

# RAVEN

| Issue No. 18 |



LET ENDLESS POSSIBILITIES BEGIN™

Social Responsibility, Sustainability Good for Business



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Dear Readers,

In this issue of the Raven, we are focusing on corporate social responsibility and sustainable business practices, not only as the right thing to do for society, but also as good business strategies.

Jayco, the nation's largest privately held recreational vehicle manufacturer, has adopted an eco-focused business strategy that is resulting in better RV units and helping protect America's scenic vistas that inspire travel. Lee Industries, one of the top furniture makers in the U.S., has also implemented a broad-based sustainability program that is designed to create products more appealing to ecology-minded consumers.

In Columbus, Ohio, Capital City Awnings has adopted a program that is not only repurposing remnant fabrics, but also generating much needed donations to the region's largest foodbank. On the West Coast, a relatively new company, Hydra Design Labs, is proving that new opportunities can emerge from adversity, including the ability to foster more sustainable business practices and products.

One of the most pressing issues for our country today is the need for greater recycling to reduce the demands on our landfills. Earlier this year, we were pleased to have achieved landfill-free status at all of our U.S.-based manufacturing centers, and we're sharing some of the lessons we learned along the way. Also from Glen Raven, we've included an article that describes how graphics can be used to monitor, measure and communicate sustainable practices.

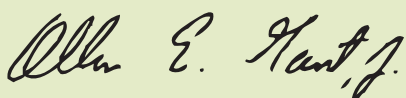
The University of North Carolina at Charlotte will launch its first football team in the fall, playing at a stadium that has incorporated numerous sustainable construction practices. Speaking of sustainability, we are also offering an article discussing the concept of sustainability, how it's defined and what it means to us all.

We are proud to include an article in this issue from Lixit, the nation's leading provider of pet watering devices. This Napa Valley-based company supports a program for the employment of special needs adults, which is helping these individuals develop job skills and positive perspectives on their lives as members of the workforce.

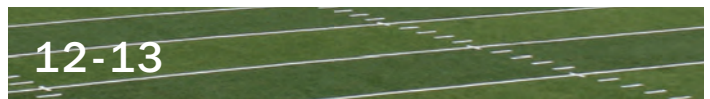
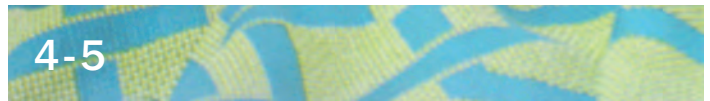
Awning Cleaning Industries of New Haven, Conn., knows the value of performance fabrics, which is reflected in its core business of cleaning, repairing and storing awning fabrics and in its leadership with recycling and repurposing used and remnant fabrics. A central element in success with recycling Sunbrella® fabrics has been our partnership with the S.C. Department of Vocational Rehabilitation, which is dedicated to helping people re-enter the workforce.

Finally, we turn our attention to France and ATC Groupe, which is a leader in environmentally friendly approaches to graphic applications. Our Dickson associates are working closely with ATC on new materials and innovative processes to produce signs and banners that are as sharp and colorful as they are eco-responsible.

In each of these articles, you will read how being a socially responsible company focused on sustainable practices is indeed good business. At Glen Raven, we are proud to be associated with all of these customers and many more that are growing and prospering while keeping a watchful eye on the health and wellbeing of their customers, employees and communities.



Allen E. Gant, Jr.  
President and CEO  
Glen Raven, Inc.



**ON THE COVER** People who enjoy the recreational vehicle lifestyle are drawn to the EcoAdvantage program of sustainable manufacturing by Jayco, one of the country's largest RV makers.

**INSIDE COVER, TOP** Lee Industries, a leading furniture manufacturer, has incorporated sustainable materials and business practices under its "naturalLee" brand of home furnishings.

**INSIDE COVER, BOTTOM** Sunbrella® Renaissance fabrics incorporate recycled fibers that create a highly textural look enjoyed by consumers who are also drawn to the sustainable nature of these beautiful fabrics.







# JAYCO RV STRATEGY HELPING PRESERVE GREAT OUTDOORS



“Everyone benefits when we build better RVs using fewer or renewable natural resources.”

Jeff Stauffer

People who adopt the recreational vehicle (RV) lifestyle are typically driven by an enjoyment of the great outdoors, exploring sites that can range from Yellowstone to the Grand Canyon and from San Francisco Bay to the Florida Keys. So it only stands to reason that one of the country’s leading RV manufacturers is doing everything it can to help protect our national environment for generations to come.

“Our company began an aggressive recycling program more than 20 years ago as a way to reduce our impact on area landfills,” said Jeff Stauffer, continuous improvement manager with Middlebury, Ind.-based Jayco, the world’s largest privately held RV manufacturer. “About two years ago, we decided it was time to ramp up our recycling efforts into a full sustainability program, which gave birth to Jayco EcoAdvantage.”

EcoAdvantage is a collaborative sustainability initiative launched in 2011 by Jayco and its three operating divisions – Jayco, Starcraft RV and Entegra Coach. The program includes the active participation of employees and trade partners, such as Glen Raven and Trivantage, who are dedicated to helping build better RVs using fewer and renewable natural resources.

Jayco’s goals are ambitious: become 100 percent landfill free by 2015 by eliminating or recycling all manufacturing and office waste; significantly reduce fresh water use in product testing and other processes by increasing the use of reclaimed rainwater; conserve energy with a 40 percent reduction in utility use by 2014; and improve overall efficiency by streamlining administrative paperwork, production processes and construction methods.

Results thus far have been impressive. During 2011, the company conserved enough electricity to power 980 homes, saved more than 41,000 trees and conserved enough gas to make 21.4 trips around the earth in a car. Jayco also saved enough landfill space to accommodate a year’s worth of trash for more than 31,000 households.

Stauffer has worked for Jayco for more than 23 years in roles that have included engineering, production management and continuous process improvement. These experiences have given him an appreciation for how sustainable practices must be integrated seamlessly into the manufacture of RVs.

“Recycling has paid for most of the costs associated with our sustainability program through reduced landfill fees and income generated by the sale of recyclable materials,” Stauffer said. “We work closely with production to locate receptacles for recyclable materials conveniently to production areas. We’ve also invested in material handling and baling equipment that makes processing these materials as cost efficient as possible.”

In addition to collaboration within the company, Jayco has also enlisted the support of its supply chain partners in achieving sustainability goals.

“We’ve enlisted more than 20 different suppliers into our sustainability program, and we’ve learned a lot from each other and everyone has benefitted,” Stauffer said. “One of the most productive areas of collaboration has been in changes to packaging that reduce the amount of materials used when shipping component parts.”

