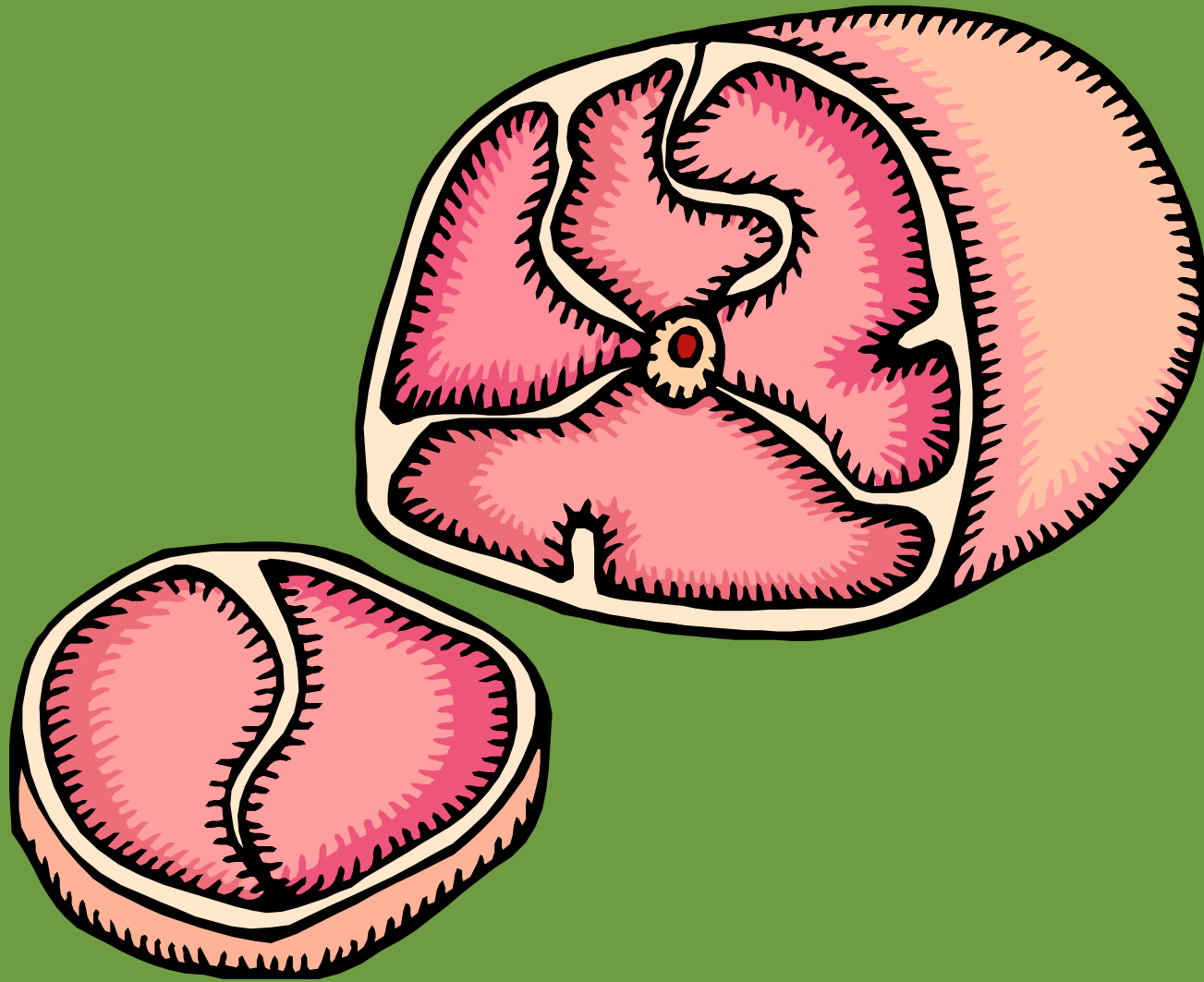


# **Future Forest Products: The Role of Innovation in the Forest Products Industry**

**Eric Hansen**  
**OSU College of Forestry**  
**[Eric.Hansen2@oregonstate.edu](mailto:Eric.Hansen2@oregonstate.edu)**









# The Role of Innovation in the Forest Products Industry

Eric N. Hansen

ABSTRACT

The US forest products industry has lost several hundred thousand jobs over recent years. It is argued that low-cost, foreign competition is largely responsible for this loss. Given this situation, enhancing innovation is increasingly seen as a path to competitive advantage and improved financial performance. Strategies have been and are being developed at the state and national level in the United States as well as the national level in many other countries. Although there is general recognition that innovation can positively impact competitiveness in the industry, there is little research verifying this relationship. This article discusses current innovation research focusing on the forest products industry. It also provides a brief example of a competitor nation's (Finland) efforts to enhance innovation in its forest products industry. With this background, the potential roles in enhancing innovation in the US forest products industry of company executives, policymakers, and researchers/educators are outlined. For example, it is recommended that companies concentrate on creating more innovation-centric cultures and policymakers are encouraged to support the future forest products industry workforce. Finally, it is suggested that the research and education community can be more effective in supporting industry through industry-focused research and developing skills of current and future employees.

