PUBLICATIONS

2961. **The effect of log heating temperature on the peeling process and veneer quality: beech, birch, and spruce case studies.** Anna Dupleix, Louis-Etienne Denaud, Laurent Bleron, Rémy Marchal, Mark Hughes. European Journal of Wood and Wood Products, December 2012.

Heating green-wood prior to peeling is necessary to improve both peeling process and quality of veneer. This study investigates optimum heating temperatures by soaking of beech, birch and spruce. The authors have studied the influence of heating temperatures from 20 to 80 °C on thickness deviations and veneer lathe checking using a pneumatic rugosimeter and image analysis of opening checks with the SMOF device (Système de Mesure de l'Ouverture des Fissures).

Conclusions account for reduced heating temperatures compared to the temperatures currently in-use in the industry. Already at 50 °C, positive effects of heating ensure efficient peeling process. Low temperatures produce veneers with deeper and more spaced checks than high temperatures when checks are closer and less deep, becoming even unpredictable especially in case of spruce. These results establish the SMOF as an essential non-destructive control device to control the quality of the veneer produced at research level. *Authors' abstract*.

2962. **Influence of Machining Parameters on the Tensile Strength of Finger-Jointed High-Density Black Spruce Lumber.** R. Hernández, R. Coman, R. Beauregard· Wood and Fiber Science, Vol. 43, No. 1, January 2011, pp. 2-10.

Finger jointed softwood lumber is widely used in manufacturing of structural or nonstructural applications such as glued laminated lumber and prefabricated wood I-joists. Black spruce is the most frequently used species for finger-jointed engineered wood products in eastern Canada. However, some key machining parameters must be adjusted according to the properties of the wood to obtain a surface quality suitable for the finger-jointing process.

The main objective of this study was to evaluate the effect of cutting speed and chip load on the ultimate tensile strength (UTS) of finger-jointed high-density black spruce. The variables were four cutting speeds and three chip loads. A feather profile was selected with an isocyanate adhesive and an end-pressure of 3.45 MPa. A factorial analysis showed a statistically significant interaction between cutting speed and chip load on UTS and cutting speed was the most significant variable.

The influence of chip load on UTS was lower, apparent only at 3260 m/min cutting speed. Suitable finger-jointing could be achieved at 1860-3960 m/min. cutting speed with a chip-load of 0.51-1.27 mm. However, the best result was obtained at 3260 m/min cutting speed and 0.89 mm chip load. These results need to be validated in industrial mills to verify.tool wear behavior. *Authors' abstract.*

2963. **Nondestructive assessment of glued joints in timber applying vibration-based methods** Mehran Roohnia, Mostafa Kohantorabi, Ahmad Jahan-Latibari, Ajang Tajdini, Mohammadreza Ghaznavi. European Journal of Wood and Wood Products, November 2012, Volume 70, Issue 6, pp. 791- 799

In this study, three different shapes and glue coverage rates of joints were evaluated nondestructively using longitudinal and flexural vibration-based methods. Rectangular specimens of 20 × 40 × 360 mm³ (R × T × L) dimensions were prepared from clear eastern beech (Fagus orientalis; Lipsky) wood. Joints were located at the middle of the beams. The selected joint shapes were 45° scarf joint, 30° scarf joint and finger joint with 10 mm length and 3 mm pitch.

Longitudinal vibration test proved a better assessment for gluing than flexural efficiency. Some weaker jointed timbers could demonstrate identical Young's moduli by both longitudinal and flexural vibration-based methods. In the presence of any significant difference between Young's moduli evaluated by two methods, it was realized that the joints were weak and required to be rejected or assigned to re-manufacturing. The R^2 of Timoshenko's linear model significantly decreased when there was any un-integrity in the joints. This factor was suggested to be used as a potential subsidiary indicator. The vibration-based methods were recommended to be applied for joint assessment of old jointed timbers and for grading newly constructed jointed lumbers. *Authors' abstract*.

CALENDAR

January 14-20, 2013: imm cologne/LivingKitchen 2013, Cologne, Germany.

Inf.: www.imm-cologne.com; www.livingkitchen-cologne.com

March 13-15, 2013: Small Log Conference, Couer d'Alene, Idaho.

Inf.: Tom Waddell, Conference Manager; 406-546-5977

April 18-19, 2013: North American Wood Windows & Doors Symposium, Radisson Hotel, Roseville, MN.

Inf.: www.forestprod.org/wooddoorsymposium/

May 6-10, 2913: Ligna Hannover 2013: World Fair for the Forestry and Wood Industries, Hanover Fairgrounds, Hanover, Germany.

