

June 2009						
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

INSIDE VT WOOD

Reminder...

Remember to submit department news items by Friday 3 p.m. of each week to Will Pfeil at wpfeil@vt.edu for inclusion in Inside VT WOOD each Monday morning. All past issues of Inside VT Wood reside on our department website under the [publications link](#).

News From Paul Winistorfer

- I am pleased to acknowledge that Dr. Audrey Zink-Sharp has been named interim department head for Wood Science and Forest Products effective July 10, 2009. Audrey has been working closely with me the past few years in her role as associate department head and her experience will facilitate a smooth transition in the department until a new department head is identified through the search process that is on-going.
- You can find the materials related to the search for a new department head online at www.woodscience.vt.edu/searchresources Initial screening begins July 24th for this important position in our department.

Wood Week 2009 is set for September 14-18, 2009 – MARK YOUR CALENDAR TODAY!

Wood Week 2009 will take place September 14-18, with the Career Fair on September 17th, the Student Scholarship Recognition Reception on Wednesday evening, September 16th. The industrial advisory boards of the Center for Unit Load and the Forest Products Marketing Center will also meet during Wood Week. There will be additional events such as a keynote speaker, amongst other activities that week. Stay tuned for more announcements as Wood Week 2009 unfolds.

Updated Advising Information for Summer and Transfer Students Available

A note regarding academic advising for the summer from the University Studies Office: In preparation for summer orientation (new and transfer students), I am pleased to announce that new and updated advising information is available at www.advising.vt.edu. Thanks to the efforts of a sub-committee of the University O-Team, lead by Dr. Karen Watson, an intentional effort has been made to provide valuable information to assist in the university's efforts to facilitate the transition of our new students. All of the information provided has been verified with the respective home departments and units which provide leadership to these areas. To access the information, visit www.advising.vt.edu and click on the "Orientation Advising Information" link on the left-hand side of the page. If you have any questions or comments, please contact Kimberly S. Brown at ksbrown@vt.edu.

Kimberly S. Brown
Director of the UAAC/University Studies
Virginia Tech
MC 0154
Blacksburg, VA 24061
(540) 231-8440 office | (540) 231-9799 fax

College Faculty Association Elections Returns Now Available

Results from the College Faculty Association elections have been tabulated. To view your new officers and representatives, please go to: <http://www.cnr.vt.edu/cnrfacultyassociation/>

Click on “Officers and Standing Committees for 2009-10” and also “CNR Representatives to University Bodies.” The new representatives and officers are in red for the time being - continuing ones are in black.

Fixed Assets Inventory to Begin

Wood Science department fixed assets and equipment inventory will soon take place. Audrey Zink-Sharp and David Jones are coordinating the inventory with Trish Colley, Fiscal Technician Sr., Fixed Assets and Equipment Inventory Services. We will be checking Brooks and Cheatham for fixed assets and equipment in the next few days to weeks.

Audrey Zink-Sharp Appointed Wood Science and Forest Products Interim Department Head

By Lynn Davis

BLACKSBURG, Va., June 17, 2009 — Audrey Zink-Sharp has been appointed as interim head of the Department of Wood Science and Forest Products in Virginia Tech’s College of Natural Resources.

Zink-Sharp will begin her official duties July 10, filling in for department head Paul Winistorfer, who will succeed the retiring Dean Mike Kelly on Aug. 1.

“In her roles as associate department head and institute director, Dr. Zink-Sharp has shown herself to be both a very capable fiscal manager and program leader. I sincerely appreciate Audrey’s willingness to assume additional duties during this period of leadership transition, and know that the wood science department will be in good hands,” said Kelly.

Zink-Sharp teaches undergraduate, graduate, and continuing education classes in wood anatomy, wood properties, and wood processing, and serves as director of the Sustainable Engineered Materials Institute at Virginia Tech.

Her primary research emphasis is wood cell wall architecture and the development of improved wood-based composites. She is presently creating 3-D, virtual reality models of a wood cube. Zink-Sharp has coordinated Wood Magic at Virginia Tech, a natural resource education program that has reached over 10,000 children, teachers, guests, and volunteers, since its inception in 1998.

