

## WHAT'S IN THE DESIGN?

Leaders in office furniture are transforming their manufacturing process.

Garrick Ng and Lisa Diniz

**A visit to three leading office furniture manufacturers offers a glimpse into the future of sustainable manufacturing in Canada. Mark Müller, Director of Design for Nienkämper, remembers a day when flats of high grade virgin mahogany would arrive regularly at the Toronto-based company's receiving bay. To the relief of environmentalists, those opulent furniture pieces crafted from imported hardwoods are no longer a coveted status symbol. Instead, savvy consumers are opting for more intelligently and simply designed furniture solutions that combine an elegant aesthetic with exceptional quality, high functionality and sustainable production values. In fact, in response to evolving tastes, furniture companies like Nienkämper, Teknion and Knoll are re-examining their products through the lens of sustainability – a holistic planning concept that seeks to fuse social, environmental and economic value creation.**

Designing for sustainability is a process that goes beyond the designer's drawing block. It's a corporate ethos that embodies aspects of design, procurement, manufacturing and product usage – a challenge to be addressed by all levels of an organization. Nestled in the northern outskirts of Toronto, a cluster of leading office furniture manufacturers search for answers to this challenge and are pioneering innovative practices along the way.

Today, most of the virgin wood used in the production of Nienkämper furniture is razor-thin strips of veneer that are pressed on to MDF (medium density fiberboard

that is 100% recovered and recycled wood fiber). Ideas of what constitutes good design have changed, and in recent years, change seems to be driven by a desire to see furnishings that interact as gracefully with nature as they do with their human users.

With production concentrated mostly in Ontario and Quebec, Canada's furniture industry enjoyed a rapid period of growth in the 1990s. By 2002 the furniture industry was worth \$13.4 billion in shipments. Fifty-six per cent of these shipments were for export, making Canada the second largest exporter of furniture in the world.<sup>1</sup>

The new millennium has been less kind to the industry. Recession, tumbling dot-coms and widespread office closures put a halt to the good times. But at the same time interest has been building around the little-known sustainability movement – which shows manufacturers how they might improve their environmental performance and at the same time create a new business advantage. The industry's response to the business case for sustainability has been deliberate, though no two firms are embracing sustainability in the same fashion.

### Pure and Simple

Nienkämper might be reluctant to draw fanfare to its practices, but the company's long-standing belief that "the best concepts are kept simple," has inspired thoughtful products which minimize environmental impacts. For instance, Nienkämper pioneered a technique for wrapping veneer around machine-formed MDF to create a fluid, bevelled table edge that is traditionally crafted by adhering milled slabs of solid wood to flat panel sections. (The traditional practice uses virgin materials and results in significant material wastage.) Furthermore, the components in the elegant Nienkämper designs are crafted to fit together without the use of tools, glues or toxic welding, which means the products are easier to recycle. The Duo® table base, for example, replaces solid wood table legging with flexible veneer panels that not only create elegant new shapes, but also can be removed by hand to conceal audio-visual wires within their hollow core. Components that can be easily removed for replacement or repair help to further extend the life of products in the Nienkämper portfolio.

### Wood Accents

Of course, there is a tradeoff. As Nienkämper's design director, Mark Müller explains: "Snap fits (components that snap together) are easier to recycle and reduce the need for fixturing, but you spend more time designing these products." His personal approach as a designer is to reduce a product to its simplest and purest form. He is fond of using pure wood for accents. "Wood is a gorgeous material but if you over use it, you squander the effect." This is a design choice but it is also an environmentally responsible decision.

For high-design firms with a history of producing award-winning and often expensive showpieces, drawing little attention to environmental stewardship was perhaps intentional. A decade ago, the idea of sustainable design might have conjured up



Reff open plan stations in maple and Reff Companion by Knoll. Photo: EMD



images of quirky chairs, tables fashioned from scrap yard treasures and second rate materials. Owing to green movements in architecture and interior design with accompanying innovations in technology, all this has changed. Customers are coming to expect environmentally-friendly products without sacrificing quality or aesthetics.

One of the principle drivers for green design in North America is the LEED (Leadership in Energy and Environmental Design) Green Building Rating System™, developed by the US Green Building Council. LEED certification encourages progressive practices around sustainable site development, water conservation, energy efficiency, materials selection and indoor environmental quality. Sholem Prasow, VP of Business Development and Strategic Planning for Teknion, notes that, "Using today's integrated design methodologies, you can now have it all. You can build and furnish a building that provides a healthy working facility, is environmentally sound, boosts productivity and is profitable to the owner and tenant." Indeed, a glance over requests for proposals streaming across Prasow's desk reveals customer concerns as diverse as product recyclability, recycled content, volatile organic compounds (VOCs) and even the use of shrink wrap for shipping.

Today, when Teknion executives speak of sustainability, there is more than a hint of "just wait 'til you see" anticipation resonating in their voices. Teknion's initiation into sustainability began two years ago with a series of experimental projects undertaken by their Advanced Concepts Program. Charged with the task of exploring sustainable design through life cycle analysis and design for environment (DfE), the team developed new product innovations like the Avion® Workstation, a model for reducing material usage, conserving energy and improving user productivity.

With their use of new materials and curvilinear lines, it's easy to become fixated on the look of sustainably designed products. Yet, what happens behind the scenes in production is as important. Standing on Knoll's shop floor at the corner of "On Time Street" and "Customer Satisfaction Boulevard," Lawrence Bouchard describes how saw dust from milling is recovered and used to create steam heat for the half million square foot facility. This is where environmentalism meets Japanese-inspired Total Quality Management. And it works.