Inf.: www.ligna.de

May 13-16, 2013: Interzum Cologne 2013, Cologne International Expo Center, Cologne, Germany.

Inf.: www.interzum.com

June 9-11, 2013: Forest Products Society 67th International Convention, AT&T Conference Center, Austin, TX, USA

Inf.: www.forestprod.org/ic/

July 24-27, 2013: AWFS (Association of Woodworking & Furnishing Suppliers) Fair, Las Vegas Convention Center, Las Vegas, NV, USA

Inf.: www.awfsfair.org

August 4-7, 2013: 21st International Wood Machining Seminar, Tsukuba, Japan

Inf.: Kohji Murata, iwms21@ffpri.affrc.go.jp
http://www.ffpri.affrc.go.jp/en/symposium/iwms21/

Wood Machining News

WORLDWIDE DEVELOPMENTS IN RESEARCH AND INDUSTRY

Vol. 29, No. 6 November/December 2012

U.S. Forest Service Report Forecasts Natural Resource Management Trends and Challenges For Next 50 Years

Study projects significant forest loss due to suburbanization and land fragmentation

A comprehensive U.S. Forest Service report released in December examines the ways expanding populations, increased urbanization, and changing land-use patterns could profoundly impact natural resources, including water supplies, nationwide during the next 50 years. Significantly, the study shows the potential for significant loss of privately-owned forests to development and fragmentation, which could substantially reduce benefits from forests that the public now enjoys including clean water, wildlife habitat, forest products and others.

"We should all be concerned by the projected decline in our nation's forests and the corresponding loss of the many critical services they provide such as clean drinking water, wildlife habitat, carbon sequestration, wood products and outdoor recreation," said Agriculture Under Secretary Harris Sherman.

U.S. Forest Service scientists and partners at universities, non-profits and other agencies found urban and developed land areas in the U.S. will increase 41 percent by 2060. Forested areas will be most impacted by this growth, with losses ranging from 16 to 34 million acres in the lower 48 states. The study also examines the effect of climate change on forests and the services forests provide.

"Our nation's forests and grasslands are facing significant challenges. This assessment strengthens our commitment to accelerate restoration efforts that will improve forest resiliency and conservation of vitally important natural resources," said U.S. Forest Service Chief Tom Tidwell.

The assessment's projections are influenced by a set of scenarios with varying assumptions about U.S. population and economic growth, global population and economic growth, global wood energy consumption and U.S. land use change from 2010 to 2060. Using those scenarios, the report forecasts the following key trends:

- Forest areas will decline as a result of development, particularly in the South, where population is projected to grow the most
- Timber prices are expected to remain relatively flat
- Rangeland area is expected to continue its slow decline but rangeland productivity is stable with forage sufficient to meet expected livestock grazing demands
- Biodiversity may continue to erode because projected loss of forestland will impact the variety of forest species

Additionally, the report stresses the need to develop forest and rangeland policies which are flexible enough to be effective under a wide range of future socioeconomic and ecological conditions such as climate change. The Forest and Rangelands Renewable Service Resources Planning Act of 1974 requires the Forest Service to produce an assessment of natural resource trends every 10 years.

The mission of the Forest Service is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations. The agency manages 193 million acres of public land, provides assistance to state and private landowners, and maintains the largest forestry research organization in the world. Forest Service lands contribute more than $13 billion to the economy each year through visitor spending alone. Those same lands provide 20 percent of the nation's clean water supply, a value estimated at $27 billion per year.

Source: U.S. Forest Service, www.fs.fed.us

Small Log Conference

The 2013 Small Log Conference, produced by Forest Business Network, will be held March 14-15, 2013 at the Coeur d'Alene Resort, Coeur d'Alene, Idaho. The conference will tackle three core focus areas to help you build your business and prosper as forest products professional. A Supplier's Showcase will complement each day of informative topics and panels. Sessions include:

- **Innovative and new small log processing equipment/ technology**:
  - Greenfield rebuild of Canadian small log mill in Burns Lake, BC
  - Installation of small log primary at Tillamook, Oregon stud mill
  - Processing of forest residues
  - Co-products potential from woody biomass
- **Impacts of forest health and conservation collaboration**
  - U.S. Forest Service data related to the issues of forest inventory and how forest health is being impacted by lack of harvest, along with the degradation of the forest industry infrastructure.
- **Economic development**

For more information, contact:
Tom Waddell, Conference Manager: 406-546-5977

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Northwest Log Prices will Rise Throughout 1Q 2013

Forest2Market projects the price of Douglas fir will average $625 per MBF by the end of the quarter, a high not seen since 2007. After muted gains in the second half in 2012, log prices in the Pacific Northwest are climbing back to pre-recession levels. Forest2Market projects that they will gain additional ground in 1Q2013, the result of the ongoing recovery taking place in both domestic and export markets.