Zink-Sharp received her bachelor’s and master’s degrees from Colorado State University, and her doctorate from the State University of New York.



Lean Thinking Workshop Series Concluded

Faculty of the Department of Wood Science and Forest Products and Virginia Cooperative Extension concluded the 2009 lean thinking workshop series with the final event on May 14, 2009 in the Danville Community College’s Regional Center for Advanced Technology and Training. Twenty-seven participants attended this event showing the power of Lean Thinking through simulating real-world situations. Lean Thinking, by eliminating wasteful processes, allows businesses to increase performance significantly, achieving results that were not thought to be achievable prior to starting an organization’s lean transformation.



Figure 1: Lean manufacturing simulation conducted at the Lean Thinking workshop in Danville, VA on May 14, 2009. Batch production and unbalanced processes “overwhelmed” individual workstations and outside help had to jump in to help conduct the work.

After incurring a loss of over \$450, the lean team reorganized repositioned its processes and significantly eliminated process and production waste. Thanks to all these improvements a profit of over \$250 was achieved. Figure 2 shows part of the new manufacturing set-up, with workstations aligned in a cell without the need for material transportation.



Figure 2: A lean process cell set-up by the Danville lean team. Material handling has largely been eliminated and the whole process is set-up as one work cell. This new configuration has enabled the team to increase their production capacity several times and marketing now has to look for new sales opportunities.

The Lean Thinking workshop offered by Virginia Cooperative Extension, the Sloan Foundation Forest Industries Center, and the Department of Wood Science and Forest Products at Virginia Tech, was offered in Harrisonburg, Abingdon, Virginia Beach, and Danville over the last two months. Planning for new workshops about Lean Thinking to be offered in 2010 has begun. If you are interested in upcoming opportunities, please email Urs Buehlmann (buehlmann@gmail.com) to be added to the VTLean email list which will disseminate information about upcoming events.

Manufacturing Systems Automation in Europe

A recent trip through central Europe focusing on manufacturing systems automation in the secondary wood products industry, the author was surprised to realize that one of the most innovative industries in Europe is the wooden windows manufacturing sector. Wooden window manufacturers, having lost considerable market share to plastic windows over the past decades, had to “reinvent” their product and become cost-competitive with plastic windows, the major competing product. An amazing variety of windows systems and manufacturing technology innovation can be observed as a result of this ongoing intense competition. “One of the main culprits for European wooden windows is price as at present, wooden windows cost 15 percent more than similar alternatives made of plastic” says Urs Uehlinger, windows manufacturing expert and department head of the windows group at the University of Applied Sciences Bern, Switzerland. “Thus, manufacturers are using automation as a means to decrease manufacturing costs.”



Figure 1: European wooden window with outside aluminium cladding (source: Baumgartner Fenster).

The Product: Windows in central Europe, unlike in North America, need to fulfill functions above and beyond simple utility, e.g. to let light in, keep the cold out and allow for fresh air to come in. Windows in central Europe typically are casement windows opening inward and need to be aesthetically pleasing, to be able to structurally replace entire walls that can be opened, and fulfill stringent energy conservation and light transmission requirements. For example, the energy efficiency of a typical central European window is at least 30 percent better than a typical U.S. window. Figure 1 shows a typical central European wooden window with aluminium cladding on the outside.

Baumgartner Fenster, one of these small-to-medium sized enterprises (SME) on which this report is focusing, came up with an innovative window product that also revolutionized its manufacturing processes. The redesigned wooden window shown in Figure 1 actually is specifically designed for automated manufacturing processes, while it fulfills all aesthetic, functional, structural, and energy requirements. In fact, to eliminate the task of fixing the glass panes into the window frame, a tedious manual process, the new process glues the glass panes into the frame instead of mechanically fixing it. With this new



Figure 2: Baumgartner windows' new manufacturing facility (source: Baumgartner Fenster).

window, the company expects to double its annual production to 120,000 units per year involving 130 employees (including sales and administration). For this purpose, a new two-story building with 14,400 m² (155,000 sqft) surface was built (Figure 2).



