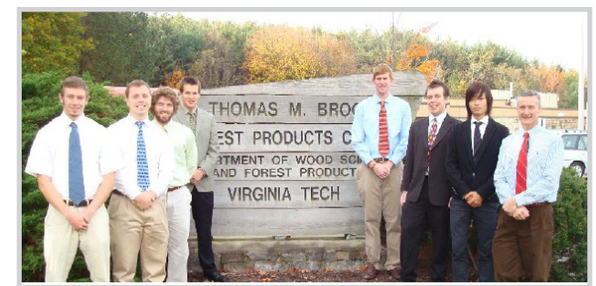

Questions? Contact Us:

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