**Keywords:** forest products industry, innovation, competitiveness

**T**he current housing and industry downturn has stolen headlines from the general US forest industry attrition that has happened over the past several years. Between 1999 and 2006 wood product manufacturing, paper manufacturing, and furniture and related product manufacturing lost approximately 52,000, 147,000, and 109,000 jobs, respectively (US Census Bureau 2002, 2009). Some of this loss is caused by consolidation and productivity improvements, but in many cases foreign competition has been a primary culprit (e.g.,

LaBissoniere and Bowe 2006, Buehlmann et al. 2007).

The US furniture industry provides a good example of the influence of foreign competition. According to the US International Trade Administration (ITA), during the years of 1999–2006, imports of furniture from China into the United States increased 4.3 times, or an annual rate of nearly 24% (ITA 2009). In 2003, an antidumping petition was filed with the US International Trade Commission and the US Department of Commerce against Chinese manufactur-

ers of wooden bedroom furniture. Despite efforts to limit Chinese imports, many US companies were still unable to compete, contributing to the job losses outlined previously.

This information paints a picture of an industry in retreat, but not all sectors have had the same experience. The wooden cabinet industry has largely weathered the storm of foreign competition. Between 1999 and 2006 this industry sector added over 38,000 employees and nearly doubled its value of shipments (US Census Bureau 2002, 2009). Effective mass customization, a way companies are able to quickly deliver products that more closely match consumer demand, thus differentiating themselves from foreign competition, has been suggested as a key difference between the cabinet industry and the furniture industry (Lihra et al. 2008).

As policymakers in developed economies have watched the rise of manufacturing in developing countries and the loss of competitiveness in their own domestic industries, there has been an escalation of interest in the potential for innovation to counteract the loss of global competitiveness and increase profitability (e.g., Bullard and West 2002, Andrew et al. 2007). This interest has been focused by national-level recognition

- General industry situation
- Research results
- Learning from Finland
- Recommendations
  - Industry
  - Policymakers
  - Researchers/Educators

Received July 10, 2009; accepted December 8, 2009.

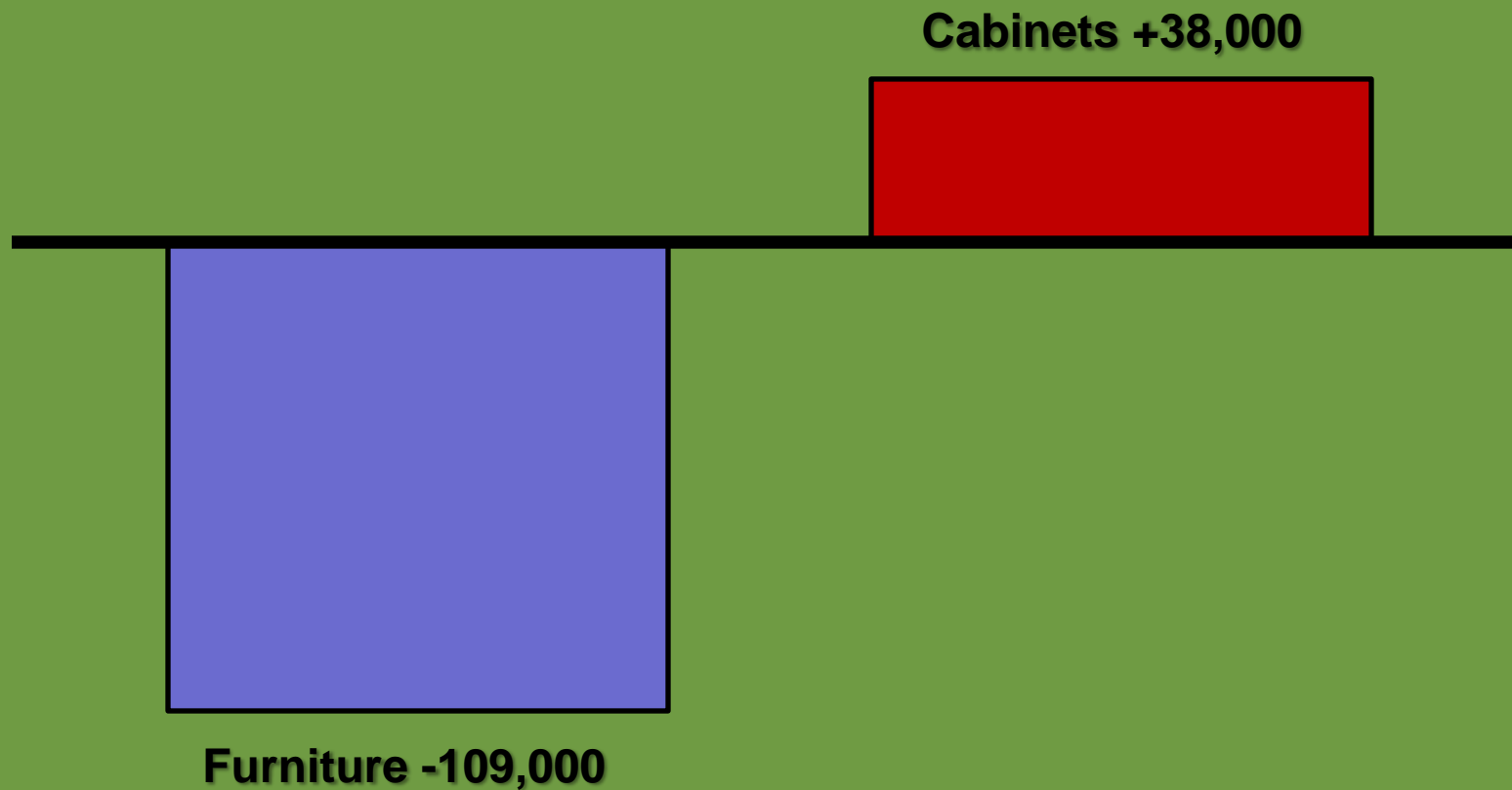
Eric N. Hansen (eric.hansen2@oregonstate.edu) is professor of forest products marketing, Department of Wood Science and Engineering, Oregon State University, 119 Richardson Hall, Corvallis, OR 97331-5751. The author thanks Chris Knowles, Lyndall Bull, Tom McLain, and three anonymous reviewers for their insightful feedback on earlier versions of this article.

