Supply Chain Partners Help Companies "Go Green"

Cost savings, streamlined production are added benefits when companies collaborate to achieve environmental sustainability.

Lea A.P. Tonkin

our organization can get the most bang for its lean buck by fostering green supply chain innovation; that is, by working with suppliers, customers, and employees to achieve environmental responsibility. Added revenues, cost savings, and improved supply chain processes are among the potential rewards, as reflected in the following account of several green supply chain champions. Additional rewards they report range from employee and community goodwill to the knowledge that you're doing something concrete to keep the planet cleaner and less cluttered than traditional ways allowed. To succeed in implementing this lean and green approach, these companies

In Brief

Extending lean to encompass sustainability goals is a natural progression. Organizations innovatively melding the lean/green approach as part of supply chain management can reap financial, environmental, and other rewards. say you must gain top management support, invest with payback in mind, and cultivate cost-effective, profitable alternatives.

All Weather Windows: Partnering in a Natural Lean Progression

In just over a year's time, All Weather Windows in Edmonton, Alberta, Canada is making significant progress in reducing its environmental footprint through collaboration with suppliers, customers, and other stakeholders - and there are some financial rewards from these initiatives. "As Canada's largest privately-owned window and door company, management and employees throughout the organization are looking at ways we can meet our customers' higher expectations for social responsibility," said James Simon, senior lean specialist. "During the past year, we've been going full force in this direction." The organization's sustainability goals are spelled out on their website www.allweather windows.com (see "Committed to Green").

Thanks to teamwork with their PVC supplier, for example, they launched one of their biggest-impact "green" initiatives: regrinding all excess PVC (polyvinyl chloride) resulting from their window production operations and finding uses for the material instead of sending it to a landfill. "The recovered vinyl is reprocessed into a variety of consumer goods including PVC deck and fencing products," Simon said. "Our PVC supplier also accepts the regrind and uses it in our product where possible. The program was a natural progression in our suppliercustomer relationship, with both parties eager to get involved. We have to provide a pure, uncontaminated regrind, as there is a risk of contaminates affecting quality and the extruding dies. We have a very structured work process aligned with a strict quality program. Any regrind that does not make the grade is sent to our recycling partner for further treatment. We are gaining in all aspects of this approach." A total of approximately 2000 to 3000 pounds of waste PVC material is reground daily by All Weather Windows. The PVC supplier is also looking into changing their recycling program to align with All Weather Windows. "We have diverted over 600,000 pounds of PVC from the landfill since June 2008," Simon said. "We do not pay for waste from the landfill; we do not pay for the weight of the waste PVC to be taken away." All Weather Windows is paid for "waste" PVC by their PVC supplier and their PVC/plastics recycler. "We are doing this at no cost to the organization or to our customers," Simon said. "We use related revenue to help All Weather Windows become a world-class manufacturer."

All Weather Windows collaborated with another supplier to eliminate disposal of polyurethane corners that are used in packaging. These corners are gathered and reused by the supplier for the same product packaging. "This program came straight from the employees who discovered an opportunity to reuse and save cost. Our PVC suppliers use reusable carts for shipments and have eliminated traditional packaging that used to be landfilled," Simon said. Although this approach may not be new in some organizations, noted Simon, it is a "first" in their enterprise.

"We have been on our lean journey for three years," he continued. "We see sustainability as part of this natural progression. It is about finding a more efficient way of doing things. We are continuing to ask our suppliers for ideas about ways to improve in lean, and also green.

"One of the biggest lessons we've learned is that we could not 'go green' overnight," Simon added. "Finding operations where you can send materials to be recycled was difficult because the idea is still fairly new to many companies. We are also learning how to branch out — to think beyond just reducing the amount of material sent to a landfill. Calling on employees, suppliers, customers, and others for 'green'

Resources

Energy Star (www.energystar.gov). Check energy-efficient products that provide top performance and innovative features in more than 50 categories (heating and cooling, lighting, office products, etc.).

Green Seal (www.greenseal.org) — information about products and services marked by environmentally-friendly design and production.

SmartWay Partnership, sponsored by the U.S. EPA, provides information and suggestions for reducing fuel use and carbon emissions from freight transport (www.epa.gov/smartway).

Tonkin, Lea A.P., "Sustainable You," *Target*, Fourth Issue 2008, pp. 38-40.

