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SPRING 2007

WOOD

JOURNAL



TALENT SEARCH

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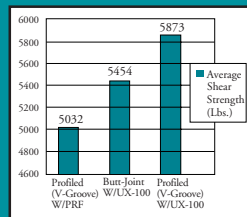
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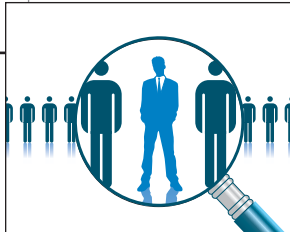
Engineered Wood

JOURNAL

THE OFFICIAL PUBLICATION OF APA – THE ENGINEERED WOOD ASSOCIATION

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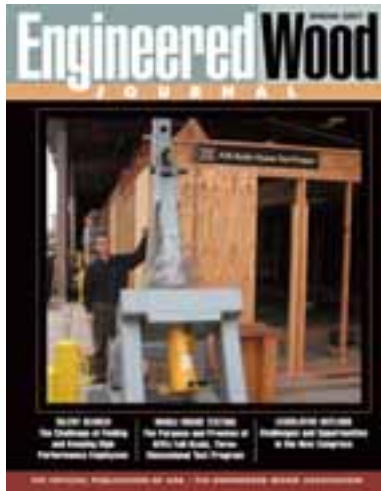
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About the Cover:
APA Technical Services Director Borjen Yeh beside the Association's full-scale house test project. See story on page 20.

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The CSR Crusade

Now that trans fats are to be outlawed in New York City restaurants, what should we expect next from the regulatory juggernaut?

Well, in the UK recently, it already has brought into law a requirement that companies report everything they do that might affect their employees, community and environment.

It is the latest and perhaps most significant advance yet of the Corporate Social Responsibility (CSR) movement, which seeks to make business more accountable to society. On the face of it, expecting companies to be socially responsible sounds reasonable enough. And the more transparency the better.

The problem, however, comes in defining “social responsibility.” Not surprisingly, many of those most passionate about corporate social responsibility also are among those most disdainful of corporations, business in general and even capitalism itself. And their definitions of social responsibility are not necessarily those most of us would want imposed.

One is reminded of the preservationist movement, a CSR subset that in many of its leading quarters has been motivated less by love of the “common good” than by hatred of the free market.

There are, of course, all kinds of laws on the books, not to mention marketplace forces, that already constrain companies from doing anti-social things. And despite occasional high profile cases of wrongdoing, it can reasonably be argued that most public companies today—and private ones too—have a fairly enlightened appreciation of their accountability to a broad range of stakeholders. That’s commendable. It’s also just good business practice.

In the end, however, those who risk their own money in business ventures, whether shareholders or private entrepreneurs, ought to have the final say on how to run the company—within the law, of course. Then, let the market decide, not the government, and not self-appointed guardians of the commonweal.

The late Milton Friedman, our era’s foremost champion of the free market, wrote some 35 years ago that “there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.”

The Nobel laureate in economics was especially dismayed by business people who take up the CSR crusade mantra, calling them “unwitting puppets of the intellectual forces that have been undermining the basis of a free society these past decades.”

The UK’s adoption of compulsory CSR reporting could well be a harbinger event. We should not be surprised to see look-alike laws showing up eventually in legislative bodies on this side of the Atlantic. And depending on who’s defining “social responsibility,” that could make trans fats very small potatoes.

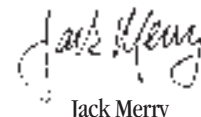
Help Wanted

It’s no secret that the wood products industry is struggling to find and keep high quality employees well trained in the myriad tasks of operating a successful manufacturing business.

We’re not alone. As noted in the article beginning on page 16, virtually all North American manufacturing sectors have the same problem.

To help bring the challenge into focus, and more importantly, to begin finding solutions, the Engineered Wood Technology Association (EWTA) is sponsoring a seminar on the subject on June 21. The half-day event will be held as part of the conference schedule at the Forest Products Machinery & Equipment Exposition (EXPO 2007) at the Georgia World Congress Center in Atlanta. EXPO is sponsored by the Southern Forest Products Association in cooperation with APA and others.

If you’re planning to attend EXPO, you should plan to attend the workshop. And if you’re not planning to attend EXPO, you might want to reconsider. The event will be a good one. More information on the workshop can be found on EWTA’s web site at www.engineeredwood.org. For more about EXPO, log on to www.sfpexpo.com.



Jack Merry

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2006 Panel Production Down 1.8 Percent from 2005

U.S. and Canadian production of structural wood panels declined 755 million square feet, or 1.8 percent, compared to 2005, according to yearend data released recently by APA—The Engineered Wood Association.



Although housing starts, which consume approximately half of industry production, declined 12 percent for the year, panel demand was buoyed by reasonably good demand in the nonresidential, industrial and repair and remodeling markets. Panel imports, according to preliminary data, also appear to have declined in 2006 by more than 30 percent. Excluding U.S.-Canadian trading, panel exports rose slightly last year to 532 million square feet.

Among other engineered wood products, glulam production declined less than 1 percent, wood I-joist output dropped 7 percent, and laminated veneer lumber volume fell about 4 percent.

Wood Products Council Incorporates as Nonprofit

After more than 20 years of operation as an ad-hoc vehicle to develop and coordinate wood industry market, education and promotion programs in North America, the Wood Products Council (WPC) officially incorporated as a U.S. nonprofit organization late last year.

The primary purpose of incorporating was to facilitate an industry-wide initiative to

increase wood product demand in the nonresidential construction market. However, opportunities for better coordination of industry programs related to residential construction, Gulf Coast rebuilding and green building also were factors in the decision to incorporate.

The council is governed by a board of directors comprised of 15 senior industry executives representing the organization's five charter members—APA—The Engineered Wood Association, American Wood Council, Canadian Wood Council, Southern Forest Products Association and Western Wood Products Association.

Jim Enright, general sales manager at Rosboro, Springfield, Oregon, and Rick Franko, vice president, export lumber sales and market development, West Fraser Timber Co. Ltd., were appointed co-chairmen. APA President Dennis Hardman is the current WPC president and Canadian Wood Council Vice President Etienne LaLonde is vice president/secretary.

U.S. Product Standard PS 1 Revisions Nearly Completed

A multi-year review and revision of *U.S. Product Standard PS 1-95 for Construction and Industrial Plywood* is nearing completion under the coordination of the National Institute of Standards and Technology (NIST). A public comment period ended January 31 and the revised standard is due to be published shortly.

The revision process, which is undertaken approximately every 10 years to keep pace with market needs, manufacturing practices, changes in resource supplies and other trends, is conducted by a standing committee comprised of manufacturers, dealers, distributors, consumers, academia, government agencies and others. APA—The Engineered Wood Association serves as the secretariat but is not on the committee.

Most notable among the changes is the standard's new name: *U.S. Product Standard PS-06 for Structural Plywood*. Other revisions include harmonizing sheathing grades with *Product Standard PS 2*, updating of the overlay sections, and clarification of growing regions for species groupings.

Copies of the revised standard will be available soon from APA and NIST.

Four More Eco-Terror Defendants Plead Guilty

Four more individuals charged with engaging in eco-terrorist acts over several years took plea deals in federal court in Eugene late last year.

Three of the defendants face eight-year prison terms under the plea deals, while the fourth could get five years in prison.

Six other defendants in the string of arsons pleaded guilty earlier last year and were given prison sentences ranging from nearly 16 years to just over three years.

SUPPLYSIDES

News and information about members of the Engineered Wood Technology Association (EWTA), the related supplier organization of APA—The Engineered Wood Association. Send news items to Jack Merry, jack.merry@apawood.org.

- **TEACHERS' PRIVATE CAPITAL**, the private investment arm of the Ontario Teachers' Pension Plan, announced an agreement to acquire **DYNEA NORTH AMERICA** from Dynea Chemicals Oy of Finland. Headquartered in Mississauga and with operations across Canada, the U.S. and Mexico, Dynea North America has annual sales of more than \$550 million.
- **HEXION SPECIALTY CHEMICALS**, Columbus, Ohio, reported it has purchased property adjacent to its Edmonton, Alberta plant in order to improve the rail and logistics infrastructure at the site. The cost of the improvements are estimated at \$4-5 million. More than 900 million pounds of UF and PF resins are produced annually at the facility.
- **VALSPAR CORPORATION**, a leading global coatings company, announced completion of its acquisition of the powder coatings business of **H.B. FULLER COMPANY**.

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Three others in the case remain at large and are believed to have fled the country.

The series of arsons caused an estimated \$30 million damage in six states. Responsibility for most of the crimes was claimed by the Environmental Liberation Front (ELF) and Animal Liberation Front (ALF).

"We believe we have basically disassembled the Northwest cell of ELF/ALF arsonists," said Assistant U.S. Attorney Kirk Engdall. He added, however, that more arrests are possible.

Katrina Timber Losses Pegged at \$630 Million In Louisiana Alone

Hurricane Katrina caused an estimated \$630 million in losses to the Louisiana timber industry, according to the Louisiana Pulp and Paper Association (LPPA).

The hurricane damaged 1.5 million acres in the state and downed or damaged three billion board feet of timber, said LPPA Executive Director Gary O'Rielly.

Timber, the number one agricultural crop in the state, was valued at more than \$956 million in 2003, the last year for which figures are available, O'Rielly said. The 2003 timber crop accounted for 22 percent of the gross farm income of the state, nearly matching the combined value of cotton, rice, soybean and sugarcane.

Trus Joist Co-founder Harold Thomas Receives Bronson Lewis Award



Harold Thomas

Harold Thomas, co-founder of Trus Joist Corporation, was presented the second annual Bronson J. Lewis Award for leadership and outstanding industry

contribution during APA's annual meeting in San Antonio late last year.

"Few people have had as big an impact on the evolution of the wood products industry over the past half century as Harold

Thomas," said APA Vice Chairman Harold Stanton in presenting the award during the meeting's general session. "Together with (Trus Joist) co-founder Art Troutner, he launched the wood I-joist industry ... and contributed to a whole new way of thinking about the manufacture of engineered wood framing products that eventually transformed our industry."