Copyright © 2010 by the Society of American Foresters.



# Culture

# US Furniture & Cabinet Industries Employment Change 99-06



# China Furniture Industry Production and Exports

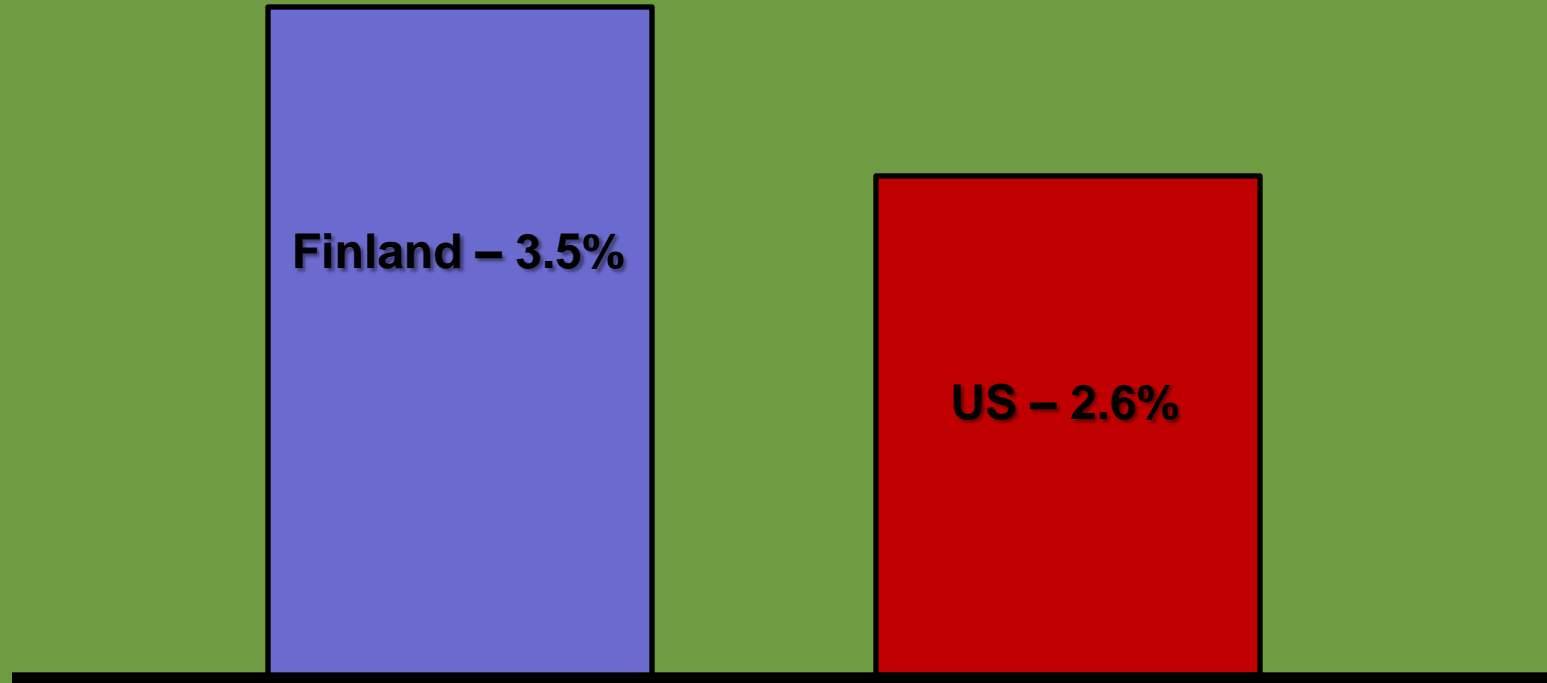
(based on mid-large sized firms)



Data Source: China National Furniture Association, China Statistics Bureau, China Customs.



# R&D as a Percentage of GDP



# Culture

- What I have seen in my 20 years of working for large forest companies is a short-term, “quarterly” mentality. We operate so lean that there is not enough time or \$ to plan. I feel like the industry is a football team with a 10 point lead late in the game and is trying to run out the clock and not make a mistake. – **US Forester**

# Who Will be Your Customers in 2021?

## 2011

- Exporters
- Lumber mills
- Plywood mills
- Paper mills

## 2021

- Bio-energy plants
- Bio-fuel plants
- Biorefineries
- Plastics manufacturers
- Exporters
- Lumber mills

pepsi bottles renew

Search

More

Radio NRJ - Surfer hitler...