Environmentally-friendly, practices like waste reduction and eco-efficiency also deliver significant cost savings and operational improvements. As explained emphatically by Sholem Prasow at Teknion, "If



Welding has undergone extensive examination and process redesign at Teknion, through ISO 14001 certification, to ensure minimal or no impact is made on the environment. Water is recycled and used for cooling the machinery, the air is drawn out of the welding area to filters, cleaning the air enabling it to be recirculated and a materials reduction program minimizes the amount of waste created. Photo: Teknion.

done right, sustainability will be saving us money, not costing us more."

Proactive measures to eliminate waste or toxic substances have the added benefit of preempting future legislation and minimizing potential liabilities in environment, health and safety. Knoll's Toronto plant is close to fully converting its solvent-based finishing to a water-based process, which will reduce VOC use by 75%. The plant also follows a number of corporate practices such as the phasing out of wooden pallets and using collapsible, reusable plastic shipping containers in place of disposable cardboard boxes. Company-wide, Knoll estimates that more than 1200 tons of pallets, 800 tons of cardboard, 7600 tons of wood scrap and 100 tons of paper are removed from the waste stream every year.

Keen on earning recognition for green design innovations, many companies are aligning themselves with a wide assortment of certification systems. Knoll's indoor air-quality program has helped it earn LEED GREENGUARD certification. Teknion reached a major milestone this year by becoming the first office furniture manufac-

turer to achieve GREENGUARD certification for its major product lines. Three of Teknion's lines have also earned Canada's Environmental Choice Program Seal of Approval. In addition, both Teknion and Knoll offer customers the option of sourcing certified wood content through a standard established by the Forest Stewardship Council (FSC) and are developing environmental management systems around ISO 14001.

Opinions are mixed over the myriad of certification systems and standards entering the market. Until recently, Nienkämper has eschewed many of these schemes, opting for the flexibility of pursuing design innovations on its own terms. Depending on the customer's environmental objectives, standards can also provide mixed messages. For instance, from an environmental standpoint, is 100% recovered and recycled wood fiber MDF not certified by FSC inferior to the FSC-labelled alternative which might actually contain virgin wood – albeit sourced from certified forests? Scott Deugo, President of Teknion's Fileco division and Chairman of the corporate Environmental Steering Team, explains that

part of Teknion's role as a corporate citizen is to help customers "understand their true needs and deal with the facts. In contrast to preaching or selling packaged labels," Scott continues, "responsible education is about ensuring customers grasp a solid understanding of how differing certification systems work and what they measure."

Greening supply chains and incorporating environmentally responsible practices has not always been a smooth journey for leaders in the field. Nearly four years in the making, Knoll's campaign to eliminate VOCs from its finishing process required extensive trials with a half-dozen vendors, including one major vendor partnership that consumed two years of effort before being dissolved upon failure to meet Knoll's strict specifications. To this day, both the limited availability of suitable suppliers and price premiums still associated with labelled products continue to constrain the widespread adoption of certified inputs. Nevertheless, Lawrence Bouchard is cautiously optimistic. He recalls that not too long ago, recycled paper was an expensive, hard to find and crude alternative to regular print. Today, of course, recycled paper has become the standard, and for the most part, we take its use for granted.

### Like An Onion

But scaling the peaks of sustainable business practice still remains a daunting challenge. Nienkämper's Mark Müller finds the subject is like an onion. "Each time you peel back one layer, you discover another layer of complexity underneath."

In Scott Deugo's office at Teknion, resting alongside copies of the Harvard Business Review, is an unusual addition to Deugo's business book collection, a copy of *The Future of Life* by Edward O. Wilson, the famed Harvard biologist. Wilson seeks imaginative solutions for human survival amidst persistent tension between hard economics and the natural world. Deugo, an industrial designer by training, is also seeking sustainable solutions at the point where the disciplines of design, business and science converge. Design, after all, is about the convergence of art, science, creativity and problem solving. Sholem Prasow, and Scott Deugo at Teknion, Mark Müller at Nienkämper and Lawrence Bouchard at Knoll are among a growing group of cross disciplinary thinkers in the furniture sector who are poised to carry sustainable design to bold new heights. ●

### Notes

1. Trade statistics cited from CSIL publication, *World Furniture – World Markets Review*. September, 2002.

## The Natural Step

What might it take to get McDonald's to serve organic ice cream cake, power its stores with renewable energy, cut packaging waste by 80% and recycle 90% of restaurant waste? No, the answer isn't magic. Nor is it military deployment. In Sweden at least, where 233 McDonald's restaurants have achieved these startlingly eco-friendly results, all it has taken is The Natural Step.

The Natural Step is an increasingly influential analytical model for greening corporate supply-chains, manufacturing processes and product delivery models. The Natural Step provides a clear, accessible and savvy set of tools with which corporations can evaluate and then redesign their internal processes to minimize environmental waste and maximize economic profits. Among the hundreds of companies that have embraced The Natural Step solution to date are Bank America, IKEA, Starbucks and Nike.

A Canadian Natural Step office recently opened in Ottawa but the program originated – like so many other progressive practices – in Sweden. It was developed by a team of 50 scientists brought together to develop a versatile and effective system for designing sustainability into businesses. The project was the brainchild of Dr. Karl-Henrik Robert, who, as one of Sweden's leading cancer researchers, witnessed first-hand the damage caused by industrial toxins in the environment. His research, vision and determination have resulted in the worldwide growth of The Natural Step program.

Nienkämper's VOX® conference table was awarded Best Product Overall at the 2002 Best of Canada Awards and Best of Show at Neocon® Chicago, 2001. Photo: Nienkämper

