



# Oregon Wood Innovation Center

Connecting People, Ideas, and Resources

# Annual Report 2007



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OWIC Director



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**OWIC has a broad array of resources for research, outreach and technical assistance:**

Anatomy and wood quality

Biodeterioration, wood protection and product durability

Wood chemistry

Nanotechnology

Composite materials

Computer-aided manufacturing

Wood drying

Timber engineering and structural design

Forest products business and marketing

Environmental impacts of wood products

Other facilities

For more information, please visit our website, <http://owic.oregonstate.edu>

## What is OWIC?

The Oregon Wood Innovation Center (OWIC) was established in December 2005. Its mission is to improve the competitiveness of Oregon's wood products industry by fostering innovation in products, processes, and business systems.

OWIC links university-based research with the needs and opportunities of Oregon's forest industry. Scott Leavengood, a Wood Products Extension faculty member with Oregon State University since 1994, serves as director and Chris Knowles as Research Assistant. OWIC is housed in the College of Forestry at OSU.

## 2007 Challenges and Opportunities

During our first two years, we have visited with dozens of companies and community groups around the state, met with numerous entrepreneurs, and spoken with key leaders in Oregon's forest industry. On the basis of these conversations, we have identified the major challenges to and opportunities in the state's forestry sector that will guide our efforts in the short to intermediate term:

- **the need to embrace innovation in its broadest forms**—The forest industry has a long record of successfully reducing costs and improving yields through developing and adopting process innovations, such as scanning and optimization systems. Cost reduction and yield optimization will always be important; however, adding an emphasis on product innovation and business systems innovations can help to create and maintain competitive advantage.
- **fostering connections**—We are continually reminded of the need for better connections in Oregon's forest industry. For example, we often hear about the lack of markets for lesser-known species (such as many hardwoods and western juniper), large logs, small logs, and biomass. At the same time, we hear from entrepreneurs about their challenges in establishing or growing a business that result from uncertainties with raw material supply. Fostering connections between various links in the forest industry value chain can help new businesses to develop and existing businesses to expand.
- **utilizing biomass in biofuels and biobased products**—Biomass has been described as the 'triple win' for Oregon, based on its potential to improve forest health, improve the economy of rural areas, and provide renewable energy. We are working to make entrepreneurs and decision makers aware of existing markets for woody biomass in Oregon and the greatest opportunities for developing a new industry built on existing infrastructure and capabilities.
- **green building and sustainability**—Oregon is well known as a hotspot for sustainability and has a strong forest industry. In fact, Oregon has long led the nation in softwood lumber and panel production. OWIC is actively working to develop opportunities for synergy between green building and the forest industry and to thereby enhance demand for Oregon products.
- **workforce development**—The decline in forest sector employment in Oregon has been widely publicized; less well publicized is the current and future need for skilled employees arising from retirements and changing skill needs. Our efforts in this area are targeted to helping link Oregon firms with our students.

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We continue to devote significant effort to fostering connections, both face-to-face and web-based, within Oregon's forest industry. Other activities include updating our assessment of the educational needs of the industry, developing and delivering educational materials and programs, and providing technical assistance to existing firms and entrepreneurs.

## Fostering Connections

### Face-to-face

The Oregon Wood Innovation Center hosted several visitors to campus, including industry managers from four forest products companies, a group of World Forestry Center members, faculty from the Manado State University in Indonesia, and faculty from the University of Oregon's School of Architecture. These visits include faculty presentations providing an overview of specific research programs, a tour of our facilities, and a dialogue to seek opportunities for collaborative research and development projects. The visits have resulted in several collaborative projects, and discussions are in progress for several more.

In addition, OWIC staff spent a significant amount of time on the road in 2007, visiting 22 Oregon wood products firms and giving over a dozen presentations in locations from Baker City to Coos Bay.

### Web-based

The most frequent requests we receive are for assistance with "market connections" and networking. We have taken several steps to make resources available on the World-Wide Web that address these needs.

### Oregon Forest Industry Directory

The directory is a joint effort with the Oregon Small Woodlands Association. With over 1600 listings, it is the most up-to-date and comprehensive listing of Oregon's forestry sector and provides details on wood species used, products produced and purchased, log-buying preferences, services provided, equipment used, and residues available. It also features a classified ads section. Website hits increased dramatically this year—from

380,000 in 2006 to nearly 1.2 million in 2007.