Thomas retired from Trus Joist in 2000, capping a 40-year career with the company. The award is dedicated to Bronson J. Lewis, whose 24 years of service as secretary and then executive vice president of APA spanned both the introduction of southern pine plywood and the advent of oriented strand board.

Panel World Magazine Announces Plans for 2008 Conference and Expo

Panel World magazine has announced it plans to launch a new biennial Panel and Engineered Lumber International Conference & Expo in Atlanta beginning in February 2008.

The event, to be held Feb. 7-9 at the Omni International Conference Center, is co-chaired by Rich Donnell, editor of *Panel World*, and industry consultant Fred Kurpiel.

The conference will feature presentations by industry leaders, experts and consultants on issues, trends and technologies relevant to the worldwide panel sectors, including industrial panels, engineered lumber, laminate panels, laminate flooring, value-added products, composites and structural panels, according to the magazine.

The event also will feature industry producer, supplier and educational exhibits.

Green Building Initiative Launches Pilot Program for Existing Buildings

The Green Building Initiative (GBI), the nonprofit organization created to promote practical and affordable green building approaches, has begun pilot testing a new module to complement the Green Globes environmental assessment and rating system for new construction.

Called Green Globes for Continual Improvement of Existing Buildings, the new web-based system is designed to give building owners, facility managers and others a practical and cost-effective way to assess and improve the performance of commercial and institutional buildings.

GBI was originally established as a way to bring green building into the mainstream by helping local home builder associations develop green building programs modeled after the National Association of Home Builders (NAHB) Model Green Home Building Guidelines. It later finalized an agreement to bring Green Globes, an environmental assessment and rating tool developed in Canada, to commercial builders in the United States.

More information about the pilot program can be found at www.thegbi.org.

BC Technology Institute Expands Wood Processing and Management Programs

The British Columbia Institute of Technology (BCIT) is now accepting applications for its newest programs in Industrial Wood Processing and Management (IWPM). Students can earn a certificate in Wood Product Sales and Distribution or a certificate or diploma in Technology in Industrial Wood Processing Management.

"The shift to mill automation and industry consolidation has created a great demand for employees with both technical and managerial skills," said John McDonald, the Institute's newly appointed head of the IWPM programs. "The programs are designed to provide the skills and knowledge required to satisfy the recruitment needs of employers in the industrial wood processing sector, including suppliers, primary producers, subsequent processors and end users."

In addition to overseeing the IWPM programs, McDonald also teaches several engineered wood products courses.

The IWPM courses are delivered primarily online through the use of a presentation concept called WebCT, which allows participants to work toward their credentials via their home or work computers.

New Study Concludes Forests Are Expanding in Many Countries

A new formula to measure forest cover, developed by researchers at The Rockefeller University and the University of Helsinki, in collaboration with scientists in China, Scotland and the U.S., suggests that an increasing number of countries and regions are transitioning from deforestation to afforestation.

The formula, known as “Forest Identity,” considers both area and the density of trees per hectare to determine the volume of a country’s “growing stock”—trees large enough to be considered timber. Applying the formula to data collected by the United Nations, the researchers found that, despite concerns about deforestation, growing stock has expanded over the past 15 years in 22 of the world’s 50 countries with the most forest cover. The results showed that North America



was among the leaders in greatest total gain of trees and area of forestland.

Forest area and biomass are still being lost in such important countries as Brazil and Indonesia, but an increasing number of nations show gains, the study found. And in the

world’s two most populous nations, China’s forests are expanding while India’s have reached equilibrium.

The study results were published late last year in the *Proceedings of the National Academy of Sciences*. ●

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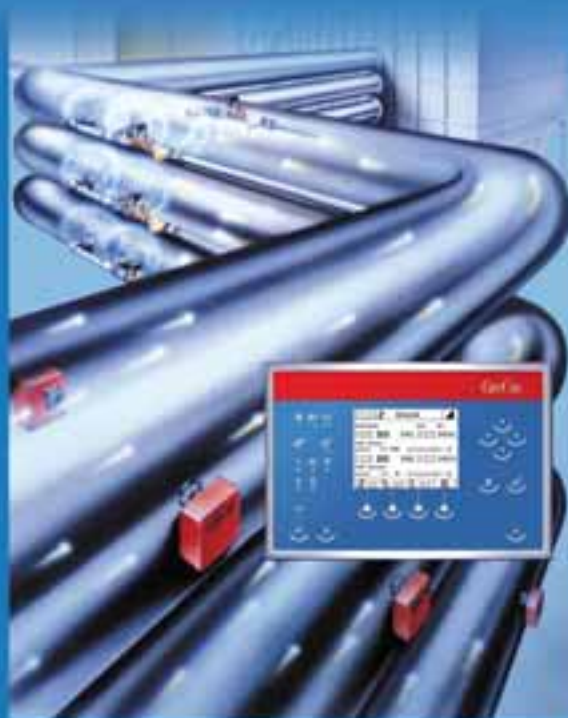
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APA Annual Meeting Scheduled for Nov. 10-13 in Palm Desert

Plans are proceeding for APA's 70th annual meeting scheduled for Nov. 10-13 at the Hyatt Grand Champions Resort and Spa in Indian Wells, California.



Located approximately 30 minutes from Palm Springs International Airport, the 480-guest room resort features two golf courses, several restaurants and lounges, seven pools, a celebrated art collection and grand views of the surrounding desert and Santa Rosa mountains.

More information about the resort and meeting will be sent soon to all APA members and posted on the APA web site.

Canfor Exec Tom Temple Elected APA Vice Chairman



Tom Temple

Tom Temple, vice president of sales and marketing at Canfor Corporation, Vancouver, B.C., was elected vice chairman of the APA Board of Trustees late last year. He succeeds Harold

Stanton, who recently retired from LP.

Also appointed to the Board was Jeff Wagner, vice president of OSB at LP, who assumes Stanton's trustee position.

Annual Production and Market Outlook Nears Completion

APA's annual *Regional Production and Market Outlook for Structural Panels and Engineered Wood Products* is nearing

completion and will be sent soon to all APA members.

The comprehensive report contains economic forecast assumptions, market segment demand data and analysis, historical production and capacity figures by product category, regional production statistics, export and import data, and other information.

The report is distributed free to APA members as a business planning tool and is available only to APA members. Members also can access the report from the members-only section of the APA web site.

A *Structural Panel & Engineered Wood Yearbook* containing historical production and market demand data also will be available soon to the general public for \$200. The *Yearbook* can be downloaded as PDF file from the Publications section of the Association's web site at www.apawood.org.

Panel Producer Forum Scheduled for Atlanta

The next in APA's series of producer forums for member-structured wood panel mills will be held June 20 in Atlanta, Georgia.

The full-day meeting will include a joint session for both APA plywood and OSB manufacturers followed by product-specific breakout sessions—a meeting format that was highly successful at the last APA southern region forum. Agenda topics will include product and performance standards, international market trends, environmental issues, production technology developments, and other topics of special relevance to production personnel.

The forum was scheduled for June 20 in order to provide attendees an opportunity to also attend a workshop the following day on employee recruitment and retention at the Forest Products Machinery and Equipment Exposition (EXPO) sponsored by the Southern Forest Products Association. EXPO will be held June 21-23 at the Georgia World Congress Center.

Five Companies Earn EWTA Supplier Awards

Five companies earned Supplier of the Year Awards in the latest annual awards



competition sponsored by the Engineered Wood Technology Association (EWTA).

The winners were Huntsman Polyurethanes and Tembec, Inc. Chemical Group, which tied in the oriented strand board category; Dynea Resins and Willamette Valley Company, which shared top honors in the plywood category; and Hexion Specialty Chemicals, Inc., in the engineered wood category.

The supplier awards program recognizes the value and importance of the business relationships between APA member companies and their EWTA member suppliers. Winners are selected by a vote of the APA membership.

Prescriptive Method for SIP Wall Systems Submitted to ICC

APA has submitted a code change proposal to the International Code Council for inclusion of a structural insulated panel (SIP) residential wall system Prescriptive



Method in the International Residential Code (IRC).

The Prescriptive Method is based on a performance standard developed recently by the SIP industry under a grant from

Department of Housing and Urban Development. Completion of the Prescriptive Method, a priority under a strategic alliance between APA and the Structural Insulated Panel Association (SIPA), is viewed as a critical first step in advancing marketplace acceptance and use of structural insulated panels.

Acceptance of the Prescriptive Method will allow SIPs to be specified as part of the conventional practices of the IRC, reducing construction costs and delays.

APA tested all of the assemblies that form the basis for the tables contained in the standard. A Prescriptive Method for SIP roofs also is being explored.

APA Career Center Listings Now Free

Wood products industry employers can now post job openings on APA's online Career Center free of charge.

Located at www.apawood.org/jobs, the site is designed to help link industry job seekers with job openings. APA and Engineered Wood Technology Association members previously paid \$45 for a 30-day listing. Nonmembers paid \$95. The fees were eliminated in order to encourage broader use of the service and to enhance member benefits.

Job seekers can search for openings by key word, location and category, including, for example, machine operators,

technicians, maintenance, sales and marketing, human resources, information technology, quality assurance and many others.

EWTA Advisory Committee Expands Membership

Several new members were added recently to the Engineered Wood Technology Association (EWTA) Advisory Committee in an effort to broaden the representation of EWTA supplier and manufacturer members.

New members from the supplier ranks are Stephen Blackwater, Hunt Guillot & Associates; David Evans, Carmanah Design and Manufacturing Inc.; Dave Gagnon, Samuel Strapping Systems; Cole Martin, Dieffenbacher, Inc.; Lester Pernu, Dynea Overlays, Inc.; and Miki Tokola, Coe Newnes McGehee. APA member additions are Jim Enright, Rosboro; Brian Luoma, LP; and Dan Price, Tolko Industries Ltd. Steve Zylkowski, APA Quality Services Director, also was added. The committee, whose membership now totals 17, is chaired by Dr. Fu-Shou Lin, Georgia-Pacific Corporation.