Figure 3: Automated wooden windows frame machining line (source: Baumgartner Fenster).



Figure 4: Automated hardware assembly area (source: Baumgartner Fenster).



Figure 5: Automated material handling systems (source: Baumgartner Fenster).

To achieve the required productivity per employee, an extraordinary amount of process automation was built into the manufacturing system. Actually, the manufacturing floors at Baumgartner appear strange, as there are no stations where actual humans conduct repetitive tasks. At most, one can see some technicians working on computers or electricians working on installations. Figure 3 shows the automated wooden windows frame machine line, Figure 4 looks at the area where the hardware is automatically set into the wooden windows frames and Figure 5 shows a completed window frame being moved to the final assembly area.

While the discussions around the merits of highly automated manufacturing systems is ongoing, one can only admire the guts of these European entrepreneurs who put their own, often century old, business capital on the line to pursue their vision of modern manufacturing systems. Surprisingly, Baumgartner Windows is only one of a couple of manufacturers who are pursuing their own innovative ways to new windows product and manufacturing technologies. While such small and medium sized enterprises (SME) often can cover some of their research and development costs with tax breaks and outright government subsidies, the majority of the investment and all the risk still remains with them. It is admirable to find so much courage to innovate and try out new ways for the success of tomorrow.

Environmental Audits for Improved Business Performance

Earl Kline participated in Masco Builder Cabinet Group's energy and environmental audit of their cabinet frame manufacturing facility in Jackson, Ohio on May 18-20. The audit is Masco's unique branded process called Ecovaluation™ used to assess the environmental efficiencies and impacts of built environments, manufacturing and business processes, products and human lifestyle. The 3-day audit involved 22 participants working together in teams to identify improvement projects at the Jackson facility leading to energy and environmental savings. The teams identified 35 potential environmental improvement projects and 32 safety improvement opportunities leading to significant reductions in energy usage and environmental impact by changing the way of doing business. Completion of these projects would save the business over \$350,000 annually with a payback of 1 year for the required investments.



From Left to Right: Rustin Thomas (Air Technologies), Nick Morse (Masco BCG), Earl Kline (Virginia Tech), Tommy Miller (Masco BCG), and Des Dugan (Air Technologies). Team # 1 combined their expertise to identify improvement opportunities for the Jackson, Ohio Facility's compressed air systems.

A very important point of the Ecoevaluation Process is that a business' environmental, health, and safety impact can be improved while saving \$\$\$!

In terms of the environmental impact, the potential savings found during this audit translate into over 1,600 metric tons of CO2 reduction — this reduction would be equivalent to planting 464 acres of trees or eliminating the need to drive 327 cars. This Ecoevaluation Process is based on Lean Thinking principles that have been practiced for years by Toyota and can be applied to any business or organization.

Graduate Student Amy Janke Attends Trade Fairs in Germany

Amy Jahnke, graduate student in Forest Products Marketing, recently had the opportunity to attend two forest industry trade fairs in Germany. She was accompanied on the trip by Scott Bowe (Professor of Wood Products at the University of Wisconsin-Madison), Terry Mace (Forest Utilization and Marketing Specialist for the Wisconsin Department of Natural Resources), and Steve Hubbard (University of Wisconsin-Madison graduate student). The group gathered in Cologne, Germany, to visit interzum, the world's largest trade fair for suppliers of the furniture and interiors industry. This year marks the 50th anniversary of interzum. In addition, Jahnke helped represent VA hardwood manufacturers at the Virginia Department of Agriculture and Consumer Services (VDACS) booth during the four day event.



Photo (from left to right): Amy Jahnke (VT graduate student), Fredrik Stureson (Augusta Lumber Company), and Joel Stopha (VDACS).

The group then traveled to Hannover, Germany, to attend Ligna, the world fair for the forestry and wood industries. Exhibitors at Ligna represent manufacturers and suppliers of wood products harvesting and processing equipment from a variety of forest industry sectors. The five-day event amassed 1758 exhibitors from 50 nations and hosted over 83,000 visitors. This year's theme was "Making more out of wood — Technology for resource efficiency". The group got a chance to see some of the newest innovations in the wood products industry at these two fairs.