PepsiCo Develops World's...

World's Largest Earthquake

YouTube - NEZWood Capit...

Sign In

Convert

Select

Page

Safety

Tools



PEP: 69.86 (+0.59)

CONTACT

GLOBAL SITES

Home

Company

Purpose

Brands

Investors

Media

Careers

Search

Media

0 1 2 0 1 3 0 1



Home » Media » Press Releases » PepsiCo Develops World's First 100 Percent Plant-Based, Renewably Sourced PET Bottle

Share This Page











MEDIA

PepsiCo Stories

Press Releases

In the News

Events

Speeches

Media Contacts

Fact Sheets

Multimedia Downloads

## PepsiCo Develops World's First 100 Percent Plant-Based, Renewably Sourced PET Bottle

PURCHASE, N.Y., March 15, 2011 /PRNewswire/ -- Building upon its heritage as an innovator and leader in environmental sustainability, PepsiCo (NYSE: PEP) today announced it has developed the world's first PET plastic bottle made entirely from plant-based, fully renewable resources, enabling the company to manufacture a beverage container with a significantly reduced carbon footprint.

(Photo: <http://photos.prnewswire.com/prnh/20110315/NY65182>)

PepsiCo's "green" bottle is 100 percent recyclable and far surpasses existing industry technologies. The bottle is made from bio-based raw materials, including switch grass, pine bark and corn husks. In the future, the company expects to broaden the renewable sources used to create the "green" bottle to include orange peels, potato peels, oat hulls and other agricultural byproducts from its foods business. This process further reinforces PepsiCo's "Power of One" advantage by driving a strategic beverage innovation via a food-based solution.

"This breakthrough innovation is a transformational development for PepsiCo and the beverage industry, and a direct result of our commitment to research and development," said PepsiCo Chairman and CEO, Indra Nooyi. "PepsiCo is in a unique position, as one of the world's largest food and beverage businesses, to ultimately source agricultural byproducts from our foods business to manufacture a more environmentally-sustainable bottle for our beverage business -- a sustainable business model that can help us achieve the goals of our Power of One."

start

Internet

100%

1:00 PM

http://www.pepsico.com/Media.html

PepsiCo

Radio N...

WMTB

RealPlay...

SAP 201...

Final Re...

Waves

Untitled 2

Presenta...

Clear 3...

Webcam

http://...

EN



# Three Types of Innovation/Innovativeness

- Product
- Process
- Business systems





# TRUS JOIST® TJ®-INSULATED HEADERS

Featuring 1.5E TimberStrand® LSL for  
Residential Applications

- Insulates to R15
- Resists framing heat loss or gain
- Matches 2x6 wall width
- Reduces installation labor with one-piece members
- Resists bowing, twisting, and shrinking
- Reduces construction waste on the job site



#TJ-8102 SPECIFIER'S GUIDE

[www.iLevel.com](http://www.iLevel.com)  
1.888.iLevel8 (1.888.453.8358)



# Columbia Forest Products

## PURE MUSSEL STRENGTH

[100% Natural]