EWTA, a related nonprofit organization of APA, is comprised of 90 product, equipment and service providers and all of APA's member manufacturers. The committee reports to the APA Board of Trustees. ●

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The Challenge of Finding and Keeping High Performance Employees

by Kathy Price-Robinson

What's bugging manufacturers these days? The usual suspects come to mind: trade issues, taxes, energy costs, government regulations. But another big problem—growing ever more serious—is the scarcity of quality employees, both hourly and salaried.

“The vast majority of U.S. manufacturers are experiencing a serious shortage of qualified employees,” states the key finding of a “Skills Gap” survey conducted jointly by consulting firm Deloitte & Touche, The National Association of Manufacturers (which has 12,000 member companies) and The Manufacturing Institute, NAM’s nonprofit research arm.

This shortage, the report says, is a threat to the country’s ability to compete in a global market. Chinese universities, for instance, will graduate 325,000 engineers this year, compared to the 65,000 that will emerge from U.S. universities.

The questions for U.S. wood products companies are 1. how widespread is this labor problem?, 2. what is causing it?, and 3. what is being done about it?

More than 80 percent of the manufacturers in the Deloitte & Touche/NAM study say they are experiencing a lack of qualified employees. More than 60 percent of companies reported difficulty finding scientists and engineers, and 90 percent reported difficulty finding skilled production employees. When asked what types of employees companies expect to find in short supply in the coming few years, 80 percent cited skilled production employees.

Several converging trends have brought about these shortages. Among them:

Competition: Manufacturing, especially in the wood products sector, increasingly competes with other industries, like high-tech in the Northeast and the petrochemical in the South. And now there is another southern suitor for workers: the reconstruction following hurricanes Katrina and Rita.

According to Ray Peters, the vice-president of human resources for Louisiana-based Roy O. Martin Lumber Company, the wages in the Southeast are “artificially” inflated on account of the reconstruction. Yet they are inflated just the same, and promises of reconstruction riches are such a pull to Martin’s current and potential workforce that

this threat must be addressed with higher wages and other benefits.

Also, quality workers are surely being pulled away from local industry to rebuild Iraq. There are an estimated 100,000 private contractors in Iraq, and many more support staff stateside, all funded by the \$1.2 trillion thus far channeled toward that cause. While military-industrial businesses tend to do quite well in a war, forest products companies are unlikely to reap much benefit.

A changing demographic: As the Baby Boomers inch toward retirement, they take with them work ethics that harkens back to the age of their Depression-era parents and grandparents. This middle-age generation, born before video games and even television took over leisure time, was exposed daily to their elders’ early-to-bed and early-to-rise lifestyle.

Hard physical work was respected in a way it is not today. Young people today grow up in a world of laptops, cell phone televisions, iPods and electronic games. When time comes to think about a career, these kids don’t automatically dream of mills, machines, manufacturing or managing work crews.

Education: Long before the testing-intensive No Child Left Behind initiative came along to drain funds that could potentially go to vocational classes, programs that once channeled students into technical schools were already weakened and gutted. Instead of creating a career path for high school students to head straight into the workforce, schools have focused on pushing every student into a four-year college, where nearly half fail to earn a degree after six years.

Long-term solutions to the labor shortage must include bringing vocational programs and career counseling back to schools; and educating teachers, administrators and school boards about the benefits and appropriateness of manufacturing careers for at least a portion of the student body.

Manufacturing's reputation for shifting jobs offshore: Certainly some would label the issue of North American manufacturing sector labor shortages as a type of oxymoron. After all, haven't most manufacturing jobs gone to China? "That's definitely the perception and that's not the case," says Stacey Wagner, managing director of NAM's Center for Workplace Success.

While many manufacturing jobs have left the country, there are some 20 million still here, according to NAM statistics. But while companies moving out of the country get all the newspaper ink, those who are *not* moving do not register a story. Naturally, college or trade school graduates would hesitate to enter an industry they think is evaporating.

To turn this perception around, the public must be educated about manufacturing's endurance in North America. According to Judd Michael, associate professor at Penn State's School of Forest Resources, the engineered wood industry in particular has a strong future and strong growth here at home.

The forestry stigma: Though wood-is-good campaigns have certainly tempered the perceived connection between environmental degradation and the wood products industry, there is still ignorance in the general population about the benefits and opportunity for advancements that forest products careers can offer. When many people hear the word forestry, says Michael, "they think they're going to have to use a chainsaw." Ongoing public relation campaigns will be necessary to bring those outdated perceptions in line with reality.

Seminar on Employee Recruitment and Retention to be held at EXPO 2007

A half-day seminar on forest products industry employee recruitment and retention issues will be held as part of the Forest Products Machinery & Equipment Exposition (EXPO 2007) in Atlanta June 21.

The program is sponsored by the Engineered Wood Technology Association (EWTA) under an agreement with the Southern Forest Products Association, which sponsors EXPO.

EXPO 2007 will run from June 21-23 at Atlanta's Georgia World Congress Center. More information can be found on the EWTA web site at www.engineeredwood.org.

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For information, contact The Engineered Wood Technology Association – EWTA at (253) 620-7237 or email terry.kenwood@apawood.org or visit www.engineeredwood.org



Strength Through Connections

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The remedy for worker shortages can be summed up in this three-pack: recruit, retrain, retain.

Every manufacturing company recruits to some extent, both for management staff and for hourly workers. The successful companies will be the ones who do it best. Jeld-Wen, the door and window manufacturer, has taken recruiting to a higher level by recruiting a star recruiter: Jerry Pettibone, former Oregon State University head football coach.

Pettibone is one of three Jeld-Wen recruiters who mine the talent at 43

university programs. At the dozen or so universities he visits, Pettibone meets with teachers and career counselors to talk up the benefits of the career path Jeld-Wen has to offer, including an 18-month management development program.

"They're very interested," Pettibone says, adding that he has never met a teacher or counselor who is not intensely interested in careers for their students. He also attends career fairs and sets up interviews with students. One of his most lucrative associations is the Organizational Leadership and Supervision program at

Purdue University's College of Technology. At a recent job fair at the department, among the several dozen companies looking for talent were Belden, Cisco Systems, Monsanto and U.S. Steel.

At Roy O. Martin Lumber Co., facing the dual competition of the petrochemical industry and hurricane rebuilding, the company's three-prong strategy is to retain the employees it already has, offer competitive wages and benefits, and elevate the training of its 70-plus supervisors. As HR chief Peters put it: "People don't quit companies. They quit supervisors. I think supervisors are the fulcrum." The company's supervisors are called "team leaders" and "probably get more training than they want," Peters says.

For Search North America, Inc., a forest products recruiting firm, looking for

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employees from other industries is key to filling jobs. The company has begun networking with trade organizations outside the forest products industry.

In attracting and retaining the best employees, wages are important, despite some studies that have said they aren't. In a research paper co-authored by Penn State's Michael, "good pay" was stated as the number one motivator for all age groups in a study, followed by having steady employment, and thirdly by pension and other benefits, although the younger the worker, the less a pension matters.

According to Michael, forest products companies tend to pay less than other industries do for the same skill level, but they do so at their peril. At the lowest levels, fast-food outlets offer workers an attractive package to compete with forest products jobs: up to \$10 an hour, a climate controlled environment and meals.

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Some companies live and learn. Michael cites the example of one small southern wood products company that went from the brink of closure to a model of success, in part by raising wages to retain higher quality employees. Michael said he expects higher wages will emerge as older and tight-fisted Depression-era owners of small wood products companies turn over leadership to younger generations.

In the long-run, school kids ideally would be enthused about seeking careers in manufacturing. This will benefit them (sparing some a sure-to-fail stint in a four-year college), and will benefit the economy overall. Working with the sluggish bureaucracy of the school system, however, has proven frustrating to many in business. Two initiatives—one established and the other just emerging—are having some success.

Skills USA: Once known as VICA (Vocational Industrial Clubs of America), Skills USA has grown in recent years into an enormous enterprise that brings together high school and community college students to compete in such real-world tasks as welding, carpentry and computer-assisted design.

According to Tom Holdsworth, Skills USA director of communications and government relations, companies actually recruit right at the show, as students demonstrate their abilities to communicate, work in a team, lead, and motivate others. Competitions are crafted by technical committees straight out of industry. Major sponsors include car manufacturers and tool makers, but no wood products companies. USG Corp. brings two dozen teachers a year to its plants for a week of instruction on how to properly install its product. The Steel Framing Alliance also has aggressively pursued participation in the competitions.

The impact of the competitions reaches back into the schools, where the shop curriculum is often crafted to mesh with what students need to learn in order to win. It's a backward way of having influence on what is taught in school. But as a member of one technical committee tells potential sponsors: "Pepsi and Pizza Hut are in schools. Why not you?" There's even a program, funded by the Kellogg Foundation, to create entry-level job certifications so the students can move seamlessly from school to work.

The Dream It! Do It! program is the newly launched creation of the Center for Workplace Success of The Manufacturing Institute. The program, rolled out first in Kansas City and then in several other states, aims to steer young people into "cool" manufacturing careers.

Geared toward what young people will respond to, the initiative's website, www.dreamit-doit.com, offers a "career calculator" where students choose what they're good at, then what they like to do, and then are presented with several career options that describe such jobs as

baker or tool and die maker, the potential salaries and the educational level needed.

This work-oriented program fills an information gap about the very nature of school and work. "We want to put it into the system so kids understand early on that they go to school so they can do what they like later on," says Stacey Wagner, the center's managing director. ●

Kathy Price-Robinson is a freelance writer who covers the construction and building products industries.

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Full-Scale House Test Project

Whole House Testing

The Purpose and Promise of APA's New Full-Scale, Three-Dimensional Test Program

by Jack Merry

How do wood framed houses built with different sheathing products, bracing methods, tie-down techniques and in various other ways perform under extreme wind and seismic loads?