Tonkin, Lea A.P., "Green Suppliers Network: Lean Met Green and Got Hitched," *Target*, First Issue 2008, pp. 15-25.

The U.S Green Building Council for LEED (Leadership in Energy and Environmental Design — www.usgbc.org) offers a whole-building sustainability certification process for existing and new commercial and institutional buildings, homes, commercial interiors, schools, and other facilities.

U.S. Environmental Protection Agency (EPA) Green Suppliers Network (GSN) at greensuppliers.gov/gsn. Information about the EPA's GSN program in partnership with the U.S. Department of Commerce National Institute of Standards and Technology (NIST)-Manufacturing Extension Partnership (MEP) is provided. ideas brings one of the greatest rewards for a lean/green initiative. More employees and people in the community are happy and receptive that we are doing this. It's been very positive. Lean is all about getting people involved and learning to think differently. It's about real cultural change. At the same time, we are doing this for a lot of good reasons. One of them is that we want to keep this planet as it is; this is the direction we want to go. It's also important to identify marketable components of your organization's waste stream to get the greatest benefit from going green."

Haworth's Design for the Environment Takes Sustainability to the Next Level

Office furniture manufacturer Haworth of Holland, MI is another privately-held company seeking innovative ways to move toward sustainable operations. "We are very aware of our responsibilities to the world and our communities," said Mark Bonnema, sustainability engineer. "Three years ago, we made the commitment to sustainability — a big leap for us. We have to redesign all of our processes to be truly sustainable. Based on our vision and our policy, we are committed to short-term and long-term goals that will drive our progress."

Haworth developed seven sustainability objectives (also found at www.haworth. com/sustainability) shown in Figure 1. In turn, Haworth employees embarked on many related initiatives — recycling metals, seeking ways to use renewable energy resources, and other activities.

"We know where we want to go in meeting our sustainability commitments," Bonnema said. "Design for the environment (DFE) is the next level we are working on, to meet our objective of sustainable product and workspace design, for example. We are working with our suppliers, customers, and employees to minimize negative impacts our products have on the environment. We are considering materials chemistry, the recycled content and how we recycle, whether materials in our products are recycled at the end of the product's life, and whether the product can be disassembled so the parts can be reused or recycled.

Haworth's Seven Sustainability Objectives

Haworth leaders and members support the company's commitment to leadership in sustainability. They communicate and promote acceptance of the policy for everyone working on behalf of the organization. This policy is reflected as a framework for activities, product design, services, and decision-making. Seven related objectives are:

- 1. *Sustainable product and workspace design.* Ensure that Haworth products and workspace solutions provide customers the environmental performance and value they expect.
- 2. *Energy management.* Increase energy efficiency and utilize renewable energy alternatives with the long-term objective of becoming climate neutral.
- 3. Green transportation. Minimize harmful emissions associated with the distribution of products and services.
- 4. Zero waste and emissions. Eliminate waste and emissions associated with the production of products and services.
- 5. *Green building and sustainable site management.* Use green building design to construct new buildings and interior renovations for all facilities worldwide and ensure sites in use are maintained for sustainability.
- 6. Social responsibility. Support the communities in which we conduct business in an ethical fashion.
- 7. Stakeholder engagement. Engage all Haworth stakeholders in our path toward sustainability.

Figure 1. Haworth's supply chain management reflects its commitment to sustainability, affecting choices in everything from product design to transportation, energy management, and maintenance.

"Particular customers now require that we meet a certain level of sustainability in our products, although there may be a premium for some 'green' products," he continued. "In the past, design engineers used to pick materials based on capabilities such as form, function, and cost. Now we have more stringent guidelines. We use a redvellow-green rating system for chemicals and various products; green is acceptable based on the chemicals it is made of, yellow may be acceptable, and red is not because chemicals or products are incompatible with our sustainability commitments. We work with our suppliers to buy materials that are in the acceptable range, and it goes down the chain. In plastics, for example, we need to ask for the ingredients to be sure we are working with environmentally-responsible companies."

With hundreds of materials used in company's products all over the world, complex logistics and other issues can snarl sustainability's progress. Bonnema said the organization is starting to contact local scrap dealers that can recycle metal content in chairs brought in by consumers. In a take-back program for Haworth's Zody line of office chairs, customers can send chairs to the company's recycling centers in Holland; each chair contains 28 pounds of recyclable steel and aluminum.