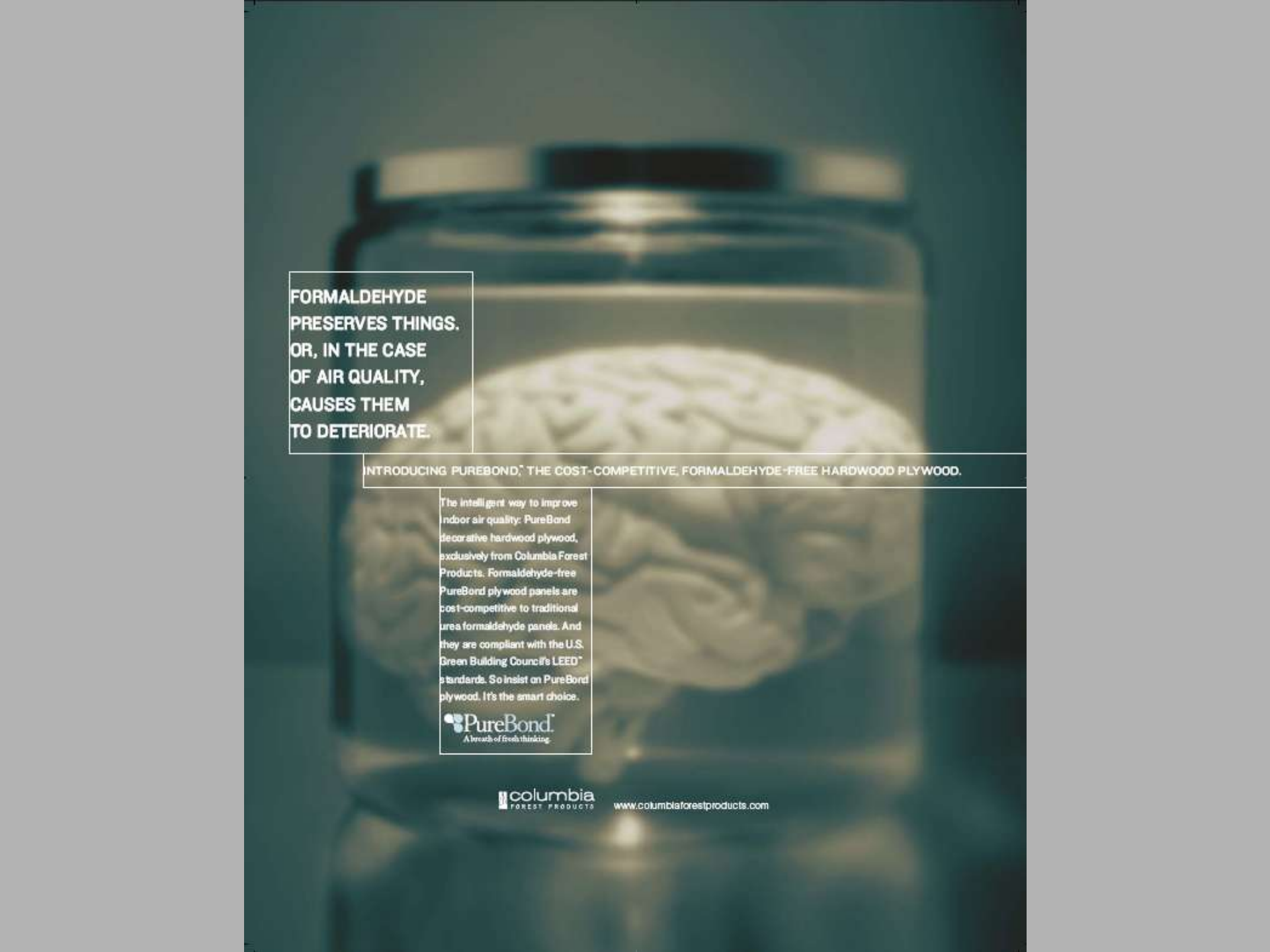
**Tough. Adaptable. And safe for the environment.** Wood adhesives developed by Oregon State University forestry professor Kaichang Li could revolutionize the wood products industry. Li was inspired by the ability of marine mussels to withstand constant pounding by ocean waves. He identified the proteins that keep them glued to the rocks and found a way to make these proteins from soybeans and other natural sources. His research could lead to replacements for toxic formaldehyde-based resins in plywood and other wood products.

**OSU research is broad and deep.** We're looking for answers to some of the world's most pressing problems. OSU received a record \$208 million last year for funded research projects, benefiting the lives of Oregonians and adding an estimated \$1 billion to the Oregon economy.

[oregonstate.edu](http://oregonstate.edu) > Research at the edge >

**OSU**  
Oregon State  
UNIVERSITY





FORMALDEHYDE  
PRESERVES THINGS.  
OR, IN THE CASE  
OF AIR QUALITY,  
CAUSES THEM  
TO DETERIORATE.

INTRODUCING PUREBOND,™ THE COST-COMPETITIVE, FORMALDEHYDE-FREE HARDWOOD PLYWOOD.

The intelligent way to improve indoor air quality: PureBond decorative hardwood plywood, exclusively from Columbia Forest Products. Formaldehyde-free PureBond plywood panels are cost-competitive to traditional urea formaldehyde panels. And they are compliant with the U.S. Green Building Council's LEED® standards. So insist on PureBond plywood. It's the smart choice.

 PureBond<sup>™</sup>  
A breath of fresh thinking.

 **columbia**  
FOREST PRODUCTS

[www.columbiaforestproducts.com](http://www.columbiaforestproducts.com)

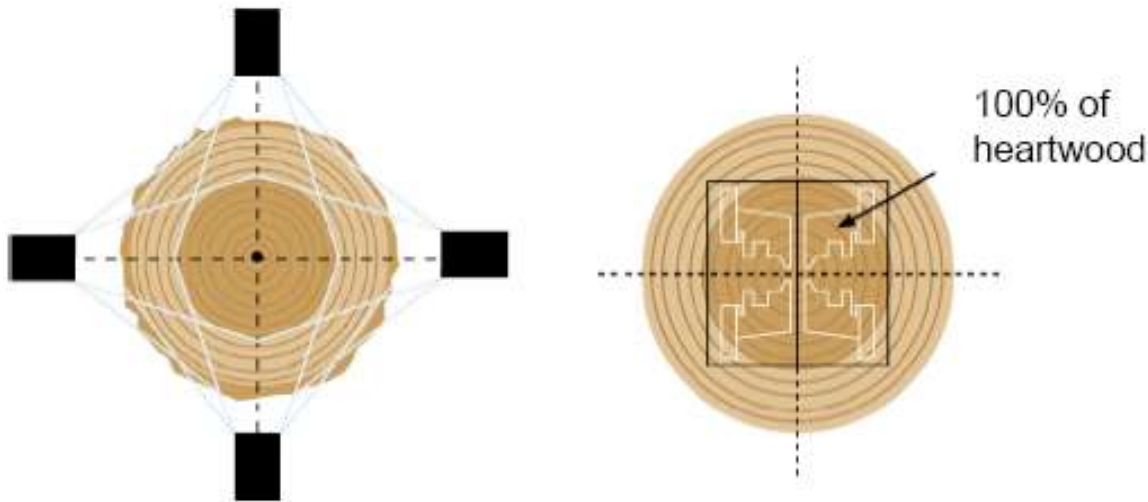


# Stora Enso WoodHeart®

- Heartwood for window industry
- X-ray and scanning technology
  - First to select logs with more heartwood and with fewer knots
  - Then to distinguish heart and sap

### ***Careful selection of WoodHeart material***

By utilisation of some of the latest log x-ray technologies, Stora Enso Timber selects raw material which maximises the content of heartwood. Other factors such as density, year ring width and knot spacing can be graded to further improve stability and performance. WoodHeart logs are sawn taking into account end use profiles, ensuring best possible use of the heartwood.



