

Road Map Summary



Value
to
Wood

RMS - 05/08
March 2008

Challenges and Opportunities for Kitchen Cabinet Manufacturers



Photo: www.bcforestinformation.com

A team of researchers interviewed Canadian kitchen cabinet manufacturers for their vision of their industry and the innovation needed to support its continued health. The team then consulted key university and Forintek researchers to review the challenges facing the industry and to brainstorm for additional innovations. The information presented in this report is part of a larger work "Roadmap for the Canadian Value-added Industry" available from FPInnovations – Forintek Division.

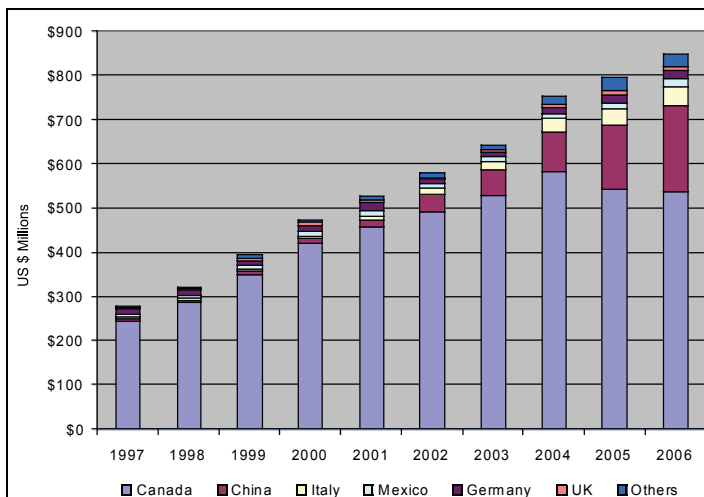


Natural Resources
Canada

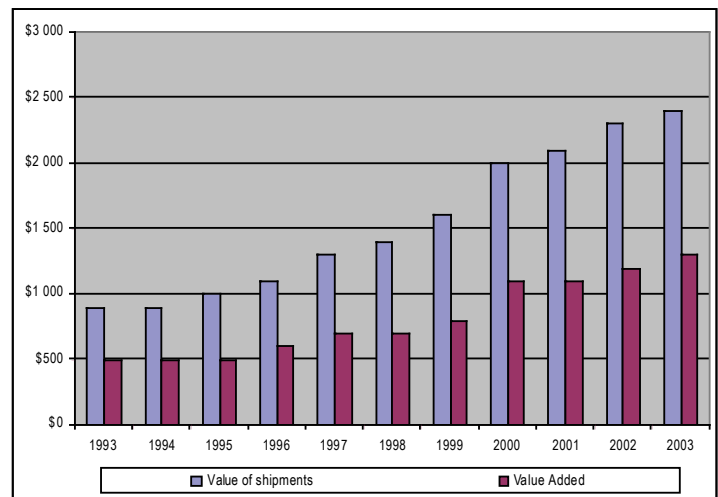
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The Kitchen Cabinet and Countertop Industry At-a-Glance

- Shipments from the kitchen cabinet and countertop sector totalled \$2.4 billion in 2003.
- Approximately half of Canadian shipments are exported every year. In 2003, Canada exported \$1.2 billion worth of kitchen cabinets and countertops. Most Canadian exports are sent to the US.
- Ontario, Quebec and Manitoba accounted for 95% of all Canadian exports, sent primarily to the US Northeast (37%) and South (29%).
- Decreasing Canadian exports can partly be explained by increasing US imports from other countries, most notably China.
- Chinese exports to the US are growing rapidly. In 2000, the country only exported US \$11 million of cabinets to the US; in 2004, this number had reached US \$89 million.



US kitchen and bathroom cabinet imports. Source: United States International Trade Commission, 2007; and Industry Canada, 2007.



Shipments and value-added in the Canadian kitchen cabinet industry (in \$ millions). Source: Industry Canada, 2005.