EcoAdvantage also addresses the design of RV units, with a goal of reducing weight for improved fuel efficiency. At the same time, the company emphasizes increasing uses for green building products and green manufacturing processes, adopting innovative industry best practices wherever possible.

“We’ve received a lot of positive feedback from our dealers about the EcoAdvantage program,” Stauffer said. “Customers visiting dealer showrooms have heard about our sustainability program and are highly supportive of the effort. Everyone benefits when we build better RVs using fewer or renewable natural resources.”

**ABOVE** Jeff Stauffer, continuous improvement manager for Jayco, is leading the company’s ongoing sustainability program. **LEFT & BELOW** The EcoAdvantage program at Jayco is resulting in units that use fewer and renewable natural resources, helping to protect the natural environment cherished by RV enthusiasts.





# CONSUMERS DEMANDING MORE SUSTAINABLE FURNITURE



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Consumers in the market for new furniture are motivated by many factors with color, design and comfort at the top of every list. Also added to this list by a growing number of consumers is sustainability reflected in both materials and manufacturing processes.

“In our view, 10 percent of the market is comprised of people who are dedicated to purchasing sustainable products regardless of the cost,” said Norman Coley, president of Lee Industries, a leading furniture manufacturer headquartered in Newton, N.C. “The majority of consumers, about 80 percent, care about the environment and sustainability, but are not necessarily willing to pay more, and you have to reach them with a compelling value proposition. For the remaining 10 percent, sustainability doesn’t register.”

Lee Industries is targeting that 90 percent of the marketplace that values sustainability with its commitment to “Earth-Friendly” furniture under its “naturalLee” brand, which encompasses products, processes and people. It’s an effort that began in the 1980s with the elimination of chlorofluorocarbon (CFC) gases from manufacturing processes and materials. Since then, Lee Industries has extended its sustainability focus into all aspects of the business, including soy-based cushions, recycled and organic fibers, and wood from forests following sustainable practices.

“We focused initially on our products by incorporating more sustainable materials, such as soy-based cushion materials; at first it was an upgrade to our existing lines, but today we extend these materials and practices to all of our offerings,”

Coley said. “We are also certified by both the Sustainable Forestry Initiative (SFI) and the Forest Stewardship Council (FSC), which support sustainable forestry practices.”

An environmental team at Lee Industries is responsible for driving the sustainability program by setting goals for positive environmental impacts and developing tactical plans for increased recycling and reducing the use of energy and water. Lee not only involves its employees with sustainability in the workplace, it also encourages them to be more responsible in environmental practices at home through its Personal Environmental Contributions (PEC) program.

“We’ve communicated to our people that everyone has an impact on our sustainability success,” Coley said. “Our program has also been extended to our supply chain partners and retail customers. It’s been very encouraging as everyone has gotten on board and we’re able to have a much larger impact with everyone working together.”

Founded as a family-owned business in 1969, Lee Industries’ sustainability program has included a broad range of activities, including replacement of CRT computer monitors with LCD devices, paperless communications, replacement of incandescent light fixtures with “green bulbs” and motion-activated lighting. Results have been substantial since 2008 including 1.3 million pounds of landfill waste eliminated. Electricity use has been reduced by a total of 1.1 million kilowatt hours, and more than 77,000 trees have been planted through Lee Industries’ contributions to the American Forests Association.





Lee Industries' commitment to sustainable business practices is reflected in the company's recent purchase and retrofitting of a 1960s-era building in neighboring Conover, N.C., as a new manufacturing center and corporate headquarters. Renovation has included a high-efficiency roof and HVAC system, motion-sensitive lighting, low-flow water fixtures and energy-efficient windows.

The ultimate success of any sustainability program is the marketplace. With double-digit sales growth since 2009, Lee Industries, which features a line of Sunbrella® fabrics, is confident that all of its business strategies, including sustainability, are helping the company continue to move forward during challenging economic conditions.

"We have always prided ourselves as leaders in the industry," Coley said. "We want to manufacture furniture that we would like to have in our own homes; we want to feel that we are having a positive impact in making the world a better place."

"We want to manufacture furniture that we would like to have in our own homes; we want to feel that we are having a positive impact in making the world a better place."

Norman Coley



**ABOVE** Lee Industries incorporates "Earth-Friendly" components in all of its offerings, including soy-based cushions and wood from sustainably managed forests. **RIGHT** Norman Coley, president of Lee Industries, left, with Daniel Deal, an expert upholsterer, in the company's Newton, N.C., plant.



# AWNING COMPANY HELPS FEED HUNGRY WITH BAGS MADE FROM REMNANT FABRIC

As one of Ohio's largest and best-known shade solution providers, Capital City Awning of Columbus, Ohio, can always count on brisk traffic at the area's annual home and garden show as consumers plan home improvements for the summer. An added attraction for Capital City's fans is the company's colorful bags made of remnant Sunbrella® fabrics.

"The bags usually sell out pretty quickly so it's a tradition by many of the show's visitors to make our booth one of their first stops," said Kisha Moldovan, sales manager and marketing director for Capital City. "We are thrilled that our bags are so popular and give show visitors yet another reason to visit our booth each season."

**"Not only are we supporting a worthy cause, but we've found a great use for our remnant fabrics."**

Kisha Moldovan

Even more thrilled about the popularity of Capital City's bags is the Mid-Ohio Foodbank. Proceeds from the sale of the bags go to the foodbank, which since 1980 has supported more than 550 food pantries, soup kitchens, shelters, after-school programs and senior housing sites across central and eastern Ohio.

Capital City Awning began its bag-making program in support of the foodbank about five years ago and today sells more than 500 bags each year for \$2 each. Made from colorful Sunbrella

fabrics purchased through Trivantage®, the bags have attracted a loyal following.

"We see the bags all over town, often in the grocery store," Moldovan said. "Many people purchase the bags as gift bags in which they add other gifts. It's not unusual for people to buy 10 or 20 bags at a time."

Sewing specialists at Capital City Awning make the bags whenever they have spare time between the stages of large awning projects or during slower times in December and January. It takes only about 10 minutes to sew a bag which is then screen printed with the Capital City name.

"Not only are we supporting a worthy cause, but we've found a great use for our remnant fabrics," Moldovan said. "We also give remnants to art students at Ohio State for their school projects; we even had a lady come in who wanted fabrics to recover her dilapidated baby stroller. She came back in a few days later and the stroller looked beautiful with the new fabrics, and she was so happy."

Involvement with the bags project has been a source of pride and morale building for Capital City employees who are given time from work with pay to volunteer for the local soup kitchen.

"For some of our employees, this is the first time they have had an opportunity to volunteer," she said. "It's a great opportunity for our people to work together outside of the company, and everyone is very excited to support this wonderful charity."