Potential customers interested in the sustainability of a supplier's product increasingly demand related certification, noted Bonnema. In the office furniture market, one source of related information he cited is the Business and Institutional Manufacturers Association (bifma.org).

Top leadership support for research and for the development of effective internal and external networks dedicated to meeting sustainability goals is needed to foster long-term progress. "This will not work as a part-time effort or by referring to it as a program," according to Bonnema. "We need the support of *everyone* who contributes to our products and processes."

Innotec Corporation: Invest Time in Understanding Issues

Innotec Corporation based in Zeeland, MI is one of Haworth's suppliers that spotted an unfilled sustainability niche and figured out a way to fill it. After hearing that Haworth was looking for a cost-effective replacement for steel used in counterweight applications (weights used to prevent a file cabinet from toppling over, for example) that would help it meet sustainability goals, Innotec engineers talked with Haworth purchasing staff about their requirements and began scouting for suitable post-industrial waste products that could fit the bill. "We spent a year in development of the product, developing sources, and our process for manufacturing the material," said Jon DeYoung, furniture division leader. "We've had many conversations with engineers and purchasing at Haworth about this project. We learned a lot along the way about understanding the entire value chain — energy use, waste, and other areas — and how we can help our customers to be more successful and sustainable. Mark Bonnema came to one of our strategic planning meetings to talk about these issues." Now Innotec is launching its InnviromassTM product with Haworth for counterweights made of metal and other waste stream products. The company's patent application is pending, so they prefer to avoid spelling out specific product content for now. DeYoung said Innotec is hoping to extend its customer base for the 100 percent recycled-content product to other furniture companies as well as applications in other industries.

Sustainability Gaining Momentum: Northrop Grumman Supply Chain

Several corporate initiatives are moving Northrop Grumman Corporation ahead in its quest for more sustainable operations. Suppliers are critical to progress toward sustainability, according to Bill Haslett, manager, enterprise sourcing and logistics, corporate supply chain. "For example, we worked with suppliers to change our print and copy capability to a managed print system," Haslett said. "Having a printer on top of every desk is costly and not environmentally-friendly. If people share printers, they can use more efficient and environmentally-friendly toners and machines designed for cradle-tocradle manufacturing. Another approach is using double-sided printing."

Cost savings from the shared copier approach are "phenomenal" according to Haslett (\$100,000 a month in the Aerospace Systems business unit alone) as well as a 25 percent reduction in waste going to landfills. "We also donated excess desktop devices to a local charity in southern California, a gain for us and the community," Haslett said.

Through collaboration with suppliers, the company is replacing traditional incandescent light bulbs with more energy-efficient compact fluorescent light bulbs, another win/win "green" strategy. Haslett projected annualized savings of approximately \$600,000 as a result of this initiative.

"We also received U.S. EPA (Environmental Protection Agency) SmartWay certification," added Haslett. Participants in this program commit to using innovative fuelsaving strategies in their freight and fleet operations. Northrop Grumman selects freight services, based on how they ship and distances traveled, that meet SmartWay guidelines.

The company also selects cleaning products that are developed with sustainability in mind. One of their suppliers developed cost-effective Green Seal-certified products that Northrop Grumman's janitorial services use, reducing the amount of toxic material going into the environment.

The company is considering whether to begin using LEED guidelines for development and construction or leasing of facilities (more energy-efficient roofing materials used, etc.).

"We are in the process of asking many of our suppliers to rate their own environmental performance in several areas such as air, water, and energy (see the scorecard in Figure 2) every six months," Haslett continued. This process is part of Northrop Grumman's efforts to develop a "Green Supply Chain" report to document and encourage responsible operations. The scorecard is designed to enable supplier partners to provide a picture of their environmental performance without being overly cumbersome, Haslett said. The ratings and related documentation will become a significant factor in regularly-scheduled supplier reviews. Haslett said suppliers are also asked how their products can help Northrop Grumman become more sustainable in the future. "We will be pushing this out to a larger part of our supply base - perhaps several hundred, not all 16,000," Haslett said. Among his related "lessons learned:" Consistent communication is needed to move ahead on sustainability performance. "I spend a lot of time with national account managers on this area," he said.

"Sustainability is gaining momentum," Haslett continued. He is a member of the Northrop Grumman corporate environmental council. Members are crafting the architecture to more readily share information on related projects.