Engineering design calculations provide guidance, as does traditional two-dimensional laboratory testing of wood framed components. Field observation following actual natural disasters is even better because it permits comparison of what theoretically ought to happen based on engineering calculations to what really does happen under the harsh conditions of actual events.

But there's still another way to predict building performance under the extreme loads of natural disasters, and APA is at the forefront of employing it. It's called "whole house testing"—applying extreme loads to full-scale, three-dimensional test structures.

The impetus for APA's whole house test program, which began early last year, was a contentious International Residential Code (IRC) code change hearing in October 2005 at which APA proposed a change to the code's narrow wall bracing provisions. The International Code Council (ICC) had earlier approved, with limitations, APA's Narrow Wall Bracing Method (NWB). That method was published in the 2004 International Residential Code Supplement and is now in the 2006 IRC. The October 2005 proposal, which was meant to address the growing desire by homeowners and designers for narrower wall segments that accommodate larger windows and doors in keeping with modern design

trends, would have permitted additional narrow wall bracing design options.

The narrow wall segment designs were subject to a structure being fully sheathed with wood structural panels in order to provide overall lateral load resistance, and were based on extensive two-dimensional cyclic wall segment testing conducted over many years at APA's Tacoma headquarters Research Center.

Competing product interests, however, viewed the proposals as a threat to their own market shares and mounted opposition arguments challenging the validity of APA's test data.

Ironically, although APA lost its bid to gain approval of its proposal, the code hearing outcome gave rise to APA's whole house test program, formation of new wall bracing advisory committees, and initiation of efforts to revise the American Society for Testing and Materials (ASTM) standard method for cyclic testing of walls—developments that in the end are expected to help vindicate APA's engineering conclusions and greatly improve the prospects for gaining code acceptance of a wide variety of new prescriptive wall bracing designs.

More broadly, notes Tom Williamson, APA vice president, Quality and Technical Services, the test program is advancing "overall understanding of building performance under extreme loads and thereby serves the life safety interests and aesthetic preferences of both the design and construction community and the home buying public."

APA's growing leadership in wall bracing testing is another welcome result, which supports an Association strategic goal of being the authoritative industry voice on matters related to engineered wood product market access issues and challenges. APA now operates one of the few laboratories in the country capable of full-scale three-dimensional structure testing.

"We're very excited about this project because of its long-term potential for supporting the structural wood panel industry's wall sheathing market goals," said APA Senior Engineer Tom Skaggs, P.E., Ph.D. Skaggs designed the test equipment and supervises the day-to-day tests.

The timing for launching the program was fortuitous because APA had just begun adding 5,000 square feet of Research Center space for storing member mill product qualification and test samples. Approximately 30 percent of the additional space was set aside for the new test equipment.

The tests employ a state-of-the-art device that applies a maximum 65,000-pound lateral load to a full-scale three-dimensional house. The test set-up is designed to record the response of both the wall and overall building with different bracing methods and configurations. For most tests, maximum wall displacements are limited to 1-1/2 inches in order to minimize damage and thereby maximize the number of tests that can be repeated using the same framing. However, the equipment has the capability of testing the structure to complete collapse.

The results of the ongoing tests are being summarized in progress reports posted at www.wallbracing.org/. To date, seven reports have been issued.

Although data from whole house testing is expected to carry substantial weight in future code change deliberations, the data alone won't automatically safeguard or advance scientifically credible treatment of wood panel bracing designs. An ongoing challenge, notes Williamson, will be to make the data and conclusions understandable to code committees and to stay involved in committee-level code debates, discussions and negotiations.

To that end, APA technical staff serve on both an ICC Ad Hoc Committee on Residential Bracing and an industry Residential Bracing Committee. The former is an official ICC-affiliated group charged with mediating the nearly 60 code changes that were submitted during the 2006-07 code-change cycle. That committee makes recommendations to the International Residential Code Building and Energy Code Committee and will continue its work on wall bracing requirements all the way to the 2012 IRC. APA Senior Engineer Ed Keith is a member.

The second group, called the IRC Bracing Committee, is an unofficial group comprised of competing product interests that was formed in an attempt to gain as much consensus as possible on a number of wall bracing issues. That group is chaired by Dr. J. Daniel Dolan, a professor of civil and environmental engineering at Washington State University. Keith and Senior Engineer Zeno Martin are members of that group.

Meanwhile, APA Technical Services Director Borjen Yeh is chair of the ASTM committee that is working to revise the standard for cyclic testing. The committee seeks to better define boundary and loading conditions so that results can be compared from laboratory to laboratory.

APA also is working with ICC to develop a wall bracing manual designed to help code officials, builders and design professionals conform to wall bracing code requirements. And APA Field Services staff continue to promote APA wall bracing designs to local code jurisdictions, which may adopt their own supplements to the International Residential Code.

The engineering design issues and code change challenges in what has been referred to as the "wall bracing wars" can seem hopelessly arcane, even to those initiated in such matters. "Yes, it's a tangled web," admits Williamson. "But we need to be involved because the stakes for our industry are very high."

Thanks to its whole house test program, APA's involvement has been elevated to a substantially higher level. ●

Jack Merry is industry communications director at APA and editor of Engineered Wood Journal. He can be reached at jack.merry@apawood.org.

For More Information

More information about APA's whole house test program, wall bracing design issues and recommendations, code development updates and related topics can be found on APA's wall bracing web site (www.wallbracing.org) and on the Association's blog for design professionals (www.apawood.org/pablog). Among other backgrounders and articles, the blog site includes "The Evolution of Lateral Load Design in Residential Construction," an overview of lateral load design developments over the past several decades. Its primary author was APA Senior Engineer Ed Keith, P.E. The Association also has published several publications on the subject of wall bracing, including Introduction to Lateral Design, Narrow Walls That Work, Introduction to Wall Bracing, and Whole House Wall Bracing. All can be downloaded free of charge from the Publications section of the APA web site at www.apawood.org.



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*Juanita Duggan,
President and CEO,
American Forest &
Paper Association*

Since I took the reins of the American Forest & Paper Association in October from my predecessor Henson Moore, we have seen some remarkable developments on the political landscape. As we were achieving long-sought major policy goals for our members and the industry as a whole—including increased natural gas exploration to reduce energy costs—Washington politics shifted dramatically on November 7 when the American people sent a Democratic majority to both houses of Congress for the first time in a dozen years.

Many of the 63 freshman members of Congress—Democrat and Republican—campaign on platforms of providing more jobs and pursuing policies that allow American companies to compete fairly in a global economy. We know that when the

Legislative Outlook

Challenges and Opportunities in the New Congress

by Juanita D. Duggan

economic playing field is level, American forest products businesses can stand toe to toe with anyone in the world. As with 1994 Congressional elections, many new members have never run for political office before, so there are fresh faces and new ideas on Capitol Hill.

Just as there were Republican members who were more receptive to our policy goals than others, so too will there be Democratic

members now in leadership who understand the industry better than others. I encourage everyone with a stake in the forest products industry to visit www.growthevote.org and examine the voting records of your state and federal legislators on our key issues. We will be competing with extremists who will attempt to advance their irrational agenda by abusing well-intentioned laws and we need to be ready to counter them with sound science and economic facts.

In addition to the ever present discussions on forest management, we will need to be prepared for continuing battles on taxation, debates on international trade, and the implementation of sound forestry practices overseas. Adverse legislation or setbacks in any one of these areas could, of course, be very costly to our industry.

At the same time, there are important opportunities that we can and will make the most of, beginning with a strong centrist body of policy makers in both houses that understands our industry's critical importance to the U.S. economy and our competitive position in global markets.

With sales of over \$230 billion annually—some six percent of all U.S. manufacturing sales—the forest products industry employs over a million people and ranks among the top 10 manufacturing employers in 42 states. As such, we are an integral and vital part of the social fabric of communities and electoral constituencies throughout this land, and we at AF&PA intend to be a loud and persuasive voice in getting our message heard in Washington.

The fact is that we have an extraordinary story to tell that appeals across the political spectrum. It is the story of an industry that combines advanced technology and innovative manufacturing practices with responsible stewardship of our precious natural resources and highly successful, proactive programs to improve the environment.

Our positive record demonstrates our ability to achieve, voluntarily and efficiently, environmental goals with programs that are sustainable and effective precisely because they take into account market forces. In other words, we are walking a path that preserves jobs as well as natural habitat—one that should serve as a model for a new Congress concerned with both.

So there are a host of opportunities as well as challenges ahead of us and we at AF&PA will be giving particular attention to the areas

where we believe we can make the difference in bringing about a positive outcome in this Congress.

Until now, the effects of forestry activities on water have long been regulated under the state-initiated best management practice (BMP) program. In fact, since AF&PA established the Sustainable Forestry Initiative program in 1995, BMP use has become commonplace.

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Now, extremists are seeking to abuse the Clean Water Act by pushing to extend to sustainable forest management operations requirements that are designed for manufacturing facilities and waste water sewer systems. In the event these requirements are imposed on forestry, they would result in an unnecessary expenditure of federal tax dollars by repeating what are already set out in the state BMP programs.

A second effort is the attempt by the Corps of Engineers to remove the statutory “normal silviculture” exemption and impose a wetland permit requirement on harvesting of cypress in Louisiana. Again, a new and burdensome permitting requirement not supported by science would be imposed on our industry where none existed before.

We will continue to promote the practice of sustainable forest management in court and work with Congress to recognize our accomplishments.

With respect to our industry's renewable energy efforts, climate-related hearings are already planned in both the House and the Senate and several legislative measures to reduce CO₂ emissions already proposed. There is no doubt that this important issue will be a focus of the 110th Congress. Our industry is well positioned in this regard and AF&PA will continue to provide the facts showing that our members stand at the forefront in addressing this challenge by already supplying 60 percent of the energy used by wood products facilities with biomass.