Natalia Raskovalova sews a Capital City Awning tote bag, which will be sold with proceeds donated to the Mid-Ohio Foodbank.



Capital City Awning tote bags made from remnant Sunbrella® fabrics are a favorite throughout the Columbus, Ohio, area.



# ACHIEVING LANDFILL-FREE OPERATIONS: A SERIES OF SMALL STEPS



“Achieving landfill-free status is good business from every angle, including reduced costs and new sources of revenue.”

Randy Blackston

Earlier this year, Glen Raven achieved a milestone in its decades-long commitment to environmental stewardship – all five of the company’s domestic manufacturing centers became landfill free. Plants in Anderson, S.C., Burnsville, N.C., Burlington, N.C. (two locations), and Norlina, N.C., no longer transport any waste materials to area landfills, which is benefitting both the company and local municipal waste authorities.

The achievement of landfill-free operations, which is attainable by virtually any company, was the result of a series of small steps over the past four years. Glen Raven estimates that by eliminating landfill waste at its five domestic manufacturing centers, more than 5.6 million pounds of various materials are now being recycled each year rather than being sent to landfills.

“We recognized that there was unrecovered value in our waste streams at all of our manufacturing centers,” said Randy Blackston, vice president of operations for Glen Raven Custom Fabrics, who spearheaded the landfill-free initiative. “Glen Raven had an economic incentive to make the commitment to landfill-free status in addition to knowing it’s the right thing to do for the environment and for the communities where we do business.”

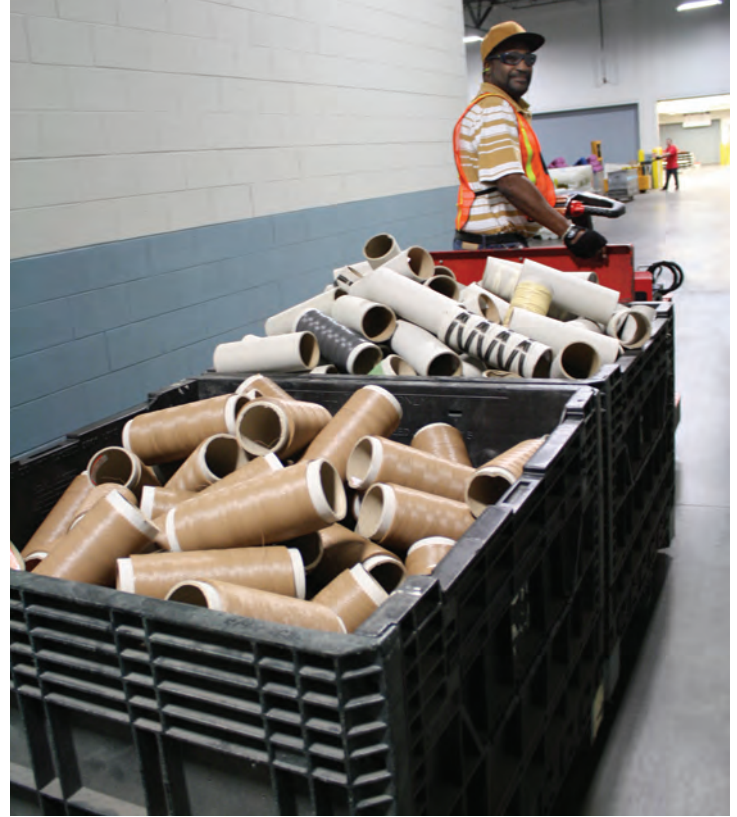
Based on Glen Raven’s experience, below are the essential components that could be adopted by any organization dedicated to reducing or eliminating its impact on landfills:

- **Commitment** – The first step in the process is a commitment at the highest level of an organization to reducing landfill wastes. Landfill-free status must be a strategic goal with a commitment of resources. For many organizations, eliminating landfill wastes can turn an expense – landfill fees – into revenue from the sale of recyclable materials.
- **Waste identification** – The next essential step is to identify all of the elements in an organization’s waste stream, from paper and plastics to raw materials and machine components. This step will provide the basis for a landfill-free plan, including the setting of priorities for which materials to recover first.
- **Most valuable first** – Materials going to the landfill will vary greatly in their value for recycling, so it’s best to start with the most valuable. For Glen Raven, fiber waste from performance fabrics manufacturing has the greatest value and has been a priority for capture, separation and recycling for many years.



**TOP** Randy Blackston, vice president of operations for Glen Raven Custom Fabrics, leads the company’s landfill-free program, which has focused on all forms of waste materials, including fibers used for performance fabrics. **ABOVE** Plastic is one of the high-value waste items that Glen Raven collects and bales. Glen Raven associates Benny Byrd, left, and Moses Morris load a baler.





- **Collection and separation** – Speaking of small steps toward landfill-free status, an essential component is setting up a collection and separation system within an organization. It's essential that employees can easily deposit waste materials in the right places every day, all day, with little to no additional effort. Keeping materials separated increases their value to recycling partners.
- **Recycling partners** – Every community is different in terms of the market for recyclable materials. Contact your local chamber of commerce or conduct a Web search to identify area companies that can purchase your recyclable materials. Recruiting valued recycling partners has been a key element in the Glen Raven program.
- **Education** – There is an abundance of resource materials on recycling and repurposing materials available over the Internet or through trade organizations such as the Industrial Fabrics Association International (IFAI) and its affiliate organizations for awnings (PAMA) and marine fabricators (MFA). Avail yourself of information on best practices in recycling and repurposing.
- **Measurement** – It's important that you measure your progress and your results to assure that your landfill-free strategy is financially sustainable. An organized collection system and reliable recycling partners can make this element attainable.
- **Employee commitment** – Everyone in an organization who touches recyclable materials, which actually means every one, has to be informed about the program and their roles in making it a success. All individuals should understand their own individual waste streams and how to manage them.
- **Repurpose and reuse** – An important way to reduce an organization's waste stream is to repurpose and reuse materials that may in the past have ended up in the trash.

Glen Raven's program includes the reuse of yarn cones, paper tubes and wood pallets multiple times before they are placed into the recycling stream. Awning and marine fabricators may find that remnant fabrics can be made into new items, such as bags.

- **Process improvements** – Many awning and marine fabricators have found that through process improvements, such as nesting patterns during fabric cutting, they can reduce waste materials and boost profit margins.
- **Teamwork and ownership** – The quest for landfill-free status affects every individual, so teamwork and ownership of the program at all levels are essential. Start with a core group of dedicated employees who can make the program a top priority on their work agendas.
- **Series of small steps** – Approach your landfill-free program as a series of small steps. It won't happen overnight, but it will happen with a plan and continual progress over time.