Dana/IRMCO Teamwork and Top Management Support Bring Lube Change

After Dana's Structures Group plant in Hopkinsville, KY shared results from its successful switch to a more environmentally-friendly, non-oil advanced forming fluid made by Irmco on its 16 presses, other plants in the automotive structural parts manufacturing group also began considering the change from traditional lube products. Among the new lube's selling points: substantially-reduced disposal costs. "We no longer have to contain our washer water and have it hauled away," said Jerry Bieck, plant manager at Hopkinsville.

When the Continuous Improvement Group at Hopkinsville began looking for alternatives to the previous chlorinated paraffin lubricant three years ago, recalled Bieck, their early experiments were not promising. Vegetable oil-based lubes caused galling to the tooling. Part cracking nixed soap-based lubes. Using dry-film coatings would have meant a significant

To: Supplier Partners.

As we continue to move forward in demonstrating the positive aspects of our relationship related to Environmental Sustainability, we have endeavored to represent this "Good News Story" on an enterprise basis. Most of you have provided various charts, presentations, and in some cases, sample products that demonstrate both sensitivity and awareness of the global environmental issues. In moving forward, we are developing internally a "Green Supply Chain" report card for use internal to our organization as our method of emphasizing the strength of our partners as a solid cadre of responsible global citizens.

In trying to understand the intricacies of such reporting, we reviewed a great many different documents and publications. For your review, we have attached a file on the Global Reporting Initiative which encompasses the major elements of sustainability in a great level of detail. In our review of this, we found far more detail than we could make practical use of. Based on this, we have created the attached draft scorecard. The intent here is to enable our Partners to provide us with a comprehensive picture without being overly cumbersome or data driven.

We request that each supplier "self report." We are asking that you review the draft scorecard and complete the various elements over the next several weeks, returning it to us by mm/dd/yyyy. It is our intent to request an update semi-annually, with interim updates as you see the need. As you are all aware, evaluating how "Green" we are is a daunting challenge. To that end, we want to report meaningful and consistent gauges of improvement.

Organizations use a variety of approaches to enhance the credibility of their reports. Organizations may have systems of internal controls in place, including internal audit functions, as part of their processes for managing and reporting information. These internal systems are important to the overall integrity and credibility of a report. However, GRI recommends the use of external assurance for sustainability reports in addition to any internal resources.

In asking you to self report, we also request that we have the ability to review your evaluation and understand each of the elements and assessments that have been provided to us. This will become a significant element of our regularly-scheduled business reviews.

We appreciate your support as a supplier partner and envision this as a key element in strengthening our relationships.

Supplier	Self Rating	Notes and Comments
AIR	Blass rating here	
	Place failing here	
WATER	Place rating here	
ENERGY	Place rating here	
RECYCLE	Place rating here	
WASTE	Place rating here	
Benefit to NG		
AIR	Place rating here	
WATER	Place rating here	
ENERGY	Place rating here	
RECYCLE	Place rating here	
WASTE	Place rating here	

Figure 2. Northrop Grumman asks its suppliers to rate their own environmental performance in several areas such as air, water, and energy using a scorecard every six months. The ratings and related documentation will become a key factor in supplier reviews. In turn, information gathered from suppliers helps Northrop Grumman to develop a "Green Supply Chain" report to document and encourage responsible operations.

and costly process change.¹ Engineers at the Dana plant worked for several months with an on-site Irmco representative to enable the transition to the alternative nonoil lube. "It wasn't easy for us," Bieck said. "We worked hands-on with all three shifts, and we made some changes in our process." Process changes included purchasing pro-

grammable spray equipment and quick-connect manifolds. Continuous Improvement Facilitator Richard Bittle noted that environmental, die performance, odor, and other issues were considered by Dana lube project participants including Todd Farmer (safety manager) and Matt Potter (maintenance manager). "We have a rigorous environment," Bittle said. "Lubes need to stand up to heat and pressures in the dies. The Irmco lube performs up to par or slightly behind petroleum-based lubes." The plant's 600- to 3000-ton presses turn out steel stampings such as brackets, cross members, side rails, etc. (See Figure 3.) All of its stamped parts, and many of those from outside suppliers, are washed to remove lubricants sprayed on stampings prior to assembly. Using the new lube allows in some cases for the elimination of post-processing steps such as cleaning parts with a heated sodiumhydroxide heating compound and recycling washer water, said Brad Jeffery, Irmco executive vice president.