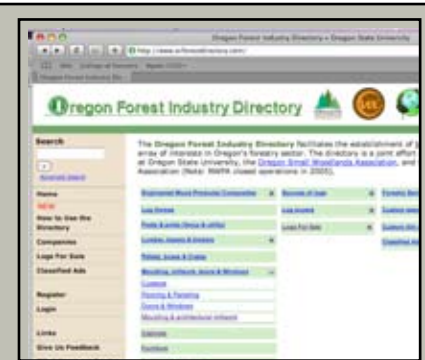
### E-communities

Our web-based discussion forums serve as "communities of practice" on topics such as the use of Statistical Process Control (SPC) in the wood products industry, independent sawmill operation, lumber grading for small mill operators, and woody biomass utilization. In 2007, we added forums on formaldehyde regulations and green building.

The forums provide a means for community members to search the archives for answers to common questions, post questions and answers, and simply interact with others in the industry. Although postings to the forums have been limited, the readership is quite high. For example, a posting on resources related to lumber grading has been viewed nearly 1500 times.

### Job Board

In 2007, a web-based job board system was created to connect employers with OSU students. The system allows employers to post available positions and our students to view the positions on a password-protected website. The physical job board has been in place for many years, and we continue to use this board. This is the first time, however, that we have posted positions on our Intranet. Within a short time of the announcement of the availability of the site, more than 40 positions were posted—30 permanent positions and 10 internships. To post a position for your company, visit <http://owic.oregonstate.edu/jobs/form.php>.



### User comments demonstrate the impact of the directory:

*This directory has served us so well I cannot even to begin to explain all the contacts we have received. For example, private landowners wanting to log their hardwood forest in our area (three sales)... For log procurement this has been a great thing.*

*I've been listed in the directory for quite some time now and have experienced at least a 15% increase in business due to the directory. I have picked up numerous contracts/sales that I would not have received had I not been listed with the directory.*

*As a furniture and cabinetmaker in Eugene, I want sources of local products and to be listed as a user of those materials. This company used the web-based feedback form to report that the directory helped them find both customers and suppliers.*

*I received a 'hit' today on my listing. [The person] noticed that I had some Oregon white oak and is interested in as many as 3 log truck loads. He is willing to pay \$400 per thousand and he will pick them up on the landing plus pay the haul. Also, he has customers for good clear noble fir lumber for use in musical instrument sound boards.*

**Visit the Oregon Forest Industry Directory at <http://www.orforestdirectory.com>**

## Educational Needs Assessment

The last comprehensive assessment of the educational needs of Oregon forest products firms was conducted in 1995. In 2007, we updated that assessment by sending questionnaires to over 1500 Oregon firms. We received responses from 288 companies. Not surprisingly, educational needs varied by company size.

What will we do with this information? These results will be used in several ways, including a series of short publications and web-based presentations to address some of the highest needs, such as identifying new markets and competitive positioning. Of course, we are also using the information to guide the development of new educational workshops.

| EMPLOYEES | TOP EDUCATIONAL NEEDS OF OREGON FOREST PRODUCTS FIRMS                      |
|-----------|--|
| 1-9       | Identifying new markets, product pricing, and product promotion            |
| 10-19     | Identifying new markets, competitive positioning, and motivating employees |
| 20-99     | Competitive positioning, lean manufacturing, and strategic marketing       |
| 100+      | Understanding EPA/DEQ regulations, safety, and identifying new markets.    |

## Educational Materials & Programs

Stakeholders ask that OWIC serve as a “one-stop shop” for innovation resources. To meet this request, we developed communication tools such as our website, newsletter, and educational workshops.

### Communication Tools

The OWIC website provides information for entrepreneurs; tools to foster networking, as discussed above; technical data on Oregon wood species; an “ask the expert” function; FAQ’s; publications; and more.

In 2007, the site registered over 1 million hits, a 75% increase over 2006. Furthermore, more than 40,000 copies of publications were downloaded this year. The most popular topics were related to wood drying/wood stability, operations research, and statistical process control. Over 230 questions have been posted to our *Ask the Expert* on a wide range of topics, such as wood drying, oak species for barrel staves, laws on timber theft, and even carbon dating of fossilized wood.