Derived from what were once considered waste products—slash, sawdust, pulping

liquors and other residuals—biomass energy is an environmental winner because it contributes no net new CO₂ to the atmosphere. The carbon dioxide that is released when biomass is used is the same that was captured and stored by the plant as it grew. As new tree growth will once again capture and “sequester” the CO₂, the forest-carbon cycle is universally considered a

“closed loop” with no negative impact on climate change.

Meanwhile, a new generation of technologies is being developed that will enable us to convert existing mills so that they can double as bio-refineries, producing new bio-fuels that can be substituted for liquid transportation fuels such as ethanol or diesel. Such bio-refineries will give our mills whole new product lines (in addition to their traditional ones) that will improve profitability and spur the creation of more and higher-paying jobs—while at the same time helping to relieve our nation's dependence on foreign oil and creating a new, environmentally-friendly energy resource.

Value Prior to Pulping, or “VPP,” seeks to extract components from wood before processing it in a board or pulp mill, to produce commercially valuable chemicals and fuels, including ethanol. A recent \$1.5 million matching grant, administered by CleanTech Partners of Wisconsin in partnership with the Agenda 2020 Technology Alliance, aims to make advancements in this technology that would enable a commercial-scale demonstration of VPP ethanol production within 2 years. Based on USDA and DOE estimates of the amount of biomass that could be made available on a sustainable basis for biofuel conversion, this new technology could potentially supply up to 8 billion gallons of ethanol annually.

Like the change in the political landscape, however, this “biomass future” also presents challenges as well as opportunities for our industry. Because

biomass and other renewables are such environmentally attractive energy alternatives, numerous initiatives have been adopted or proposed at the federal, state and regional levels to encourage their use. These measures can be a great boon to many in our industry, but a potential problem for others. Some initiatives—especially those designed to stimulate electric power generation from biomass—could make raw materials prices for traditional forest products rise to unaffordable levels.

We all believe that the market should drive choices. It is critical, therefore, that any federal initiatives should be designed to allow market forces to determine when and where wood and wood waste is used in the production of energy. We must be careful to avoid subsidies that divert wood-based raw materials from their most economically productive use and negatively affect local and regional economies.

In regions where biomass resources are underutilized, however, or where inadequate economic alternatives for biomass exist,

AF&PA will strongly support incentives for the use of biomass as a renewable energy resource. Where the government has allowed tax credits for renewable energy, we support the development of transparent systems and mechanisms to ensure the credits are accurately employed.

Another facet of our commitment to protecting the environment includes the health and safety of employees and the public, and the sustainable management of natural resources. Since 1990, the pulp and paper industry has spent \$4.8 billion to improve water quality and \$4.2 billion to ensure clean air. In all, the industry has invested over \$11 billion in significant environmental improvements.

In 2007, AF&PA will continue the significant progress we have made on behalf of the wood products industry with respect to the Maximum Achievable Control Technology (MACT) rules for plywood and composite wood panel mills. After years of data collection and advocacy by AF&PA, we are on the verge of seeing the creation of common sense rules that realize allowing market forces to work can also maintain a vibrant environment.

We all believe that the market should drive choices. It is critical, therefore, that any federal initiatives should be designed to allow market forces to determine when and where wood and wood waste is used in the production of energy.

As we know all too well, the building industry is today in the midst of a slow cycle and unnecessary regulations will almost certainly have the effect of shuttering many mills in small towns and wiping out the critically needed jobs they provide. Common sense and fair play need to be taken into consideration when new regulations and trade practices are put into force.

Green building with energy efficient and environmentally friendly wood products is gaining increased attention by government at local, state and federal levels. Many are considering legislation to spur its use and AF&PA is working hard to ensure the marketplace for our products is enhanced by green building initiatives.

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Right now, however, many policy makers assessing green building standards do not know all the facts about what it means to build "green." Some "green building" standards ignore the renewable nature of wood products and fail to recognize the commitment to sustainable forestry AF&PA members helped to develop. So, we are working diligently to gain widespread acceptance of the Green Globes rating system for commercial construction and the National Association of Home Builders' rating system for residential construction.

Trade issues will round out AF&PA's legislative agenda for 2007. Trade Promotion Authority, under which future international trade agreements are subject to up-or-down votes, but not amendment by Congress, is set to expire at the end of June. The reauthorization effort will be an uphill battle as we expect to see efforts by Democratic leadership to pursue more stringent labor and environmental policy objectives as part of trade agreements negotiated by the U.S.

A range of China specific bills are expected to be introduced to address China's undervalued currency, the trade deficit and other bilateral trade issues and

we will need to assess carefully which proposals would address these issues in a responsible way.

During 2007, AF&PA, through its Wood Products International group, will also continue to work cooperatively with APA—The Engineered Wood Association and other partners to ensure continued market access for U.S. wood product exports through the Foreign Agricultural Service export promotion program.

One objective will be to ensure that these programs are preserved in the Trade Title of the Farm Bill as it is renegotiated this year. We will utilize opportunities provided by global trade policy forums (World Trade Organization, Free Trade Agreement negotiations, etc.) to advance the industry's interests and ensure that markets remain open to, and thus do not discriminate against, U.S. wood products.

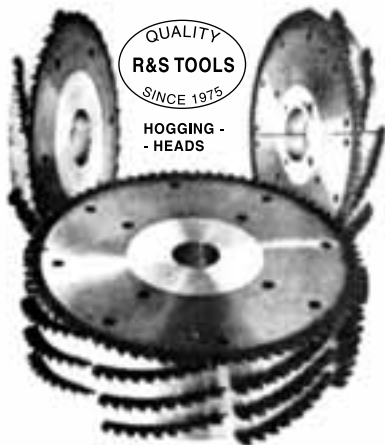
We will continue to work cooperatively to assist countries in developing new building codes and standards as well as amending codes where they are found to be restrictive so as to facilitate the use of U.S. wood products in overseas markets. In addition, foreign government and industry endorsed

trade practices need to be based on environmentally sustainable grounds and not impede fair access for U.S. companies to overseas wood markets. We will carefully prospect for new market opportunities for U.S. wood product exports through credible market research.

What does the foreseeable future hold? I believe that for us, the next few years will be familiar ground. We face potential obstacles, but in each and every case our position rests on sound science and a substantial track record. We just need to ensure that when we articulate our position, we also demonstrate our industry's commitment to conserve our country's natural resources, and our constant—and highly successful—efforts to improve the environment. ●

Juanita Duggan is president and chief executive officer of the Washington, D.C.-based American Forest & Paper Association. Prior to joining AF&PA, she was president and CEO of Wine and Spirits Wholesalers of America, Inc. She is also a former White House staff member in the administrations of George Bush and Ronald Reagan.

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What Forest
Industry
Managers
Think About
Achieving and
Measuring
Innovation

Ahead of the Pack

by Eric Hansen,
Chris Knowles and
Heikki Juslin

“One of the things I find attractive about the wood products business, it is slow moving, it is an old business and doesn’t take much to mark yourself as an innovator.”

The explanation above from a North American forest industry manager provides insight into innovativeness in the forest sector. If the industry is to remain a viable competitor with substitute materials and global rivals, innovation will be instrumental to future success.

In a recent study sponsored by Oregon State University’s College of Forestry, we

explored the concept of innovativeness through extensive interviews with forest industry managers of medium- to large-sized forest industry companies in Europe, North America, and Oceania. Thirty-five managers from 16 companies were interviewed.

A better understanding of how the industry “thinks” of innovativeness may provide managers with insight for improvement, allowing them to compare efforts to peers and better manage innovation in their own organizations. Analysis of interview transcripts allowed us to identify important themes. The primary

themes discussed below are Attributes of Innovative Companies, Hurdles to Innovation, and Measuring Innovativeness.

Attributes of Innovative Companies

Several common themes emerged from the interviews. These themes can be summarized by 1. new, 2. creating the “right” culture, 3. managing the market/customer link, 4. being a leader, and 5. a focus on the future.

New: New products, new services, new technology, etc. are associated with innovative

companies. Innovative is synonymous with creating or adopting something new.

"You just have to keep moving forward, looking for new, either new products or new ways to do things or new components or materials and combining those. So I think that's what it means to me to be an innovative company."—North America

Creating the "right" culture: An appropriate company culture and atmosphere is conducive to innovation.

"I would like to think ... that we are slightly better than the competition because we have the right mindset, that we may have understood some of the connections, some of the links and the importance of this activity slightly better or earlier than the competition. We might have been clever enough to do something to encourage people and encourage this activity."

—Europe

Managing the market/customer link:

Despite a traditional production orientation, managers claim close links to the marketplace and customers. Being closely tied to customers is seen as characteristic of an innovative company. Also, some managers are quite critical of the industry as a whole and its over-reliance on tradition and conservatism at the expense of innovation.

"To be truly innovative, you need to have a very, very good link to your customer base and you need to produce products based on real requirements."

—North America

Being a leader: Innovative companies are leaders that stay ahead of competitors and "lead the pack."

"If you are a real innovator, you're ahead of the curve. You're reading the tea leaves. You see where your markets are going and what your customers want, and where the industry is going."

—North America

A focus on the future: Innovative companies concern themselves with the future in order to position themselves well in an ever-changing operating environment.

"I need to predict, predict what's going to happen in the future, doesn't matter whether it's in marketing or production or anything and implement something before it is necessary. I'd say that is my definition of being innovative, it's getting ahead of the pack and really looking out."

—Oceania

Hurdles to Innovativeness

Culture at the company and industry level can pose hurdles to innovation. Each of the three identified themes contains aspects of culture: 1) tradition/production orientation, 2) culture—resistance to change, and 3) ideas from market to innovation.

Tradition/production orientation:

Production-oriented companies maintain significant decision-making authority at the manufacturing level. A shift to enhanced market orientation, focusing on customers and competitors while integrating information to all parts of the organization, requires significant culture change. Managers are highly customer oriented in their vocabulary, often referring to efforts to shed a production orientation and focus on customers, but also expressing frustration with failures to shed a production mentality. A focus on production metrics makes it difficult for an organization to move away from a production orientation.