Citing the cost and time invested in the lube change, Bieck commented, "To make a change like this, you need top management support. The price per gallon for the new lube is more expensive. But we've cut our costs per stroke in half, since the elimination of natural gas to heat our part washers. "



Figure 3. Automotive parts such as this spring hangar bracket are manufactured at the Dana Structures Group plant in Hopkinsville, KY. Their disposal costs decreased after the plant switched to a more environmentally-friendly, non-oil advanced forming fluid made by Irmco on its presses.

Allegra and PortionPac Create a Chain Reaction

Cost concerns needlessly scrap many manufacturers' interest in sustainabilityfocused marketing materials, even though they've made the commitment to "green" raw material sourcing decisions, said Thomas Auge, vice president of sales, Allegra Print & Imaging in Elk Grove Village, IL. "Yet they could add to their sustainability quotient by selecting a printer that works with them to reduce the amount of printing material that is wasted and uses the highest-recycled content (post-consumer waste) that will work with their equipment, at a three- to four-percent premium," he said. "Newer papers offer sustainability benefits unavailable a few years ago. Printers can encourage customers to print only what they need, often less than the volume they originally planned - keeping waste out of landfills. If you order 50,000 flyers and only mail 30,000, you're wasting resources to move, store, and get rid of the excess. We look for ways to improve distribution methods and also look at ways to reduce chemical and other emissions." The initial added cost for environmentally-conscious marketing materials sourcing can be offset by reduced costs for storing and disposing of unused materials, when order quantities are minimized.

PortionPac Chemical Corporation, a Chicago-based manufacturer of janitorial cleaning products, embraces sustainability and counts on suppliers such as Allegra to support this commitment. "The most exciting thing is that customers and suppliers can work together to create a chain reaction that benefits the environment," said Marvin Klein, co-founder. "When suppliers start creating new products and services needed to meet sustainability goals, it will lead to more sales, new customers, and additional profits."

Learn from Others, Then Get Started

How can organizations most effectively collaborate with supply chain partners to harvest green innovation? Brett Wills, a green transformation specialist with High Performance Solutions (HPS) and former plant manager for Powersmiths (a green presenter at AME's most recent annual conference in Toronto), shared these ideas:

- Take a broad perspective on sustainability and your organization's role as a customer and as a supplier. Make a commitment to going green and start to look at the environmental impact of your operations. Consider energy usage and cost, water, materials, transportation, emissions, and other components of your products' complete life cycle and how your goals/activities mesh with all your stakeholders, including the communities where your company operates.
- Facilitate consortium-type events whereby your organization, along with your suppliers and customers, shares best practices to learn from each other about what lean/green approaches work well or poorly. By implementing these newly-learned approaches and improving on them, you keep the green supply chain wheel turning.
- Get started. If your company isn't geared up for an organization-wide sustainability transformation, start with one area and evaluate possible changes (talk with suppliers about what resources you and your suppliers need to invest/potential paybacks) and then select an initial target or project. Look for initiatives that have little to no upfront cost or that have rapid paybacks. Energy management, in some cases, offers easier possible "fixes" such as new lighting choices or running machines only when needed. Measure your savings and use them to justify continuing down the path to environ-

mental responsibility. As you gain experience in navigating sustainability issues with suppliers, your organization will more smoothly graduate to more complex initiatives such as cradle-to-cradle product design or the use of renewable energy.

• Don't get spooked about going green. "Many people still have this illusion that going green is a financial drag and that there is no systematic process to follow," Wills said. "Green manufacturing is an extension of lean operations with an added spotlight for environmental waste. You are still asking employees and your suppliers to find innovative ways to eliminate waste and non-valueadding activities. You are also learning together about factoring in all of the costs for products and services and rewarding suppliers that take the initiative to go greener. When you look at all the costs over time and get past the first cost mentality, green products and processes are almost always less expensive alternatives. At the same time, this innovation helps your organization to minimize its impact on the environment. All of this results in reduced costs and a much stronger ability to compete and win."

Lea A.P. Tonkin, Woodstock, IL, is the executive editor of Target.

Footnote

1. Kuvin, Brad F., Metalforming, May 2007, pp. 32-33.

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