### ***High technology further processing***

- Latest technology equipment and control systems ensure excellent quality finger joints

facebook

Search

Home Profile Find Friends Account

Create a Page

Collins

The first name  
in FSC-certified  
forest products.

Wall

Info

Friend Activity

Photos (13)

Video

Events

Links

About

Our mission is to manage the  
forests sustainably. Nurture the  
forest's blood...

More

157 people like this

Likes

See All

## The Collins Companies

Building Materials · Portland, Oregon



Wall

The Collins Companies · Top Posts

Share: Post Photo Link Video

Write something...



The Collins Companies

FREE Exhibits pass to PCBC 2011, June 22-24, Moscone Center, San Francisco, CA.

<http://www.collinsco.com/Library/Press/2011-PCBCFreePass.pdf>  
[www.collinsco.com](http://www.collinsco.com)

Wednesday at 3:26pm · Like · Comment · Share

The Collins Companies likes this.

Write a comment...



The Collins Companies

The Joinery is very excited to offer hands-on furniture building classes to the public. At the end of your 2-3 day class you will have experience milling, shaping, sanding, assembling and finishing fine furniture. Rather than purchasing your next piece of furniture, work with us to build it yourself. Wood classes available include:

### You and The Collins Companies



7 friends like this.

Oregon State University Renewable M...  
Softwood Export Council

### People You May Know

See All



2 mutual friends  
 Add as friend



Fred Kamke  
7 mutual friends  
 Add as friend

### Sponsored

Create an Ad

#### The Cleaning Authority - Boise



Don't miss out! Register before June 30th to win a YEAR of FREE house cleaning from the best in Boise. Your friends already did...

Like · Jeffrey Hansen likes this

Chat (5)

http://www.facebook.com/TheCollinsCompanies?fbid=...



**Eric Hansen**  
Edit My Profile

News Feed

Messages

2

Events

1

Friends



**Pacific Albus in...**

Create Group...

[See All](#)



Game Requests

2



Apps

[More](#)

Friends on Chat



## Pacific Albus interest group

Edit Settings

Closed Group

Share: Post Link Photo Video Question

Write something...



**Lee Jimerson**

Superior grade Pacific Albus. This grade will go from 5% of our production to over 20% in less than 5 years, due to tree pruning that was started about 7 years ago.



about a month ago · [Like](#) · [Comment](#) · [Subscribe](#)



**Lee Jimerson**

Cross section of a 12 year-old Pacific Albus log



about a month ago · [Like](#) · [Comment](#) · [Subscribe](#)



**Lee Jimerson**

GTFF = trees+jobs



about a month ago · [Like](#) · [Comment](#) · [Subscribe](#)

Chris Bailey likes this



# The Nature of the Forest Industry

**“All the dumb ones are gone!”**

**Mill Owner, North America**

**“This is a redneck-in-the-woods  
kind of industry”**

**New Product Development Manager, North America**

# Marketing Myopia

- “The railroads did not stop growing because the need for passenger and freight transportation declined.”
- “...they assumed themselves to be in the railroad business rather than in the transportation business.”



**“We’re working with wood, so  
what is there?”**

**– American Manager**

**“...we just make buggy whips,  
as fast as we can.”**

**– American CEO**

**“...we have been challenged by our customers to come up with an innovative product...we don't know how...the customer would like to see it, but they won't pay for it. So, innovation in our industry is extremely difficult.”**

**– US Manager**

**“...we are really trying to, as we say in our strategy, we are developing innovative solutions for our customers”**

**– European Manager**

## LVL USER'S GUIDE

Technical Data for LVL Headers, Beams, Columns and Rim Board  
Applications for Residential Floor and Roof Systems



CANADIAN VERSION



kerto<sup>®</sup>

ALL THE BENEFITS OF TIMBER  
ALL THE STRENGTHS OF COMPOSITES

finnforest



# Manager Views

1324

## Innovativeness in the global forest products industry: exploring new insights

Eric Hansen, Heikki Juslin, and Chris Knowles

**Abstract:** Innovativeness is a concept that has seen extensive study, yet there remain significant gaps in our understanding of the phenomenon. This is especially true when considering views of practitioners as well as specific industry sectors, such as the forest products industry. The qualitative work described here explores 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: (i) new, (ii) creating the "right" culture, (iii) managing the market-consumer link, (iv) being a leader, and (v) a focus on the future. Similar to past research, managers identified new or improved products, processes, and business systems as areas within which a firm can be innovative. Results also outline challenges that firms face as they attempt to become innovative, how they would go about measuring innovativeness, and how they build innovative capacity. Based on these findings, we suggest that firms have significant opportunities to increase innovativeness and, thereby, enhance competitiveness.