Photo (from left to right): Terry Mace (Wisconsin DNR), Steve Hubbard (UW-Madison graduate student), Scott Bowe (UW-Madison professor) and Amy Jahnke (VT graduate student).

Jahnke will then travel to Salzburg, Austria, for the remainder of the summer to conduct her dissertation research on innovativeness in the veneer industry. She hopes to compare and contrast the factors influencing innovativeness in American and Austrian firms. She received a Marshall Plan Scholarship to attend the Salzburg University of Applied Sciences for 3 months. Jahnke is co-advised by Bob Smith in Wood Science and Forest Products and David Brinberg in Marketing. Special thanks to the Department of Wood Science and Forest Products, the Center for Forest Products Marketing and Management, and Scott Bowe at UW-Madison for financial assistance to make these trips possible.

Department Hosted Businessmen from India

In cooperation with Virginia Department of Agriculture and Consumer Services (VDACS), the Department held a workshop at the Brooks Center on June 3, 2009 to showcase the mission, vision, and specific research outputs of our academic programs. The visitors from India came to the State of Virginia looking for business opportunities with local hardwood and softwood producers. During the week of June 1st, the visitors had the opportunity to visit manufacturing sites, state organizations, and the Department of Wood Science and Forest Products (WS&FP) at

Virginia Tech. For these businessmen it was fundamental to learn how the Department of WS&FP transforms research in wood science, marketing, manufacturing, and construction engineering in broader impacts to support the local industry. Presentations and lab tours were given by Dr. Paul Winistorfer, Dr. Earl Kline, Dr. Brian Bond, Dr. Daniel Hindman, Dr. Brian Perkins, and Mr. Ralph Rupert. Also the visitors were exposed to forestry operations research thanks to the participation of Dr. Janaki Alavalapati, Department Head and Dr. Chad Bolding, assistant professor both at the Department of Forestry. For more information please contact assistant professor Dr. Henry Quesada at quesada@vt.edu, manufacturing and business specialist.



Photo (from left to right): Henry Quesada (WS&FP), Athul Khanna (Gobal Cold Chain), Rajesh Mehta (Indo-American Hardwoods), Sanjay Hemnani (Range Logs n Lumber), Ralph Rupert (WS&FP), Ahshay Kumar (National Plywood Industries LTD), Joel Stopha (VDACS), and Ashok Bajaj (Ply-Wood Point)

Microsoft donates Enterprise Resource Planning (ERP) Software to Department of Wood Science and Forest Products

The Department of Wood Science and Forest Products (WS&FP) at Virginia Tech received a donation of 25 licenses of the ERP Dynamics Axapta from Microsoft. ERP software has become an important information technology asset for large and small corporations across the world to better process, control, integrate, and prepare company data for decision making. Before ERP software, business firms needed a numerous arrangement of information technology solutions from multiple vendors in order to process data for decision making. With the introduction of ERP solutions in the late 1990's, firms such as SAP and JD Edwards could make business transactions faster and more cost efficient. Also, the idea of integrating the firm's business data model into a single information technology platform has been very beneficial to integrate firm's business processes. The wood products industry has also been impacted by ERP software and it is necessary that we as a Department continue to incorporate these technologies into our academic activities. With this donation, we will offer to our undergraduate and graduate students the opportunity to learn about ERP software. The scalability and flexibility of this technology will allow students in new classes such as WOOD-3445/6 Wood Enterprise Institute or WOOD-4984 Forest Products Business Systems to integrate information from core and support processes from a business perspective in a wood products company. Also, this ERP brings Marketing, Strategic Management, and Production Control modules that can be used also by other courses at our Department. Thanks to the cooperation of our College of Natural Resources Information Technology Staff, the ERP system should be up and running by the end of Summer 09. The main ERP software will be installed on the new CNR Microcomputer Teaching Lab (CNR Microlab) server with the necessary clients installed in both the Brooks lab and the newly renovated CNR Microlab. For more information, please contact Assistant Professor Dr. Henry Quesada at quesada@vt.edu, manufacturing and business specialist.