“Achieving landfill-free status is good business from every angle, including reduced costs and new sources of revenue,” Blackston said. “It can also be a source of pride and sense of achievement for employees who know they are doing everything they can to protect the environment and help make their jobs more secure.”

**ABOVE LEFT** Food wastes from the canteen at Glen Raven's Anderson, S.C., manufacturing center are composted with landscaping cuttings, resulting in rich nutrients that are used throughout the 180-acre campus. Glen Raven associate David Groves attends the composting center. **ABOVE RIGHT** Glen Raven associate James Harling transports cones that Glen Raven reuses multiple times.



# AWNING CLEANING COMPANY LEADING FABRIC RECYCLING, REPURPOSING



**A**s a specialist in awning and marine fabric cleaning and maintenance, Scott Massey has a special appreciation for the long-term value of performance fabrics, which has inspired his other passion – recycling and repurposing used and remnant fabrics.

Over the past three years, Massey's company, Awning Cleaning Industries of New Haven, Conn., has processed more than 14,000 pounds of fabric for recycling and more 12,000 pounds of fabric for repurposing for nonprofits. His company serves as a collection point for awning and marine fabricators from throughout the region; as president of the North East Canvas Products Association (NECPA), Massey promotes recycling and repurposing to its members.

"We regularly pick up or receive used and scrap fabric from the awning and marine fabricators throughout the area," Massey said. "At our association meeting three years ago, members brought in 100 pounds of used and scrap fabric. This year we collected more than 1,000 pounds during our meeting. It's really beginning to catch on with small and big shops."

For recycling, Awning Cleaning Industries processes, bundles, and ships used and scrap Sunbrella® fabric to the Recycle My Sunbrella program in Anderson, S.C., which processes the

fabric for other applications, such as Renaissance fabrics with recycled content. Glen Raven contracts with the S.C. Vocational Rehabilitation Department to manage receiving and baling fabrics in the Recycle My Sunbrella program. This relationship provides work assignments for Vocational Rehabilitation clients and revenue to help support the department's counseling and work training programs.

"Consumers want to do business with ecologically responsible businesses, and active involvement with repurposing and recycling fabrics can help place the entire awning and marine industry in a more favorable light."

Scott Massey

For fabrics that have more useful life, Awning Cleaning Industries sews them into tarps for AmeriCares, an international nonprofit disaster relief and humanitarian aid organization. Awning Cleaning Industries also donates fabric to a nonprofit artist organization in Massachusetts which uses the fabrics for hand-painted rugs, and to other community organizations, such as the local animal shelter that used fabric for privacy fencing.

During IFAI Expo in Boston last year, Awning Cleaning Industries and two other NECPA members manufactured 1,000 show bags that used remnant fabrics for one side of the bag and salvaged and cleaned fabrics from used awnings and boat covers for the other side. The goal of the project was to draw attention to the creative uses possible with remnant and used fabrics.

"Awning and marine fabricators see the value in their used and scrap materials and are enthusiastic supporters of our recycling and repurposing efforts," Massey said. "By choosing to work together, we can all make a difference."

The primary mission of Awning Cleaning Industries is the cleaning and repair of awning, marine and recreational fabrics from throughout the New England region and beyond. The company has constructed a special cleaning facility that uses green cleaning products and is focused on helping its customers keep their outdoor fabrics looking good.

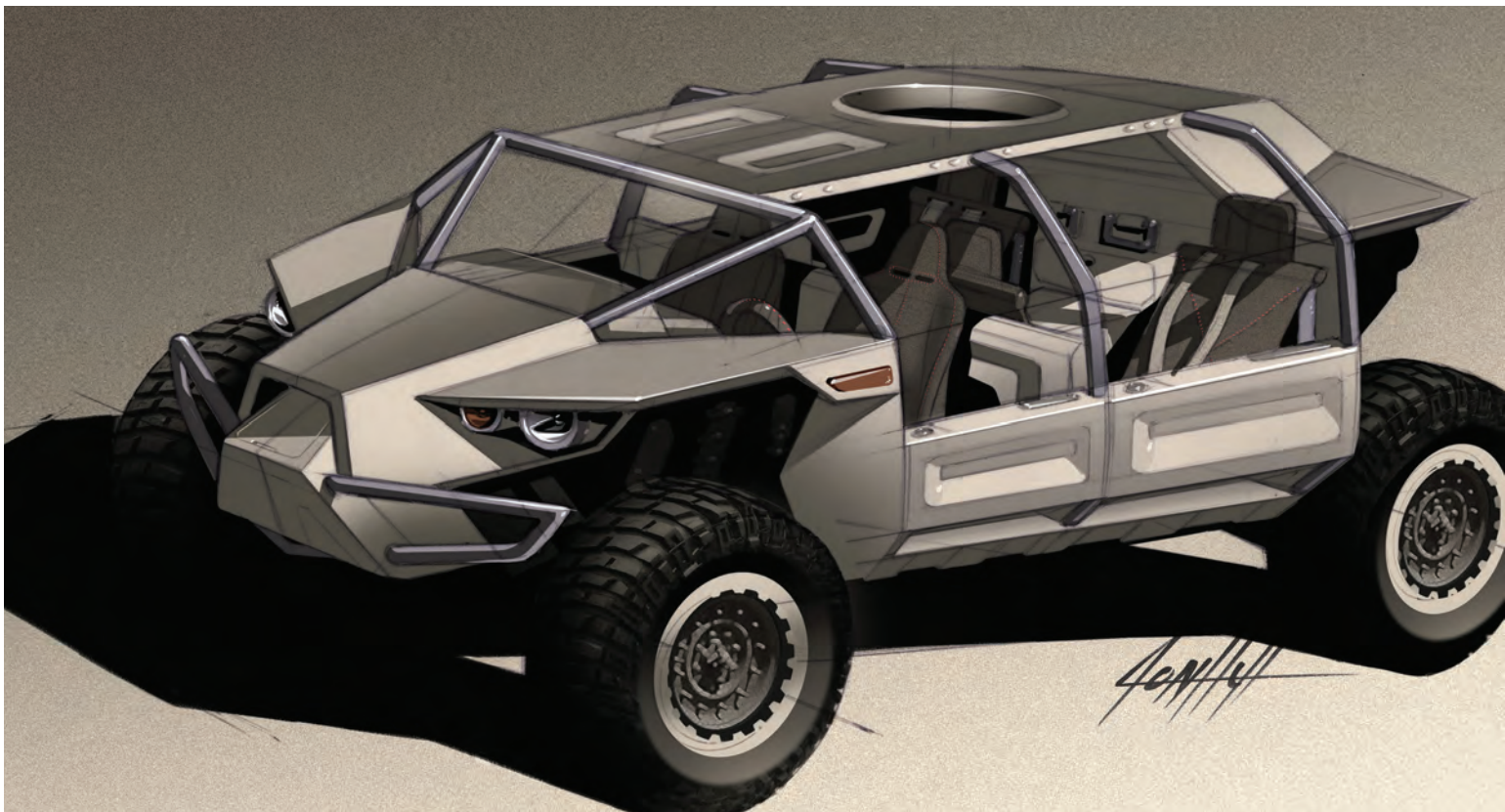
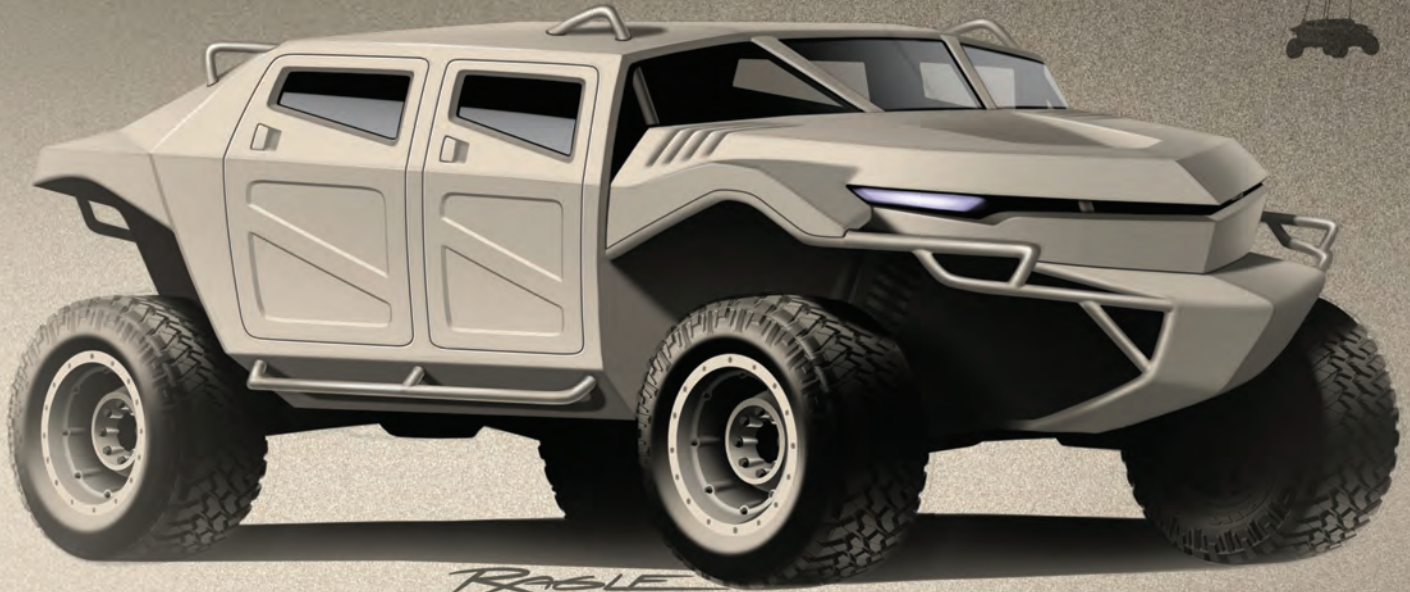
"Consumers want to do business with ecologically responsible businesses, and active involvement with repurposing and recycling fabrics can help place the entire awning and marine industry in a more favorable light," Massey said. "Our work with fabric recycling and repurposing and fabric cleaning goes hand in hand."