**Résumé :** L'innovativité est un concept qui a fait l'objet d'études approfondies mais il y a encore d'importantes lacunes dans notre compréhension du phénomène. Cela est particulièrement vrai lorsqu'on considère l'opinion des praticiens ainsi que certains secteurs industriels tels que l'industrie des produits forestiers. Le travail qualitatif décrit ici explore le concept d'innovativité du point de vue des gestionnaires de l'industrie forestière. Les gestionnaires décrivent invariablement cinq dimensions qui caractérisent une compagnie innovatrice : nouveauté, créer la culture appropriée, gérer la relation entre le marché et les clients, être au chef de file et être tourné vers le futur. Comme dans les études antérieures, les gestionnaires ont identifié les produits améliorés ou nouveaux, les processus et les systèmes d'affaires comme des domaines où une entreprise peut innover. Les résultats exposent aussi les défis auxquels les entreprises font face lorsqu'elles cherchent à innover, la façon dont elles pourraient mesurer l'innovativité et comment elles bâtissent leur capacité d'innovation. Sur la base de ces résultats, nous croyons que les entreprises ont de réelles possibilités d'accroître leur innovativité et par conséquent d'améliorer leur compétitivité.

[Traduit par la Rédaction]

### Introduction

One of the things I find attractive about the wood products business, it is slow growing; it is an old business and doesn't take much to mark yourself as an innovator. [Forest Industry Manager, North America]

I look at our industry as being real dinosaurs in the area of new product development and especially in the area of good marketing. [Forest Industry Manager, North America]

Our industry is, in my opinion, way behind the curve on innovation and new technology. [Forest Industry Manager, North America]

Everyone is working longer hours; everybody's working [so hard] to do their jobs now. I mean 20 years ago, it

just wasn't so hard. There was more fat in the system, and you didn't budget so carefully because there was lots of fat in the system, and it didn't really matter. You could cruise through, and if you went home early, it didn't really matter. But [sic] now there is so much to do, and there are shareholders to report to and profit targets to meet and safety targets; we didn't even have safety 20 years ago. Now, it's a full system, it's so many things now that put people just so flat out, they're not actually thinking of things like innovation. You know, you can call it by different names, but essentially that's what it is, and I think that's probably one of the biggest problems. I've had this discussion at [the] Board level when I said to them we're reacting, we're not getting ahead of the pack.... [Forest Industry Manager, Oceania]

I think when I graduated this line of business was seen as a sunset business. Through the 80s, [sic] the sawmilling industry was not seen as the most vibrant [sic] developing area of business in the world, and everybody said, even some of my colleagues, "why... did you choose the sawmilling industry? I mean there are much more interesting areas," but right now I could say that we have a new step, a huge step ahead of us and already in somewhat happening, so we are able to first of all have the new future in front of us.... [Forest Industry Manager, Europe]

I think in our company we have recently started to realize the R&D function is the only function that can take us

Received 25 September 2006; Accepted 20 December 2006.  
Published on the NRC Research Press Web site at [cfr.nrca.ca](http://cfr.nrca.ca) on 30 August 2007.

E. Hansen<sup>1</sup> and C. Knowles, Department of Wood Science and Engineering, 119 Richardson Hall, Oregon State University, Corvallis, OR 97331, USA.

H. Juslin, Department of Forest Economics, P.O. Box 27 (Lätkäkatunkatu 7), 00014 University of Helsinki, Finland.

<sup>1</sup>Corresponding author (e-mail: [Eric.Hansen@oregonstate.edu](mailto:Eric.Hansen@oregonstate.edu)).

# Attributes of Innovative Companies

- New
- Creating the “right” culture
- Managing the market/customer link
- Being a leader
- A focus on the future

# Creating the Right Culture

- “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**

# A Mindset

- “The basis of developing innovativeness in the sawmill industry is that you don’t only maximize yield from the log. You have to clarify what the customer needs and produce those products that have demand.” – **Europe**

# Challenges to Being Innovative

- Tradition/production orientation
- Culture – resistance to change
- Difficulty in moving ideas from market to innovation



# Industry Tradition and Evolution

- Production orientation
  - “If yield is the main measurement, it kills innovation, in plywood we stopped thinking about yield 15 years ago” – **Manager, Europe**
- Sales orientation
- Market orientation

# Culture – resistance to change

- “...this culture is incredibly conservative in this industry, so very resistant to change.” – **North America**
- “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**