Given the complex and contingent nature of innovation, we cannot hope to prescribe cookie-cutter solutions for forest industry companies. There are general points, however, that can be made. As the old adage goes, "You can't manage what you don't measure."

"In the plywood industry we have stopped thinking of yield in the sales and marketing or in the management already 10 years ago or 15 years ago and that has meant we have moved closer to other industries."—Europe

However, not all managers focus on a market orientation, but set their sights squarely on process efficiency.

"The nature of the business is so that if we can utilize, for example, raw material more efficient than we do today, the income is much better and faster than by trying to develop new products and find new markets for new products."—Europe

Culture—resistance to change:

Culture at the overall manufacturing sector, individual company, and the marketplace levels can enhance or impede innovation. For example:

"... this culture is incredibly conservative in this industry, so very resistant to change."—North America

Some feel that forest industry management is not sufficiently diverse in background and generally lacks sufficient training in new product development and innovation management.

"I think a lot of the problem also comes from the fact that they haven't hired from outside, they keep promoting from within."—North America

Ultimately, a critical component of culture is how employees see their role in innovativeness.

"I think this whole innovation thing or being innovative or not is something that people consider a bit apart from their everyday work or everyday duties and this is, of course, not the idea."—Europe

Resistance to change is not limited to internal company operations. The marketplace can also resist attempts to introduce innovations resulting from inadequate knowledge by key specifiers, conservatism from customers, or the bureaucracy of industry standards.

"People are slow to adopt in this industry, lot of times it is a hand-me-down business, my daddy did it this way, my

granddaddy did it that way, he built with 2x's and I am going to build with 2x's, this is the way to go."—North America

Ideas from market to innovation:

Forest industry companies traditionally sold products via an extensive channel of distribution and paid little attention to the remainder of the value chain. This tends to create a disconnect in the flow of innovative ideas from consumer to manufacturer. Managers express frustration regarding the difficulty of moving ideas from the marketplace into company innovation processes.

"We don't have too much understanding of the real processes of our customers and their customers."—Europe

Measuring Innovativeness

Measuring innovativeness is not a topic with which most interviewed managers are intimately familiar. Return on investment or profitability, percentage of sales represented by new products, levels of investment required for a given innovation, market share over time, success in commercialization of products, number of patents received, and time to market are all methods highlighted by

managers. This does not imply, however, that these companies actively measure these items. Rather, managers were identifying possible measures of innovativeness.

For most companies there are no significant efforts targeting increased innovativeness as such. However, managers typically do not make a connection between the question that was asked regarding “increasing innovativeness” and many of their ongoing efficiency efforts, or incremental improvements.

Some managers expound on moves made in their companies to adapt to changing market realities or to better facilitate innovativeness. Moving toward a higher level of market orientation is common. Several companies have shifted responsibility for research and development to the marketing function in an effort to make product development more customer-focused.

“This was a totally commodity-based company. So it needed a completely different strategy. It needed a new business model. It needed a totally new infrastructure.”—North America

One way of attempting to mold culture is through altering organizational structure.

“One of our strategies has been that all new persons coming to the company are coming to the R&D department to get that sort of R&D mind and then the next step is to go to market or production to learn real-life things as well.”—Europe

Thoughts on Enhancing Organizational Innovativeness

Innovation and innovativeness have been studied extensively during the last century. The process of innovation is so complex that the knowledge base is often contradictory and difficult for managers to draw from. Innovation processes have been described as “contingent.” In other words, successful innovation depends on a variety of factors.

Given the complex and contingent nature of innovation, we cannot hope to prescribe cookie-cutter solutions for forest industry companies. There are general points, however, that can be made. As the old adage goes, “You can’t manage what you don’t measure.”

None of our firms could be described as implementing a broad innovation management process with a holistic set of metrics. Instead, what exists in most forest industry companies is a focus on process efficiency with corresponding efficiency

metrics. Ask a North American sawmill manager how he or she is evaluated, and overrun will be high on the list, even though the highest overrun may not result in optimal profitability.

Companies should begin to develop a holistic approach to innovation management that incorporates a broad set of metrics that cover areas beyond process efficiency. We do not discount the importance of process innovation. Rather, we consider it to be a necessary but insufficient element to maintaining competitiveness.

Active Innovation Management: Often, managers did not mention innovative activities within their firms that we knew of independently. While this may have been a result of limited time and memory, another likely explanation is that innovation or innovativeness has not been adequately defined by their companies. As a result, innovation may be perceived differently even within the top management team.

This suggests that part of any attempt to develop innovation management within a firm should start by defining innovation and then moving towards a plan for managing that innovation, including a strong set of metrics. An example definition is: “Innovation is creation and/or adoption of new processes, products/services, or business systems intended to increase value to our customers and thereby improve our performance.”

With the right leadership and a common understanding of innovativeness, an innovative culture can be developed. Developing and maintaining an appropriate company culture is at the heart of establishing an innovative organization. Developing a market-facing culture that is proactively creative is an immense challenge. This is especially true of a company that has a long history of focusing on production and process efficiency.

Making the change requires a significant shake up of culture. When power changes hands in an organization it can be a painful process. Some individuals will be unable to buy in and make the changes necessary to facilitate enhanced innovativeness. Therefore, a change in culture may require removing some individuals that are especially resistant to change.

Some companies that participated in this research employed managers from diverse backgrounds. For example, marketing managers may have come from automotive, chemical and software industries. While

diverse backgrounds can enhance innovativeness, companies must mold their culture carefully, or suffer negative consequences. Attempting to change too quickly can derail efforts. It is important to remember that communication is the key aspect to successfully implementing a change in culture. Employees are more likely to buy into a change in culture when they are informed of why and how the organization is changing.

An Appropriate Business Structure: In recent work on the forest industry, Korhonen¹ outlined the challenge of maintaining the dual purposes of exploitation and exploration. Exploitation is akin to increased efficiency while exploration refers to finding or creating new approaches and new capabilities (e.g., new products).

These concepts are essentially the same as incremental and radical innovation, respectively. Firms successful in simultaneously pursuing exploration and exploitation have become known as ambidextrous organizations². The main mechanism for this is structural separation of “exploitation” units that are still integrated into the management hierarchy². In other words, a top manager is responsible for both ongoing operations in a particular area as well as an emerging business.

Organizational Learning: Learning and knowledge management are strongly associated with successful innovation. Exploration includes activities such as experimentation, trial and free discovery. Success in this area is built upon acquiring new knowledge and creating new capabilities. Exploitation is associated with efficiency, implementation, and focused attention. Successful exploitation is built upon sharing and utilization of knowledge that already exists to entrench existing capabilities¹. Acquiring, sharing, and effectively utilizing knowledge across the firm is closely tied to communication and networking, a topic discussed below.

Communication and Networking: A strong ability to interact with external partners as well as effective inter-company networking is critical for enhancing innovativeness. In past research at OSU we

1 Korhonen, S. 2006. A Capability-Based View on Organizational Renewal: Maintaining Long- and Short-Term Potential for Growth in Large, Established Companies. *Journal of Forest Products Business Research*. 3(3):21.

2 O'Reilly, C.A., III and M.L. Tushman. 2004. The ambidextrous organization. *Harvard Business Review*. 82(4):74-81.

found that forest industry companies rely extensively on their customers and machinery manufacturers for innovative ideas. Also, as firms become ever larger, this principle is equally applicable within firms. For example, we found nearly no consistent, planned interaction between R&D operations on the solid wood and pulp and paper sides of large, integrated companies. This is an area where large, integrated firms should capitalize. All employees should be given opportunities to meet with customers, machinery manufacturers, suppliers and

For employees to support organizational innovativeness, they must understand what it means in the context of their own operations, and more specifically, in their own jobs. Managers must provide the vision and a plan for innovation management in order to improve innovativeness and, ultimately, competitiveness.

other business units. These meetings will not only facilitate communication and networking, they could also result in new or improved products, manufacturing or business systems.

Conclusions

Although managers often referred to market orientation during the interviews, there is clearly more progress to be made in this area. For example, being market driven is not enough. Driving markets will be needed for future success. Companies must strive to find and create their own future.

It is important to recognize that everything starts with leadership and culture. As one of our interviewees stated,

"There is also a very strong 'shoot the messenger' mentality in the industry where people are terminated if a project doesn't go well....who in their right mind would want to lead innovation in an environment where your first misstep is your last?"

This sort of culture clearly does not support innovativeness. Innovativeness requires buy-in from all employees.

For employees to support organizational innovativeness, they must understand what it means in the context of their own operations, and more specifically, in their own jobs. Managers must provide the vision and a plan for innovation management in order to improve innovativeness and, ultimately, competitiveness.

We see innovation management as an opportunity for the industry, yet there is still much to be learned about practical implementation. Accordingly, we are planning a project to investigate current industry practices. Please contact Eric Hansen if your company wishes to participate. ●

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STAYING IN CONTROL

Improving Flake Blending and Mat Forming in Older OSB Mills

by Sergei Kuznetsov

OSB manufacturing technology has changed significantly since the first commercial plants were constructed in the late 1970s. Advances in process technology and control systems have helped new mills manufacture quality products with greater efficiency.

However, older mills—ones built in the 1970s and 1980s—often lag their newer counterparts in embracing more automated operations. Control algorithms developed for newer mills don't work well in older mills, sometimes simply because of large transport delays that result from using lengthy conveyors connecting process equipment spread over mostly flat plant floor layout.

The problem is especially pronounced in the blending and mat forming areas, which are the key areas affecting product quality and consistency. It is not uncommon to see operators of an older mill trying to manually control wood flow into blenders and maintain desired levels in forming bins. Operators have dozens of other activities requiring their attention and sometimes don't notice a problem with a forming bin level on manual control until too late. This results in having to shut down some equipment or the whole forming line.

It is obvious that the task of controlling flows and levels should be handled by the control system. A conventional PID (proportional-integral-derivative) feedback controller will not work well in applications with long process deadtimes. Good control can be accomplished, even in

older mills, by employing the Smith Predictor control algorithm to address processes with significant transport delays or deadtimes.