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**ABOVE** Scott Massey, president of Awning Cleaning Industries, left, with production manager Carl Guerrero, fabricate tarps from used and remnant fabrics that are donated to AmeriCares, an international nonprofit disaster relief program.



# HYDRA DESIGN LABS INTEGRATES SUSTAINABLE PRACTICES IN PROCESSES, PRODUCTS





**A**ny time a company goes out of business it's a shocking experience. Will the employees who are let go try to continue along the same path or could there potentially be a new opportunity awaiting them?

When Mitsubishi Motors closed its North American design studio in Cypress, Calif., four years ago one of the company's designers saw an opportunity to start a new path. Jon Hull, former senior designer at Mitsubishi, viewed the closing as an opportunity to start a new business, and he convinced three of his former colleagues to join him in Hydra Design Labs, an independent automotive design studio based in California.

"When the Mitsubishi studio closed it was hard to say goodbye to a place where I had worked at for 13 years," Hull said. "We had built an incredible team with amazing talent, and I wanted to find a way to harness that talent and experience so that our team could continue to work together. That's where Hydra Design Labs was born."

"When we approach designing eco-friendly vehicles, we style them in such a way that meets environmental goals while also stirring the soul."

Jon Hull

Hull's concept for the new business was to handpick select individuals to form a team of designers with a vast range of experience designing both exteriors and interiors of concept and production vehicles. Collectively the four designers who make up the core team at Hydra have worked on more than 28 concept cars and 24 production vehicles.

"With experience in designing both exteriors and interiors, each of our designers can manage an entire project from start to finish," Hull said. "In addition to our four core designers, we've formed a team that can provide services for any stage of the design process, including CAD, engineering and fabrication. We can take on the full range of design projects from initial ideation to a full-blown concept car build."

When Hull began planning the organization of the new business, corporate social responsibility and sustainability were core concerns.

"The environment and sustainability have always been a personal concern of mine, and I wanted to integrate practices that fit this theme for our new firm," Hull said. "Corporate social responsibility can be overwhelming, especially if you think that the only way to have a real impact is to take on a grand larger-than-life change in the way a business functions."

Hull's approach for Hydra Design Labs has been to break down the concept of corporate social responsibility into manageable components with tangible results, not unlike the approach his team follows in conceptualizing new vehicles. The Hydra Design team has examined its day-to-day routines to identify ways in which it can enhance the environment, improve employee relations and support the community.

"We've found that travel is one of the areas in which we can adopt more sustainable practices in our business operations," Hull said. "Whether it's day-to-day travel commuting by car or traveling cross-country by air, there is a huge carbon footprint associated with travel."

Hydra Design has adopted the extensive use of video conferencing as an effective way to reduce its carbon footprint while enhancing the work lives of its employees, customers and collaboration partners, which include Glen Raven Technical Fabrics. With employees not only in California, but also in the Midwest, Hydra has used video conferencing to encourage collaboration and reduce the need for air travel.

"With a robust videoconferencing setup at our disposal, it's easy for us to stage remote meetings with our clients to review progress on a project while minimizing their time away from their offices and reducing costs," Hull said.

Hydra's commitment to sustainable practices is not only reflected in how the company operates on a daily basis; this focus is also reflected in the automotive design work itself.