	Thousand units	%
Solid wood raised panel in frame	16 341.6	59.5%
Flush panel in frame	6 433.8	23.4%
Veneer raised panel in frame	3 228.9	11.8%
Laminate surface - no frame	1 008.4	3.7%
Plywood - no frame	353.3	1.3%
Other	81.7	0.3%
TOTAL	27 447.7	

Type of kitchen cabinet door used in new residential construction in the US (2003). Source: NAHB, 2004.

	Thousand units	%
Particleboard veneer	17 929.3	51.8%
Particleboard, paper overlay	8 270.8	23.9%
Plywood	4 794.4	13.8%
Solid wood	3 609.8	10.4%
Other	37.1	0.1%
TOTAL	34 641.5	

Type of kitchen cabinet box used in new residential construction in the US (2003). Source: NAHB, 2004.

Industry Vision and Driving Forces

Newly Emerging Economies

Foreign manufacturers of commodity products (e.g., lumber, particleboard, MDF, etc.) are increasingly exporting their products into markets traditionally supplied by Canadian industries. The emergence of these economies, coupled with a weak US dollar, forces Canadian manufacturers to target different market segments or offer additional service attributes to differentiate their products from those coming from countries with low manufacturing costs.

According to manufacturers...

- The kitchen cabinet market is heavily tied to the construction industry (new construction and repair and remodelling) in any given year. Most manufacturers target regional markets, hence, companies have relatively good knowledge of their competitors.
- Chinese cabinet products are starting to show up in both Eastern and Western Canada.

Resource Issues

(supply and characterization)

Aside from the decision to change species for financial reasons, many appearance wood products' manufacturers are being forced to alter their materials and grades mixes because their historical raw material supply has changed in quality and/or price, thus influencing their ability to deliver the same products. This situation presents multiple challenges and opportunities.

According to manufacturers...

- Kitchen cabinets combine various materials including panels, thermoplastics and solid wood components.
- Matching materials (i.e., veneer panels with solid wood rails) can be difficult since light finishes are more susceptible to showing colour differences.
- Variations in the moisture content of materials purchased can affect the quality of products delivered.
- Product characteristic consistency should be checked prior to the execution of value-added operations.
- One of the concerns shared by many kitchen cabinet manufacturers is the limited domestic supply of panels.
- Availability and price issues are forcing some of them to look at Mexican and Chinese panel suppliers in the near future. Discrepancies in grading may make these sourcing arrangements difficult (but not impossible) to accomplish.

Customer Focus (consumers, homebuyers, designers, etc.)

Consumers are becoming more and more educated about the products they buy. Widespread access to the Internet makes it easy to obtain third-party information about various products and compare them quickly. Simultaneously, the current North American demographic profile is contributing to the emergence of a market segment that is looking for high-end customized products, and, more importantly, that has the ability to afford them.

According to manufacturers...

- North American kitchen cabinets' style and hardware innovation largely comes out of Europe (2 to 5 year lag). A recent trend is for large cabinet doors.
- Most consumer complaints are related to finishing issues. Consumers have high expectations vis-à-vis finish quality.
- Generations X and Y have different tastes than those of their older peers. They may be interested in imported stock cabinets as they are looking for ready-to-install products (à la IKEA), more frequent cabinet changes, kitchens that are divided into functional zones and are adjustable, free up wall space, etc.
- Despite this trend, there remains a market for higher end customized products. Some companies offering high-end products hire kitchen designers to assist customers in putting together their 'dream kitchen'.
- Darker melamine colours and wood stains are currently in vogue.

Environmental, Health, Social and Governance Issues

Partly in reaction to the challenges posed by newly emerging economies, but also from legislative measures put in place in Western countries, the Canadian value-added industry is reconsidering its raw materials, components and practices to ensure that they are less harmful to the environment and that they pose a negligible risk to consumer health. Similarly, consumers are increasingly demanding that products imported from other countries respect human rights (outsourcing) and come from wood that is legally harvested.

According to manufacturers...