Our monthly electronic newsletter includes articles on hot topics, a listing of upcoming events, and a synopsis of ongoing research. In the second year, the number of subscribers increased from 600 to nearly 1000.



### Educational Workshops

Wood Science & Engineering faculty offered nine Continuing Education conferences for nearly 400 participants this year. These sessions included

- Lumber Quality Control
- Lumber Quality Leadership
- Selling Forest Products
- Forest Products Management Development
- How to Dry Lumber for Quality and Profit
- Architectural Design with Wood
- OSB Fundamentals

and two new courses:

- California’s New Formaldehyde Regulations: Impact on Wood Products Manufacturers (with the Forest Products Society, Willamette Valley Chapter)
- Forest Biomass Utilization—an in-service session for OSU Extension Forestry faculty and volunteers



Several entrepreneurs approached us with innovative ideas for new products and processes. The technical assistance we provided can be broadly categorized as mechanical and physical properties testing and market assessments.

### ***Mechanical and Physical Properties Testing***

Projects were conducted for three firms this year. One project, for example, included evaluation of mechanical and physical properties of hybrid poplar. Test data on poplar have been used to develop a 'spec sheet' for the species used in the company's market development efforts.

### ***Market Assessments***

One market assessment was conducted in 2007. The assessment evaluated acceptance of plantation-grown black walnut by hardwood plywood industry professionals. The sponsor company stated,

**We have used your report internally, in order to show investors and potential investors that plantation-grown black walnut can be as desirable as wild black walnut. This is an important issue for us, since our business consists of growing black walnut in clonal plantings.**

We also produced the report *Woody Biomass in Oregon—Current Uses, Barriers and Opportunities for Increased Utilization, and Research Needs*. This report was created to help Oregon decision makers understand research needs. It provides an overview of Oregon's current primary forest products manufacturing industry, estimates of regional biomass supply, a review of recent reports related to use of woody biomass for biofuels and bio-based products, and interviews with private landowners and forest industry personnel. The report was funded jointly by the Oregon Economic and Community Development Department (OECD) and the Oregon University System (OUS) and is available at <http://owic.oregonstate.edu/biomass.php>.

### ***Here's what subscribers are saying:***

*"Please keep up the good work with the newsletter. The content is interesting and useful."*

*"Thanks for the excellent newsletter!"*

*"Just to say thank you and that I appreciate this newsletter, as our micro-mill shares most of the same interests and problems as other Oregon companies."*



## Recent Discoveries

OSU research resulted in several discoveries related to the management of innovation in the forest products industry.

### **Industry Managers' Views of Innovativeness**

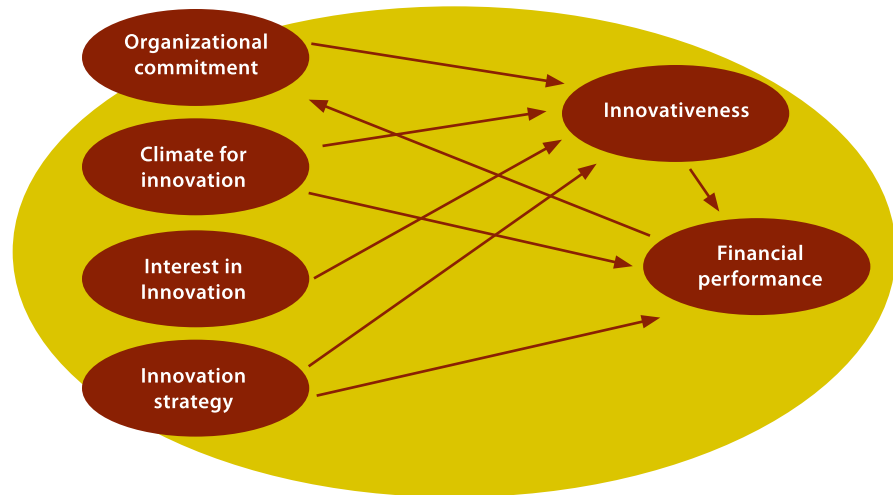
This work explored the concept of innovativeness from the perspective of forest industry managers. Managers consistently described five aspects of what it means to be an innovative company: fostering newness, creating the "right" culture, managing the market/customer link, being a leader, and focusing on the future. Managers identified new or improved products, processes, and business systems as areas where a firm can be innovative. Based on these findings, we suggest that firms have significant opportunities to increase innovativeness and thereby enhance competitiveness. A summary of this work is available in a series of publications on our website under Current Activities - Research.