"Incorporating sustainability and concerns for environmental impact in automotive design isn't a new idea, but it's one that can be a challenge to implement successfully in a way that pleases both environmentalists and automotive enthusiasts," Hull said. "When we approach designing eco-friendly vehicles, we style them in such a way that meets environmental goals while also stirring the soul."

According to Hull, incorporating eco-efficient elements into a vehicle design inherently runs the risk of creating a car or truck that has been "watered down into an emotionless amorphous form."

"The ethos at Hydra Design Labs is that eco-friendly vehicles don't have to look like eco-friendly vehicles; you don't have to lose the strength of the design," Hull said. "We try to convince our clients to incorporate both aspects into their products whenever possible so that their vehicles are as successful in protecting the environment as they are on the showroom floor."





## NEW FOOTBALL STADIUM ILLUSTRATES SUSTAINABLE PRACTICES

“Stewardship is a core value for the University, and the stadium project team helped UNC Charlotte remain true to this value.”

Bob Greger

**F**ootball is a rallying point for every major university, uniting students, alumni and other supporters around an institution’s mission and vision. It is with this goal in mind that the University of North Carolina at Charlotte is launching its first football team, the 49ers, this fall in a brand new stadium that recently won an engineering excellence award from ACEC (American Council of Engineering Companies) of North Carolina.

From the outset, engineers, architects and builders recognized that building the new stadium would present unique challenges. The 24-acre site was relatively compact for multiple intended uses, budgets were under close scrutiny and the University had high expectations for a beautiful, sustainably-built facility that would further its image as a leading institution of higher learning. By every measure the new UNC 49ers stadium is measuring up.

“It was the combination of factors that made this project unusually complex and challenging,” said Kristen Hill, senior geotechnical engineer with S&ME, Inc. of Charlotte. “It required our best efforts at value engineering with the inclusion of sustainable approaches that offer proven results while reducing costs.”

In order to build the stadium bowl, more than 30 feet of soil excavation was required, which placed the field below ground-water level. Engineering and construction teams developed a dewatering system that controls and captures the groundwater, which can be used for future irrigation needs at the site.

A stream and wetlands adjacent to the 15,000-seat stadium also had to be protected, which was achieved by creating reinforced slopes using wire baskets and natural vegetation rather than more costly options of concrete and steel construction. Other slopes throughout the site, including those at pedestrian bridges, are also reinforced using similar soil reinforcement techniques rather than more traditional concrete walls. >

**ABOVE** Kristen Hill with S&ME, Inc. and Bob Greger with Draw Enterprises were members of the team that assisted UNC Charlotte in building a new football stadium that incorporates sustainable construction practices. **RIGHT** Large retaining walls near the UNC Charlotte field house incorporate soil stabilization technology instead of more costly cast-in-place construction.







Significant cost savings were also achieved with the construction of the two-story field house. A pressure relief wall, which incorporates geogrid materials from Glen Raven's Strata subsidiary, was used to relieve lateral earth pressures against the basement wall of the field house. The result is a structural advantage for the field house while also significantly reducing the size and cost of the basement wall. Segmental retaining walls, also incorporating Strata soil stabilization products, were constructed adjacent to the field house, again resulting in significant savings compared to cast-in-place concrete.

"As an engineer, it's my goal to achieve the very best project that aligns with my clients' values," Hill said. "We balanced cost, performance and safety during and after construction throughout the UNC stadium project."

According to Bob Greger, construction project manager with Draw Enterprises of Charlotte, the design, engineering and construction team for the UNC stadium achieved superior results because of its ability to apply sustainable techniques.

"Stewardship is a core value for the University, and the stadium project team helped UNC Charlotte remain true to this value," Greger said. "The result is a highly sustainable project that assured the greatest value possible for the University."

**RIGHT** Wire basket and natural vegetation were used to stabilize slopes around the UNC Charlotte football stadium, resulting in a solution that was less costly and more environmentally friendly. **BELOW** An excavation of more than 30 feet was required to create the playing field for the new UNC Charlotte football stadium, which created challenges that were met with sustainable construction approaches.







## SUSTAINABILITY: MORE JOURNEY THAN STATE OF BEING

By John Gant, Manager of Sustainable Development,  
Glen Raven Custom Fabrics

“When we say that sustainability is more of a journey than a state of being, we are recognizing the fact that technology and innovation are continually raising the bar on sustainable best practices.”

John Gant

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**M**ost conversations surrounding sustainability begin with attempts to define it, and there is no shortage of options. Many definitions of sustainability emphasize protection of our ecosystems so that our quality of life is assured for future generations. It's hard to argue with this point of view.

The U.S. Department of Commerce has issued a succinct definition of sustainability related to manufacturing: “The creation of products that use processes that minimize negative environmental impacts, conserve energy and natural resources, are safe for employees, communities and consumers and are economically sound.”

We believe that any credible definition of sustainability should include three essential elements – that sustainability is a broadly inclusive concept, that it is more of a journey than a state of being, and that sustainable practices must be economically viable.

The scope of sustainability is absolutely broad and touches every aspect of our operations, including recycling of materials,

reduced consumption of energy and water, responsible product design with improved eco-friendly materials and processes, and protection of air, earth and water resources. Numerous industry standards and certifications, ranging from GREENGUARD for indoor air quality to ISO 14001 and 9001 for sustainable process improvements, add technical detail around the definition of sustainable practices.

When we say that sustainability is more of a journey than a state of being, we are recognizing the fact that technology and innovation are continually raising the bar on sustainable best practices. Take recycling as an example. Only a few years ago companies were congratulating themselves for recycling cardboard boxes and office paper. Today the gold standard in recycling is being landfill free, and technology and business solutions are available to make this goal attainable for many organizations. >

**ABOVE** John Gant, manager of sustainable development for Glen Raven Custom Fabrics, left, with Brandon Hughes, technical service specialist.



# GRAPHICS PLAY CENTRAL ROLE IN COMMUNICATING SUSTAINABILITY

“Sustainability is a series of large and small steps, which we capture and illustrate with our graphs.”

Eddie Gant

**E**ffective communications is one of the essential elements in achieving a sustainable operation and nothing communicates as effectively as illustrations. Glen Raven Technical Fabrics has proven this strategy through the use of “spider graphs.”

“We wanted an approach that would illustrate progress with all of the elements in our sustainability program at a glance,” said Patti Bates, vice president of operations for Technical Fabrics. “We discovered the spider graph approach at a technical conference and adopted it for our company.”

The spider graph – aptly named because it resembles a spider’s web – incorporates all of the essential sustainability factors for Technical Fabrics – energy and water use, landfill, fabric and non-fabric wastes as well as air emissions. As improvements are made in each area, that portion of the spider graph shrinks in relation to other individual elements and the graph as a whole.