The U.S. housing market turned the corner in the last half of 2012, and demand for forest products quickly followed. In November, lumber prices were $100 per thousand board feet (MBF) above their November 2011 level. Forest2Market projects the housing recovery will continue to pick up steam in 2013, with annualized housing starts hitting the 1 million mark by the end of the year.

"Asian appetite for Northwest forest products strengthened in the second half of 2012 and looks strong moving into the New Year," says Gordon Culbertson, Manager of Forest2Market's Pacific Northwest business. "Inventories of imported logs and lumber products in China have declined by nearly 50 percent from a year ago, while the Chinese Government has renewed efforts to stimulate affordable housing construction. Russia's market share, traditionally the largest supplier of Chinese logs and lumber, has continued to erode, leaving Chinese buyers to fill the shortage with deliveries from North America and New Zealand."

According to Forest2Market's Delivered Price Database, prices for logs delivered to Northwest seaports for export loading to Asia revived as 2012 progressed, with Douglas fir prices gaining back $72 per MBF of the $78 per MBF they lost in the first half of the year and Hem-fir hitting a 2012 peak in November at $558 per MBF. Strong demand from China, especially for hem-fir logs, and Japan's renewed interest in higher quality second growth Douglas fir logs will bolster prices going forward.

Supply disruptions will add to the upward pressure on prices in early months of 2013, as mills attempting to increase production face tight log inventories, difficulty stimulating new log deliveries and—in some cases—lost production.

Weather is, in part, responsible for the supply disruptions, according to Culbertson. "The long, hot, dry summer of 2012 across the Northwest led to many days of curtailed logging due to fire risk. This was followed by heavy rains in the fall and heavy rains and snowfall at low elevations in December, both of which hindered logging and hauling operations and limited the ability of mills to replenish their log supplies."

A combination of supply constraints and stronger demand from both U.S. and export markets will lead log prices higher in 2013. Douglas fir prices, for instance, will reach into the mid-$600s by the end of the first quarter, with the largest increases occurring in western Oregon, where the supply shortage is more acute.

For full press release, including graphics, visit:
www.forest2market.com

Forest2Market's Delivered Price Benchmarks

Forest2Market offers delivered price benchmarks for logs in the Pacific Northwest, the U.S. South and in the Midwest, and will soon offer the same service in the Northeast. Customers use our benchmarks to compare their performance to the market and make data-driven decisions to improve their performance.

About Forest2Market

Headquartered in Charlotte, N.C., Forest2Market provides market pricing data and supply chain expertise to customers in the forest, wood products, pulp and paper, recovered fiber, lumber and bioenergy industries.

For more information, contact: Suz-Anne Kinney,
suz-anne.kinney@forest2market.com

Finish Company, Stora Enso, Takes Steps to Improve Profitability

On October 23, 2012, the Finnish company Stora Enso decided on measures to improve profitability for all business divisions. Those measures will involve redundancies for up to 520 employees and are expected by the concern to bring total cost savings of €36m/year. In the Building division, up to 25 jobs in the three Swedish sawmills Ala, Gruvön and Varkaus are under discussion. The three plants boast cumulative annual production capacity of roughly 1.1m m³ of softwood lumber and currently employs a work force slightly in excess of 400. That measure is expected by Stora Enso to generate annual savings of €1m, starting from the first quarter of 2013.

However, the business division most affected by the measures is Renewable Packaging. As a result of the closure of the card-board mill in Ruovesi, Finland, the shutdown of BM 2 in the Ostroleka plant in Poland and the rationalization measures in the cardboard mills in Heinola, Ingerois and Pori, Finland, roughly 295 jobs will be lost by the end of the third quarter of 2013. 140 jobs are scheduled to be lost in the Printing and Reading division, whereby the biggest single measure will be the shutdown of PM 1 at the Swedish plant in Hylte. In the Biomaterials division, 60 jobs are to go, mostly affecting the Swedish pulp plant in Skutskär.

www.woodandpanel.com/woodwork_news.asp?newsid=5709

The Stora Enso also sets a CO_2 reduction target. In its published Annual Report for 2007 its CO_2 reduction target is 20% by 2020. The target covers Stora Enso's direct CO_2 emissions from production as well as indirect emissions from purchased electricity and heat. The baseline year for the target is 2006.