- Environmentally friendly products may become a key component of market access in the years to come. Cabinet manufacturers expect that consumers will soon be demanding formaldehyde-free cabinetry. Other volatile organic compounds (VOCs) such as aldehydes and xylene may eventually be targeted.

Manufacturing and Cost Efficiencies

Cost reductions and increased efficiency are permanent drivers of innovation in the Canadian value-added wood products industry. Historically, improvements in this area focused on finding low-cost alternative materials as well as designing technology that could perform manufacturing operations faster, more precisely and at a lower cost than using manual labour. Similarly, improvements were continuously sought with regard to the actual operations performed in factories, i.e., scanning (optimization), sawing, gluing, laminating, sanding, finishing, assembly, etc. However, today's search for efficiency gains encompasses the whole spectrum of operations and material inputs used by a company (i.e., packaging).

According to manufacturers...

- Lean manufacturing is becoming more and more common in the kitchen cabinet industry. Manufacturers are increasingly using kanbans to produce cabinets and manage material inputs. New products are also designed with lean manufacturing in mind.

- Optimization through nesting is becoming a current practice in the industry. Automation of the manufacturing processes should be supported as much as possible to deal with labour shortages.
- There is a lot of interest in improving existing finishing products and techniques. Leading factors contributing to finishing problems include variations in moisture content and sanding processes (uneven sanding quality). Difficulties are associated with achieving a consistent finish across different profiles (e.g., raised panels). There are also finish consistency issues across employees.
- Colour inventory is difficult to keep as it grows exponentially. Similarly, colour drift has been reported in stains and paints bought from suppliers. (Stain A produced by supplier A at time A is different from stain A produced by supplier A at time B). Lack of colour consistency causes additional costs in terms of materials, labour and delayed schedules.
- In the production of the larger European style doors, warping and twisting have been problems. V-joint cabinet boxes could eliminate multiple passes on the edgebander as well as the need for mechanical fasteners.
- Strictly in terms of material costs, dark melamine is more expensive to produce than melamine with lighter colours as panels have to be pressed for a longer period. Yet, manufacturers have to sell all colours at the same price.
- Recruiting, training and retaining employees are important concerns for kitchen cabinet manufacturers. In a high labour turnover environment that is partly attributable to low wages, there is heavy reliance on management teams. The modernization of the kitchen cabinet industry means that manufacturers will need programmers rather than cabinet makers. Automation and production methods that are less labour intensive are seen as ways to cope with labour shortages.



Photo: www.bcforestinformation.com

Top Six Innovation Needs and Priorities of the Appearance Product Industry

- Increasing the industry's design and product development capacities
- Developing enhanced finishing products and methods
- Improving the industry's understanding of business models
- Providing the industry with relevant and up-to-date market intelligence
- Developing improved methods for sanding and surface preparation
- Resolving and capitalizing on environmental and social responsibility issues

Innovations for the Kitchen Cabinet and Countertop Industry

Incremental innovations are refinements or improvements to existing technologies, products and processes. **Breakthrough innovations** are totally new ways of thinking and doing. They represent significant departures from current processes, technologies, equipment and products used in the industry.

The lists below represent only some of the innovations identified in this project. Please consult the *Roadmap* for a more extensive listing of possible innovations.

Market Access / Intelligence / Competitors

Incremental Innovations

- Market intelligence for upcoming trends.
- Develop quality standards for kitchen cabinet casings (i.e., plastic dowels vs. wood dowels, standard dowels vs. melted dowels vs. glued dowels, etc.).
- Develop marketing approaches that are targeted to key demographic segments (e.g., women as decision-makers).
- Improve understanding of consumer buying behaviour (power is in their hands – not suppliers or retailers).
- Identify business models that are sustainable in North America. Focus should be on customer input (customized products and market pull product development), speed of delivery and low production costs.

Breakthrough Innovation

- Assess the market benefits and feasibility of environmental certification in kitchen cabinets—products targeted to homebuilders, architects and designers.