Technical Fabrics began its work with the spider graph illustration in 2009 and has continually updated it each month since then. The graph represents activities at its Burnsville, N.C., weaving operation and at its Park Avenue Finishing Plant in Burlington, N.C.

“Through process and equipment improvements, we’ve reduced our water consumption in the Park Avenue Finishing Plant by more than half while overall production has increased; by changing some of our chemistry we have seen a substantial improvement in air emissions,” said Eddie Gant, manager of Park Avenue. “Sustainability is a series of large and small steps, which we capture and illustrate with our graphs.”

Both Burnsville and Park Avenue have completely eliminated landfill wastes, and Burnsville has achieved significant improvement in energy use converting from fuel oil to natural gas.

“Our conversion to natural gas could not have gone more smoothly,” said Wendell Wilson, manager of Burnsville Plant. “Natural gas is less expensive and cleaner burning, so it’s been an important improvement for us.”

A spider graph approach is applicable for virtually any organization pursuing multiple sustainability measures. The essential steps include the following:

- **Variables** – The first step is to determine the sustainability factors to be measured, including energy or water consumption and waste reduction.
- **Measurement** – The next step is measurement, which results in a beginning baseline and a method for regular updates.
- **Goal setting** – Establishing goals for each of the measurement categories adds accountability and motivation to the process.
- **Tactical plan** – Each goal must be backed by a specific tactical plan for achieving those goals.
- **Communications** – Finally, making the graph available throughout an organization supports its greatest value – clear and graphic representation of goals and achievement.

“Our sustainability program is well established today as we continue in a phase of maturing our efforts,” Gant said. “The spider graph is the one place where the impact of every element comes together.”

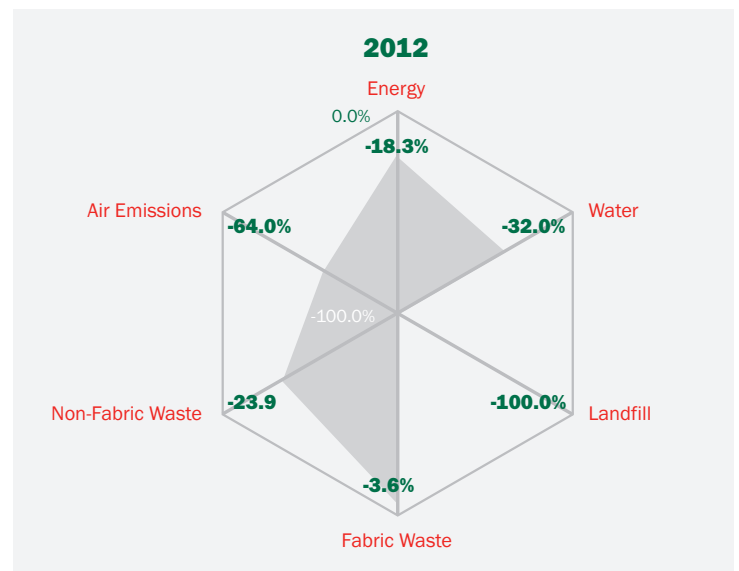
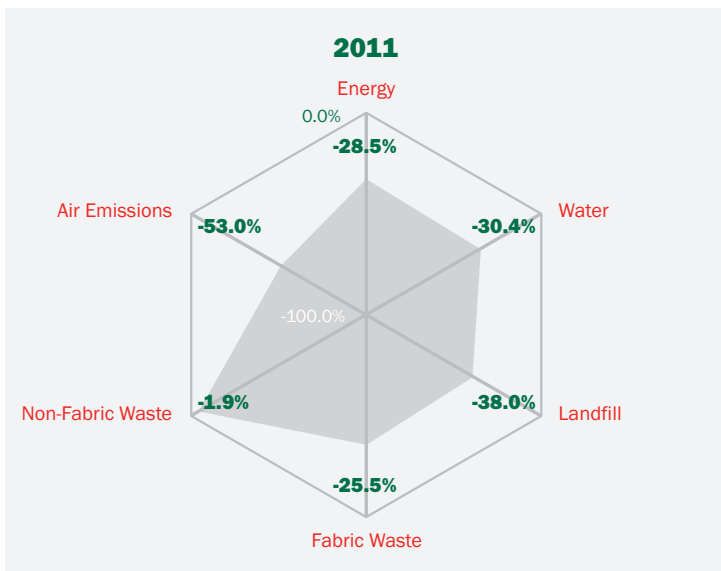
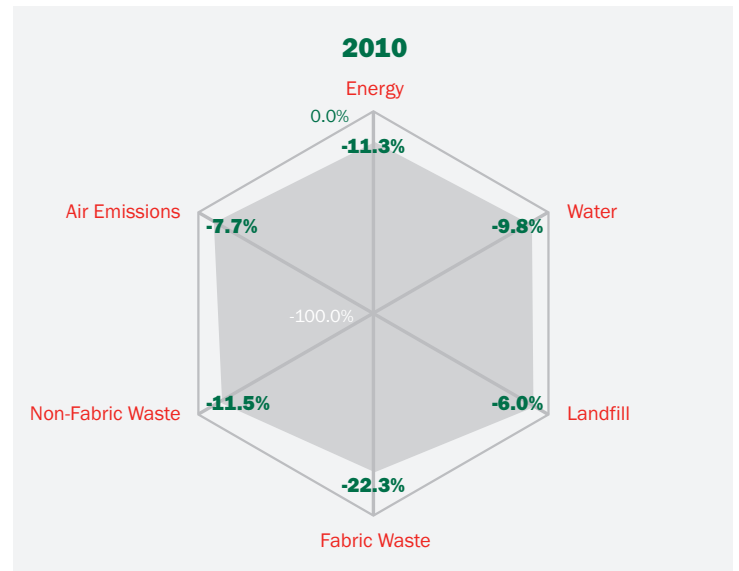
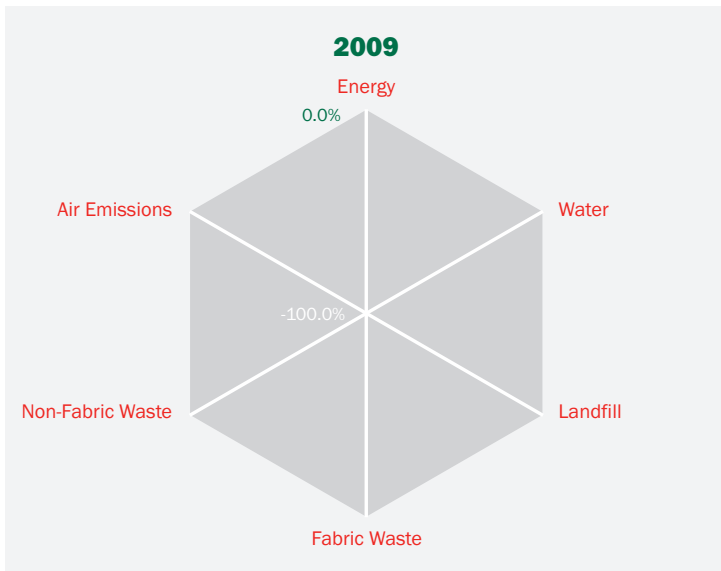
Finally, sustainability must be economically viable. We find that in virtually every instance sustainable practices are also good business strategy. For example, eliminating the payment of landfill fees and securing revenue from your waste products is obviously a sustainability good business practice. The same is true for designing and manufacturing environmentally responsible products that respond to the market’s expectations and build brand loyalty among consumers.