The Stora Enso Group has some 30 000 employees in more than 35 countries worldwide. Their customers include publishers, printing houses and paper merchants, as well as the packaging, joinery and construction industries.

www.storaenso.com

Update on Table Saw Safety

A table saw is the most dangerous tool in any woodworking shop. Based on the data from the National Electronic Injury Surveillance System (NEISS), it is estimated that the number of emergency room treated injures associated with table saws in the USA averaged 29,000 per year from 1991 to 2000.

Since that time several improvements have been made to safeguard table saws. These include: 1) The SawStop™ Safety Brake System; 2) The Cut-Stop Brake System; 3) The Whirlwind™ Table Saw Emergency Blade Brake; and 4) Inexpensive safety device consisting of a protective guard over the cutting blade which prevents use of the table saw when the protective guard is not in place.

1. SawStop™ Safety Brake System

The SawStop™ safety brake system detects accidental contact between a user hand and the blade of a table saw and stops the blade within milliseconds. According to the inventors (US Patent No. 7350444, Table Saw With Improved Safety System, filed in 2001 and published in 2008) it can make the difference between needing a band aid or a hand surgeon.

The SawStop™ System consists of a replaceable brake cartridge (Figure 1), containing the SawStop™ electronics, spring and pawl, and recognizes the difference between the electrical properties of wood and a user hand.

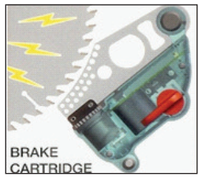

Figure 1. Brake Cartridge
The blade carries a small electrical signal. When a hand contacts the blade the signal changes because the human body is conductive. The change to the signal activates the safety system.

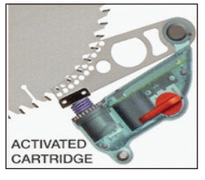

Figure 2. Activated Cartridge
To activate the cartridge an aluminum brake springs into the spinning blade, stopping it.

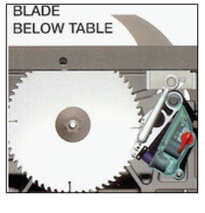

Figure 3. Blade Retraction Below Table - The blade's angular momentum drives it beneath the table, removing the risk of subsequent contact. Power to the motor is shut off.

The SawStop™ system is always on and continuously monitors for human contact with the sawblade, regardless of user training, fatigue or misuse. It works with all 10-inch conventional types and sizes of saw blades, and all types of wood and wood products, plastics, foam, and other non-conductive materials.

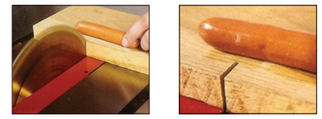

Figure 4. Testing of the Saw Stop System
Feeding a hot dog into the rotating blade. Instead of being severed the hot dog is slightly nicked.

The system performs a self-check when the table saw is turned on to ensure the system is installed correctly and fully operational, and is housed in a cartridge that is easily replaced should the system ever be triggered. The replacement of the blade and the brake cartridge takes less than five minutes. A standard brake cartridge costs $69 and a dado brake cartridge $89.

Stephen F. Gass is the founder and president of SawStop LLC, based in Tualatin, Oregon. Gass is a woodworking hobbyist who earned his doctorate in physics and has worked as a patent attorney. This combination of personal and professional interests enabled him to develop an important safety technology for table saws which was first exhibited at the International Woodworking Fair in Atlanta, GA, in August 2000 and reported in WMN Vol. 17, No. 5. After attempting to license the technology to saw manufacturers, Gass eventually developed a prototype and began manufacturing SawStop cabinet saws with two partners.

SawStop debuted its first industrial Cabinet Saw in late 2004 after five years of pursuing licensing partnerships. At present, SawStop manufacturers contractor saws, professional cabinet saws and industrial cabinet saws. These table saws are manufactured in Taiwan. SawStop employs three engineers who work at the facility to ensure that production standards and quality requirements are met. According to Matt Howard, Marketing Director, as of August 2012 about 36,000 table saws were sold.

Since 2004, SawStop has confirmed more than 800 "saves" where users have avoided serious injury by using the SawStop table saw. According to some SawStop users, they are having some problems with "fine tooth" blades that may not be too sharp and which stop slower because they do not cut into the aluminum brake as quickly.

However, it is important to note that many accidents on table saws happen due to workpiece kickback, where the operator is struck by the workpiece, an edgings or a sliver. There is no contact between the saw blade and injured person. Industrial cabinet saws manufactured before 2009 with a SawStop and saw blades thicker than the 1/16 inch riving knife (splitter), used often on table saws at that time, do not prevent such accidents.

Ryszard Szymani, Ph.D., Editor/Publisher
Safety Consultant and Accidents Investigator