Design and Product Development

Incremental Innovations

- Develop Canadian low-density boards (lightweight panels) that could be used in kitchen cabinets.
- Develop finishes that reduce colour variations in wood.
- Put together a handbook presenting new finishes and materials that are available to industry. The handbook should include material/process combinations that increase overall product performance.
- Research improved finish properties through nanotechnologies.
- Research fire retardant finishes that do not cloud, crack or dull.
- Develop efficient and flexible packaging solutions.

Breakthrough Innovations

- Develop resistant finishes that can stand daily operations (e.g., dishwashing and coffee making). UV finishes (nanotechnologies) are of particular interest.
- Develop a way to treat wood to make it a self-cleaning material suitable for appearance applications (most notably cabinets and countertops).
- Develop water-based finishes that do not result in raised grain.
- Develop a product configurator that uses questions/prompts to facilitate product design by consumers, i.e., develop a tool enabling mass-customization.

Material Supply and Properties

Incremental Innovations

- Simplify grade interpretations among suppliers and make grading more consistent.
- Develop treatments to stabilize the appearance of Canadian species. Issues include blotchiness of maple, reddening of alder and fading of cherry.
- Identify native tree species that would be most appropriate for kitchen cabinet applications (product differentiation as a competitive advantage).

Technology and Manufacturing

Incremental Innovations

- Eliminate pre-drilling in value-added appearance products.
- Develop sanding standards to match finishes of kitchen cabinets with furniture finishes as there are significant discrepancies between industries.
- Develop finishing that reduces the number of steps in the painting process.
- Develop a means to obtain consistent finishes/paints on profiled components.
- Develop low temperature powder coatings with a longer shelf life to reduce the costs of powder coating processes.

Breakthrough Innovations

- Develop knife design equipment that is suited to small businesses.
- Develop the ability to group cutting commands (different orders using same material) to minimize machine setups.
- Document the influence of wood species and machine parameters on sanding quality and sander belt life.
- Improve understanding of the relationship between surface preparation and finish quality.
- Develop sanding technology adapted to thin veneers.
- Automate finishing so that it adjusts to wood colour.

Environment and Social Responsibility

Incremental Innovations

- Develop low-emission wood panels that could be used in kitchen cabinets.
- Identify and solve problems related to gluing of formaldehyde-free boards.
- Investigate design for assembly/disassembly and recycling (green building).
- Develop a guidance document to facilitate the use of green components.
- Develop standards to present green building data for individual products.

Breakthrough Innovation

- Assist the Canadian forest products industry in the transition towards green building certification and the development of green building compliant materials.



Skills and Training

Incremental Innovations

- Implement a training program and extension strategy for finishing and basic woodworking.
- Design a method to retain 'lessons learned' in the company as labour turns over. The process should be evolving and form a manufacturing manual.
- PC-based distance education/training is needed for workers. Potential topics include (but are not restricted to): wood as a material, equipment currently available, typical manufacturing processes, markets, management, etc.

Reference

Lavoie, P.J.P., D. Fell and F. Laytner. 2006. Roadmap for the Canadian Value-added Industry. Prepared by Forintek Canada Corp. for Natural Resources Canada - Canadian Forest Service. 179 pp.

Value to Wood Research Program Partners



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As part of the *Value to Wood* program, funded by Natural Resources Canada, Forintek's Industry Advisors are providing technical services to value-added wood product manufacturers in all regions of Canada. Find out about upcoming workshops or seminars in your area by visiting us at www.valuetowood.ca or make a request for information on any technical issue related to wood product manufacturing via valuetowood.ca (Help Desk).

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Library
FPInnovations – Forintek Division
Western Region
publications.forintek@fpinnovations.ca
Tel: (604) 224-3221
Fax: (604) 222-5690

Marielle Martel
FPInnovations – Forintek Division
Eastern Region
publications.forintek@fpinnovations.ca
Tel: (418) 659-2647
Fax: (418) 659-2922