# Manager Response

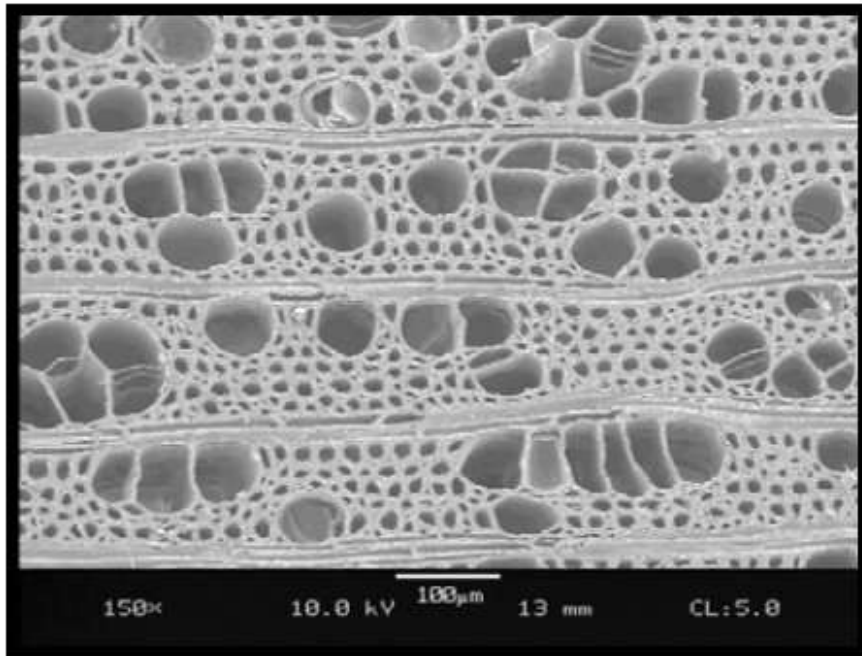
- “Eric, the paper touches on several good points but really does let the industry off much too easy. They are light years behind other industries in this area and need a reality check. The only way to change any of this is by bringing in management from other industries that know how to develop and implement an innovation based strategy.” – **North America**

# Current Activities

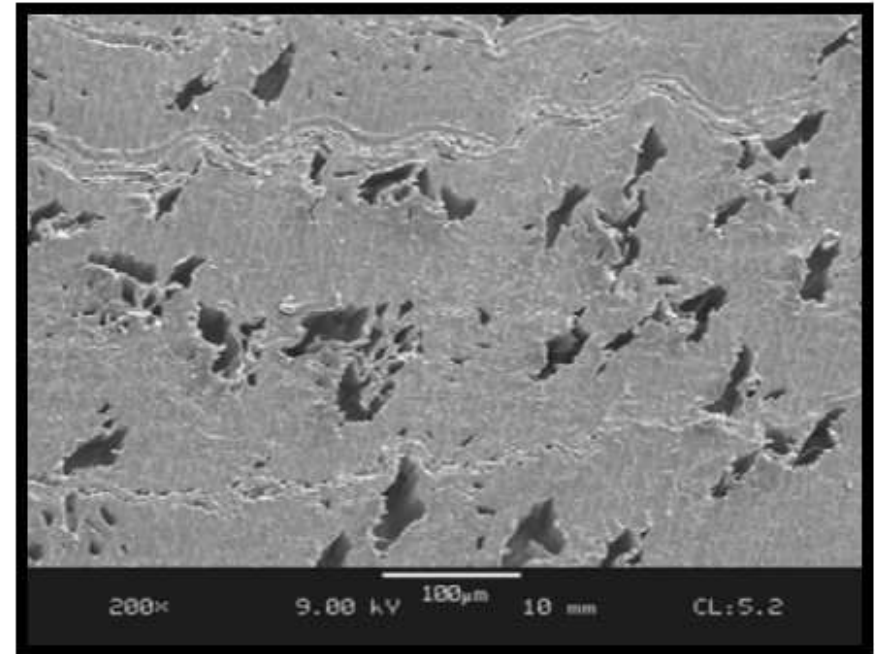
- R&D
- New products - recession driven innovation
- Move away from residential housing market
- Services pushed up the value chain
- Focus on non-residential construction

# Mechanical Hardening

- “VTC Wood” (viscoelastic thermal compressed)



*Untreated yellow-poplar*



*VTC treated yellow-poplar*



## Sales New Product Creation Form:

Use one form for each new product –

### Finished Specifications:

1) Species **HF DF WF CD SPF Mix ALL**

2) Dry **Yes No**

2) Product Name: **Export 50mm x 100mm**

3) Finished dimension (In hundreds example 1.97" x 3.94")

a) Thickness **1.97**

b) Width **3.94**

c) All Lengths **92 5/8", 104 1/4", 119"**

4) Grades at each length (Include downfall grades and special grading requests)

<u>Grade</u>	<u>Length (In exact inches)</u>	<u>Current Price</u>
<b>Max 20% #3/4"</b>	<b>All Lengths</b>	<b>\$300.00</b>

Stamp	Yes	No	Note: <u>HT on every board</u>
End Wax	Yes	No	Note: _____
Paper Wrap	Yes	No	Note: _____
Paper Cap	Yes	No	Note: _____
Anti Mold	Yes	No	Note: <u>Yes - on outside of unit</u>
Package size in pieces	<u>Not to exceed 30" tall by 44" wide - let me know piece cnt?</u>		
Battons	Yes	No	Note: <u>Need HT battons</u>
Edge protectors	Yes	No	Note: _____
Bar-coding	Yes	No	Note: _____
New PID	Yes	Need	Note: <u>Make on piece count</u>
Other packaging special needs	_____		
Any Special Notes	<u>Need to get piece count from mill based on 30"x44"</u>		
	<u>Can mix white woods together in same unit!</u>		

# Wood Use in Non-Res Construction

- Softwood checkoff program
- Testing - [earthquake](#)

got milk?

# Stadthaus, 24 Murray Grove, London

Eight storeys of apartments featuring cross-laminated timber panels



