Addressing Deadtime

New mills solve the problem of controlling forming bin level by employing PID-based controllers. One configuration uses a PID level controller to directly manipulate the corresponding dry wood bin live bottom conveyor speed. Another configuration cascades the PID level controller to a PID conveyor speed controller that controls the dry wood flow. The cascaded loop provides a more constant wood flow rate at the blender inlet and thus improves the blending process.

The deadtime associated with the conveyors of an older mill reaches five minutes in some extreme cases and prevents this simple control strategy from working properly or at all.

Process Area	Sensor (Process Variable)	Actuator (Manipulated Variable)	Typical Deadline
Blending wood flow	Weight scale graduated in lbs per hour	Dry wood bin live bottom conveyor speed	30 to 150 seconds
Forming bin level	Forming bin level transmitter	Blending wood flow controller setpoint	60 to 150 seconds

Deadtime is the result of material (flakes) being transported from the site of the actuator to another location where the sensor takes its reading. The sensor detects changes caused by the actuator only after the material has traveled all the way from the actuator to the sensor. The table nearby shows sensors, actuators, and deadtimes for both loops at a typical old mill.

If the process deadtime is ignored, then a wood flow controller will receive actual flow rate and adjust the corresponding dry wood live bottom speed. However, it will take time for the requested amount of material to reach the weigh scale. In the meantime, the controller will determine that the last correction was not enough and will request increasingly larger corrections until the weigh scale finally “sees” the change. By that time the controller will have overcorrected for the original error and it then begins reversing its corrections. This results in instability and often causes oscillations.

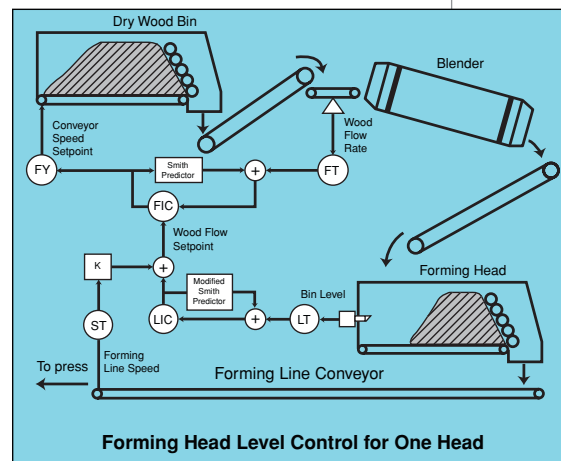
One way to eliminate the oscillation is to detune the controller, which slows its response down. Large deadtimes present at older mills require serious detuning to the point where the controller is not able to provide quality setpoint control.

This problem can be solved by the use of a control algorithm called the “Smith Predictor.” It was proposed in 1957 by O.J.M. Smith of the University of California at Berkeley. This famous algorithm is widely used in refineries to control gas composition being measured by on-line chromatographs with deadtime measured in minutes, on rolling mills to control sheet thickness, and in other applications where material is being transported from the site of the actuator to another location where the sensor takes its reading.

The Smith Predictor uses a process model to calculate predicted process change in response to a control action as if there is no deadtime. This change is added to the PID process variable so the controller is made to “believe” that the corrective action actually took effect immediately, and thus will not take additional action. With such a

modification the PID controller can be aggressively tuned so it can provide good control of its process variable.

Since a cascaded level/flow controller offers more benefits for the mill, only this option is considered in this article.



Blending Wood Flow Control

Dry wood flow entering a blender originates in the corresponding dry wood bin with a “live bottom” conveyor driven by a variable speed drive (the actuator). The drive speed is adjusted to control the amount of wood flakes discharged from the bin. The

time it takes the material to travel from a dry wood bin discharge to the blender inlet could vary from several seconds to as much as 150 seconds in some extreme cases. Dry wood flow, as measured by a weigh scale graduated in flow units (lbs per hour, for example) positioned before the blender inlet, is used as a reference for resin and wax injection in the blender.

Wood flow can experience significant deviations due to irregularities in the wood pile shape inside the bin. Some mills have more than one bin feeding a particular conveyor. When operators switch bins around they introduce additional disturbances into the process. While operators do their best to keep wood flow as steady as possible, a PID controller, equipped with the Smith Predictor described earlier, can be aggressively tuned to provide very good automatic control.

Such a control strategy has been implemented on three OSB production lines with positive results. Dry wood flow controllers are now in automatic mode most of the time. Operators, who no longer need to manually adjust the live bottom speed of several dry wood bins, are able to dedicate more time to other tasks. Steadier wood flow helps maintain the proper ratio between wood and wax/resin in the blender.

Forming Bin Level Control

Maintaining material in a forming bin at the desired level has been notoriously difficult in older OSB mills. Regardless of who is in charge of this control—the operator or an automatic controller—level in forming bins often wanders out of the desired range. The reason is the presence of a large deadtime caused by long conveyors and blender retention time.

These swings present a serious problem for the mill. If level in one of the bins is too low, then the forming line has to be shut down. If the level is too high then the corresponding feeding conveyor chain has to be stopped and the blender put in high speed mode to keep flakes inside. Unstable forming bin level may affect mat weight consistency and thus increase board weight variation.

Developing an automatic controller for forming bin levels thus offers an opportunity to significantly improve operation of this process area.

A PID-based level controller coupled with Smith Predictor can be used to solve this problem as well. In this case the actuator is the flow controller setpoint. The sensor is the forming bin level transmitter. A change in the flow setpoint will lead to a change in the level value. The model used in the Smith Predictor accounts for the deadtime so that the PID loop can be tuned aggressively and provide tight control of the level in the forming bins.

The level controller thus becomes the "master" that calculates the needed wood flow setpoint for the "slave" blending wood flow controller. When a forming bin level gets too high, the master sends a lower flow setpoint to the flow controller. If the level gets too high, flow setpoint is reduced. Both slave and master have their respective process deadtimes compensated by the Smith Predictor algorithm, so the cascaded pair works almost as if there is no deadtime at all. Of course, an analog level measurement needs to be available for the PID-based algorithm to work properly. Laser level

meters have proven to be very effective in this application.

While use of the Smith Predictor to address transport delay problems is quite common, it is complicated in this case of the forming bin level due to the integrating nature of the controller process. What that means is that if the incoming wood flow rate is changed from the rate required to maintain constant level, the level in the bin does not settle at a new value but instead starts to drift until it eventually reaches one of the limits. A number of modifications of a basic Smith Predictor have been proposed since 1994 for controlling non-self-regulating processes with large deadtime.

Conclusion

The system allows two modes of operation—manual bin level control (flow mode) wherein the operator adjusts the wood flow controller setpoint to maintain the desired bin level, or automatic bin level control (level mode) wherein the forming bin level controller is cascaded to the wood flow controller.

Using the system in flow mode stabilizes wood flow and thus improves blending

operation and simplifies the operator's task of manually maintaining the level in the forming bins. Some configurations can produce flow swings which cause plug-ups and line stoppages. The frequency of these events is reduced with a more stable wood flow.

However, the greatest benefits are received when the system operates in the fully automatic level mode. In that mode the system maintains the level in the forming bins within 5 percent of the setpoint, which helps to improve forming line mat consistency. This mode also dramatically reduces frequency of equipment shutdowns due to inadvertent overflowing or emptying of the forming bins. Overall line down time is reduced and the amount of off-spec is minimized. ●

Sergei Kuznetsov is a principal control systems engineer at TAG (The Automation Group, LLC, www.tagsite.com), a Houston-based provider of control system design services. He is located in Minnesota and can be contacted at 612-643-2508 or by email at sergei.kuznetsov@tagsite.com.

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MAY

- 3-5 American Institute of Architects Convention and Trade Show, San Antonio, Texas, www.iaaiaconvention.com.
- 6-8 Structural Insulated Panel Association annual meeting, Arlington, Virginia, 253-858-7472, www.sips.org.
- 7-9 International Wood Machining Seminar, Vancouver, British Columbia, 604-224-3221, www.iwms18.ca.
- 8-10 Forest Leadership Conference, Vancouver, British Columbia, 514-274-4344, www.forestleadership.com.
- 10 20th Anniversary Global Forest and Paper Industry Conference, Vancouver, British Columbia, 604-806-7090, www.pwc.com/forestconf07.
- 21-23 Forest Products Society 9th International Conference on Wood & Biofiber Plastic Composites, Madison, Wisconsin, 608-231-1361, ext. 208, www.forestprod.org.

JUNE

- 10-13 Forest Products Society 61st International Convention, Knoxville, Tennessee, 608-231-1361, ext. 208, www.forestprod.org.
- 13-15 Forest Products Society 2007 International Conference on Nanotechnology for the Forest Products Industry, Knoxville, Tennessee, 608-231-1361, ext. 208, www.forestprod.org.
- 20-22 Construction Specifications Institute Show, Baltimore, Maryland, www.csinet.org.
- 21 Engineered Wood Technology Association Employee Recruitment and Retention seminar, Atlanta, Georgia, 253-620-7237, www.engineeredwood.org.
- 21-23 Southern Forest Products Association EXPO 2007, Atlanta, Georgia, 504-443-4464, ext. 214, www.sfpexpo.com.

SEPTEMBER

- 10-12 15th International Nondestructive Testing of Wood Symposium, Duluth, Minn., 218-720-4248, www.nrri.umn.edu.
- 29-Oct. 2 Southern Forest Products Association annual meeting, Charleston, South Carolina, 504-443-4464 ext. 225, www.sfp.org.

OCTOBER

- 4-6 National Lumber & Building Material Dealers Association industry summit, Las Vegas, Nevada, www.dealer.org.
- 15-17 Forest Products Transport Symposium, Mobile Bay, Alabama, www.transportsymposium.com.