- *Attributes of Innovative Companies*
- *Hurdles to Innovativeness*
- *The Importance of Innovation Management*

### **Corporate Culture, Innovativeness, and Financial Performance**

This work explored the relationship between corporate culture, innovativeness, and financial performance in the forest products industry. Results showed that corporate culture significantly impacts how innovative a firm is. Firms lacking a culture favorable to innovation (e.g., resistant to change, inability to share information) were less innovative. There was also a strong relationship

## INNOVATIVENESS DEPENDS ON



between innovativeness and financial performance, with more innovative firms having better performance. A summary of this work is available in a series of publications:

- *Fostering a Culture for Innovativeness*
- *Measuring Innovativeness*

### **Focus on Innovation**

#### **Exploring the Quality-Innovation Connection**

Most people will recall Ford Motor Company's slogan—"Quality is Job 1." Recently, the slogan "Driving American Innovation" appeared on Ford's website. The change in focus in this one organization captures what is happening in many sectors of business today—focus on innovation is replacing focus on quality as a competitive tool. This raises a question: Are quality and innovation complementary or competing goals? Might managers be able to adapt their company's quality management system to lead to innovation performance in addition to quality performance? We are working to identify firms that are successfully achieving innovation goals with traditional quality tools and techniques; our goal is to identify specific quality management

practices that lead to improved innovation performance.

#### **An Analysis of the Wood Window Sector: Voice of the Customer**

High-performing companies tend to be efficient in bringing new products and/or services to market. "Voice of the customer" research is a qualitative approach to creating an enhanced understanding of customer wants and needs. This study will identify areas where existing products/services are inadequate or where new products/services are needed and illustrate the approach to industry managers through a how-to summary.

#### **Corporate Social Responsibility and Innovativeness in the Forest Sector**

Corporate social responsibility (CSR) is a topic of growing importance to the global forest sector. This study is designed to compare large U.S. companies with their international competitors with respect to innovation, learning orientation, market orientation, and implementation of CSR practices. Ultimately, the study will identify the relationship between innovativeness and implementation of CSR practices in the global forest products industry.

Our work in progress includes projects related to developing new educational programs, providing technical assistance to new and existing firms, and a statewide initiative focused on the forestry cluster.

## New Educational Programs

### *Responsible Material Selection*

This is a collaborative project with partners at the University of Oregon, Portland State University, and the Oregon Forest Resources Institute. We will be working with architects, engineers, and builders to determine the perceived and real information gaps regarding the selection of structural building materials (concrete, steel, wood). A forum on responsible selection of structural building materials will be held in the fall of 2008, followed by publication of a guide to responsible material selection.

### *Quality Control in Wood Products Manufacturing*

Plans are underway to offer this two-day course as either an on-site workshop or web-based course—perhaps both. The course will provide an overview of various approaches to quality and production management, such as Total Quality Management (TQM), six sigma, lean manufacturing, and ISO 9000; statistics; quality tools such as histograms, cause-and-effect diagrams, and Statistical Process Control (SPC); and unique considerations for quality control when working with wood.

## Technical Assistance

Several projects are in progress with entrepreneurs and existing firms. They include projects related to

- bio-based product development
- wood impregnation for densification and hardening
- inorganic wood preservatives
- wood bicycles!



## Initiative: the Oregon Forest Cluster Economic Development Strategy

Late in 2007, a memorandum of agreement was signed by the Oregon Department of Forestry, Oregon Economic & Community Development Department, Oregon Forest Resources Institute, and OSU to develop an economic development strategy for Oregon's forest cluster; OWIC staff represent OSU on the committee. The goal is to develop a strategy that will serve to improve the contribution of Oregon's forest cluster to state and local economies and to educate Oregonians about the cluster.

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