NOVEMBER

- 7-9 Greenbuild International Conference and Expo, Los Angeles, California, www.greenbuildexpo.org.
- 10-13 APA—The Engineered Wood Association annual meeting and Info Fair supplier exhibition, Indian Wells, California, 253-620-7429, www.apawood.org.
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Global Warming Goes to Court

by Iain Murray

The Supreme Court, by agreeing to hear a case on whether the Environmental Protection Agency (EPA) must take steps to reduce carbon dioxide emissions, will finally judge on the alleged threat of global warming. The stakes are huge. Should the Court find in favor of the plaintiffs, it would put the EPA in control of the U.S. economy for the foreseeable future.



Iain Murray

The modern global economy is powered by hydrocarbons—oil, natural gas and coal. Burning these fuels releases the energy we need to light our homes, heat and cool our offices, and get us from place to place. But the process also releases a byproduct called carbon dioxide (CO₂). We have known for well over a century that, all other things being equal, more carbon dioxide in the atmosphere will warm the atmosphere as it absorbs energy up to a certain point. In recent years, with the atmosphere warming since the 1970s, scientists have connected the warming trend to the amount of carbon dioxide in the atmosphere. This is the phenomenon of global warming.

The case arose when a group of activist state attorneys general (AGs) petitioned the Environmental Protection Agency to make rules to control emissions of carbon dioxide. When the agency determined that it had no power to do so, the AGs and several environmental pressure groups sued, claiming, “The Clean Air Act requires the EPA to take certain actions when it determines that a pollutant may ‘cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.’”

Their petition was turned down on a 2-1 verdict by the D.C. Circuit Court in July 2005. However, the verdict was a curious one, with the majority issuing two separate opinions that dwelt mostly on the merits of global warming science while ignoring the central question of the case—whether or not the EPA has the power to regulate carbon dioxide as a pollutant. (By contrast, the dissenting judge wrote a strong opinion that signified a serious disagreement over the scientific case and also addressed the central issue.)

The Supreme Court’s agreeing to hear the case underscores its importance to the American economy. Regulation would directly affect 70 percent of the electricity sector and 98 percent of the transportation sector—with repercussions throughout the entire economy as those sectors are forced to raise costs to comply with new regulations. Had the Court not agreed to hear the case, the plaintiffs would surely seek out other judicial avenues to force the EPA to regulate. By agreeing to hear the case, the Supreme Court has at least signaled that there will be an end to the uncertainty soon. Businesses around the U.S. will be grateful for that.

It is hard to overstate the effect on the U.S. economy if the Court were to find in the petitioners’ favor. The EPA would be forced to set acceptable carbon dioxide levels nationwide along the lines of the National Ambient Air Quality Standards program, which currently sets such standards at the state level. By enforcing compliance nationwide, the EPA would have to set controls on all those activities that produce carbon dioxide, most notably electricity generation and transportation.

In effect, the Supreme Court would be enacting the Kyoto Protocol, which limits greenhouse gas emissions, and has never been ratified by the Senate. Yet the EPA could well find itself compelled to impose stricter limits than Kyoto. Even the Protocol’s

supporters admit it will do little to reduce global warming (averting at most 0.7 degrees Celsius of warming by 2050). Yet the cost of Kyoto alone to the economy could be around \$150 billion annually. Stricter emissions controls designed to avert more warming would cost far more.

There is another problem. Carbon dioxide is “well mixed” in the atmosphere, meaning that other countries’ emissions affect the atmosphere over the United States. If other countries, such as fast-growing China and India, continue to emit large amounts of CO₂, the entire U.S. could be in violation of the new standards even if emissions were reduced to zero.

Ironically, Congress has repeatedly considered and rejected controls on greenhouse gas emissions. For the Supreme Court to rule that Congress intended to control such emissions when it passed the Clean Air Act would require judicial activism of the highest order. For the sake of the economy and out of respect for the Legislative Branch, the Court should reject this petition. ●

Iain Murray is a senior fellow at the Competitive Enterprise Institute (www.cei.org), a Washington, D.C. nonprofit public policy organization dedicated to the principles of free enterprise and limited government. He can be reached at imurray@cei.org.

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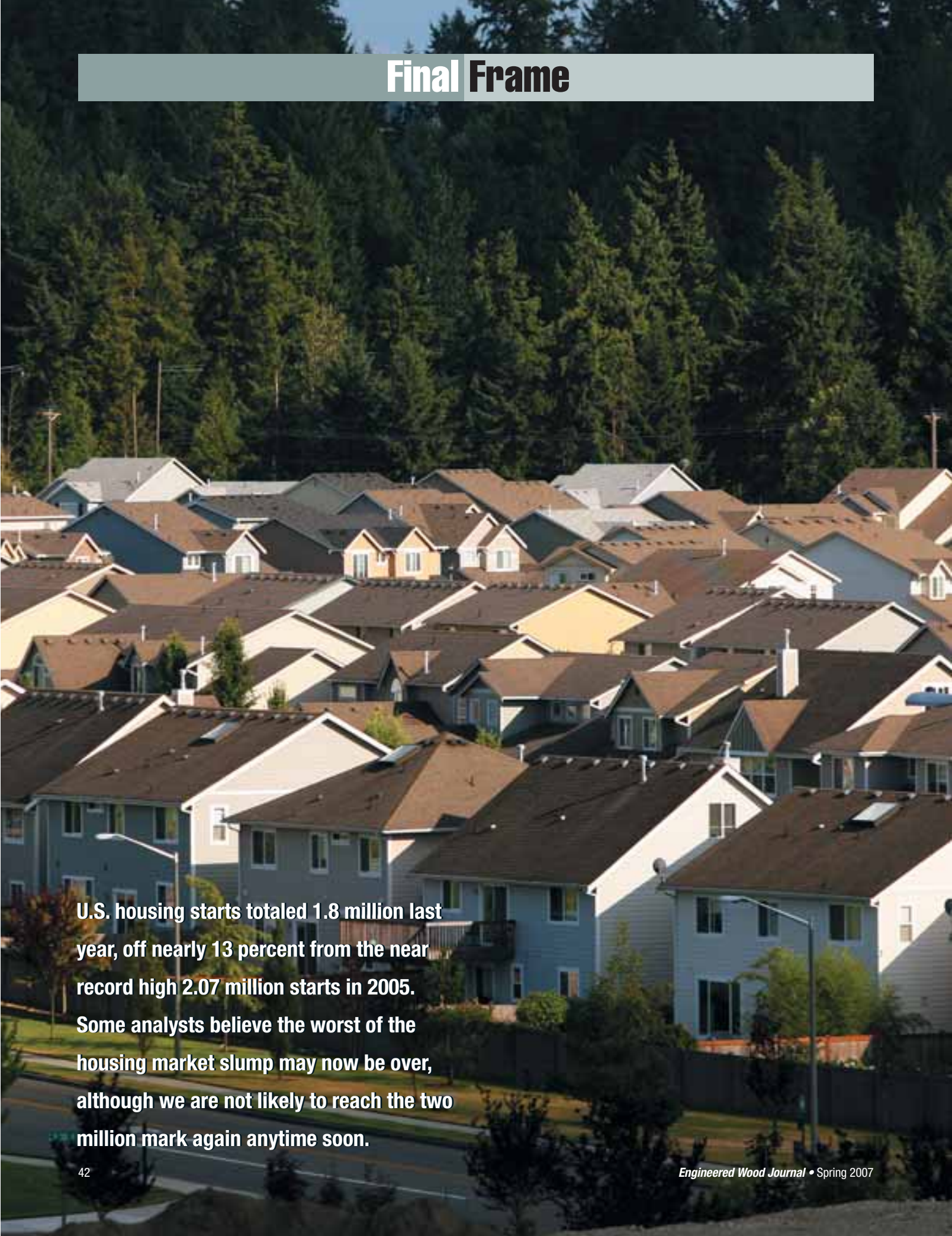


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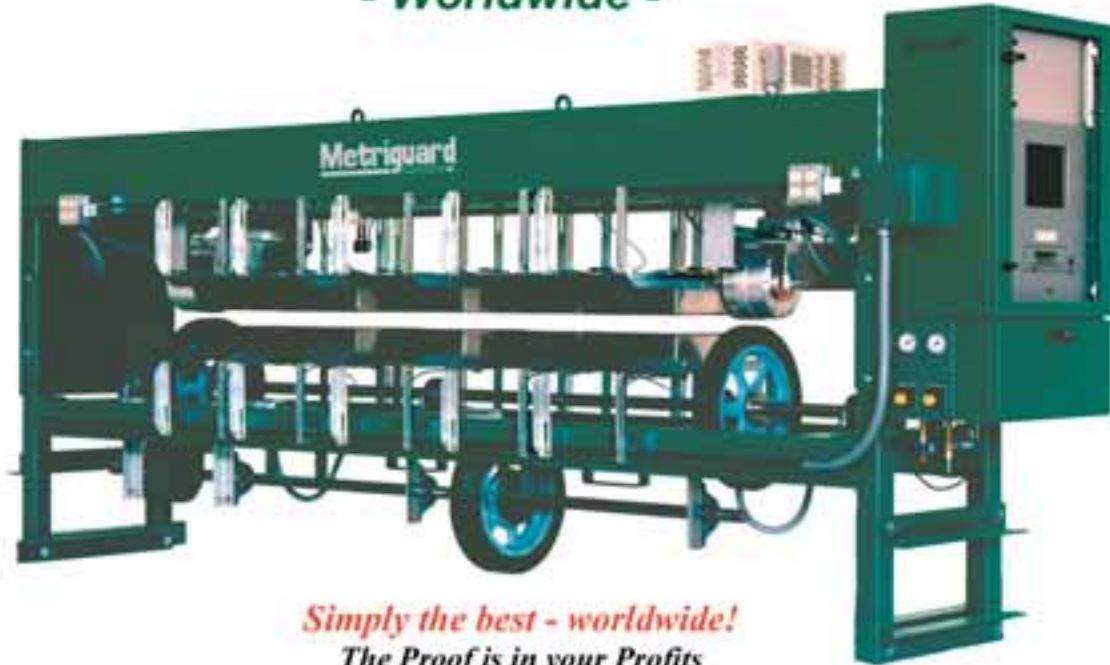


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