Arriving at a definition of sustainability is an excellent first step in the continuing process of becoming more sustainable. Rather than being viewed as some lofty unattainable goal, we can recognize that each element of sustainability represents solid business practices that every organization can adopt for more prosperous and secure futures.

**RIGHT** Sunbrella® fabrics with recycled content, marketed under the Renaissance brand, are used for upholstery, braided rugs and awnings, offering a highly textural look and feel. **OPPOSITE PAGE** A solar array atop the Glen Raven Norlina, N.C., manufacturing center is a signature element in the company’s sustainability program.







Glen Raven Technical Fabrics adopted a “spider” graph approach in 2009 to illustrate the goals and progress of its sustainability program. As progress is made with each of the sustainability measures, that portion of the spider graph is reduced. The series of graphs illustrates Technical Fabrics’ progress over the past several years, including the recent achievement of landfill-free status at its two North Carolina manufacturing centers.

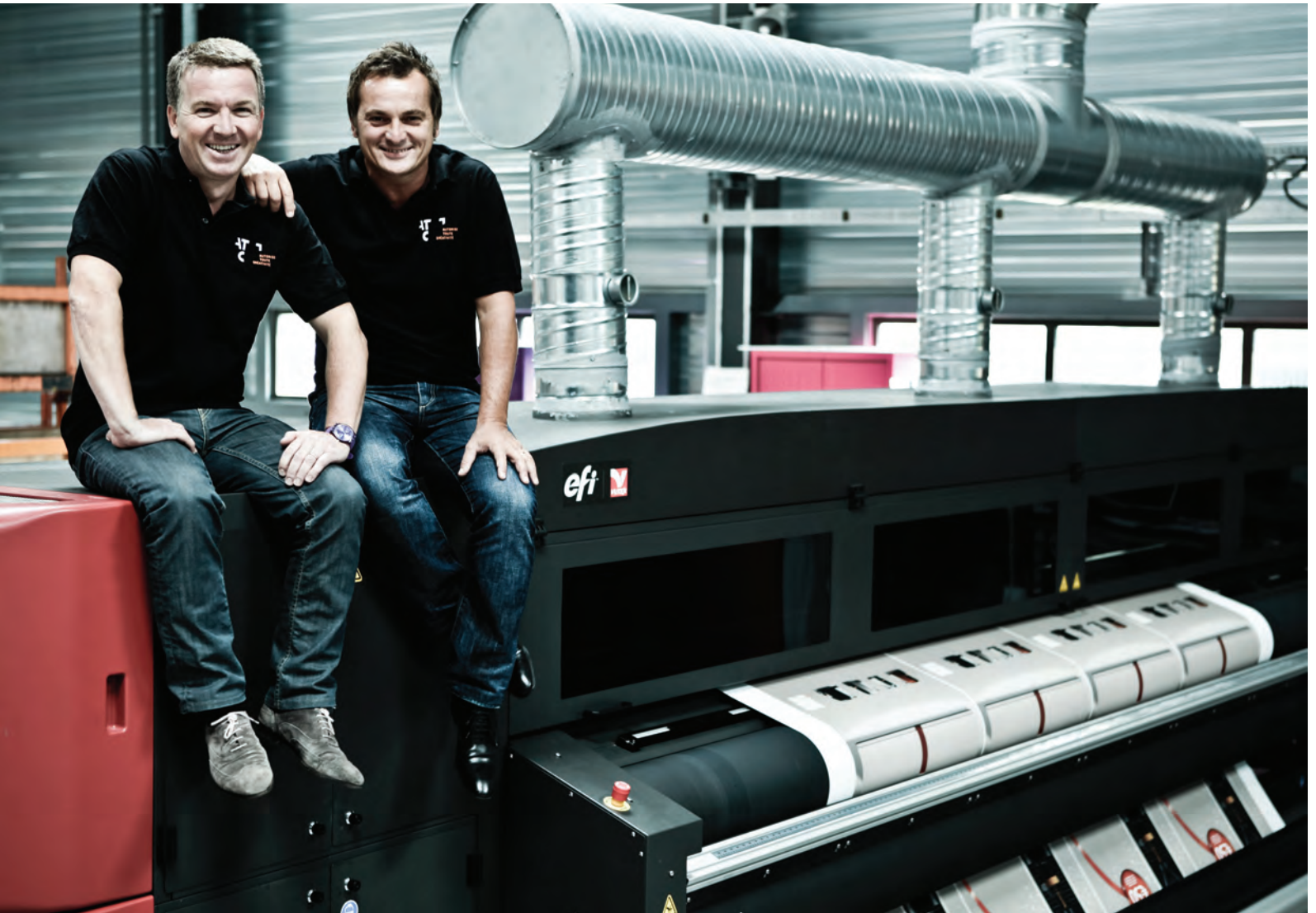




# ATC GROUPE LEADING DIGITAL GRAPHICS SUSTAINABILITY IN FRANCE

“On a technical level, we are searching for energy savings in the whole production chain by choosing the best materials and by using solvent-free inks that help to reduce the impact on the environment.”

Christophe Aussenac



The demand for colorful graphics continues to grow in Europe in a great diversity of applications, from retail centers and public spaces to outdoor advertising. Accompanying this increased use of graphics is a growing appreciation for sustainable practices.

Leading the sustainable graphics movement in Europe is ATC Groupe, which was founded in Rillieux-la-Pape near Lyon in the south of France in 1991 by Christophe Aussenac and Robert Combes, who continue to own and operate the company. ATC employs 66 people and has annual revenues of 12 million euros (\$16.4 million).

“In terms of social and environmental issues, we began our commitment to enhanced sustainability in 2006 with a program that we created called ‘Eco-Attitude,’ which communicated our commitment to sustainability to the marketplace and led to our achieving ISO 14001 certification,” Aussenac said. “On a technical level, we are

searching for energy savings in the whole production chain by choosing the best materials and by using solvent-free inks that help to reduce the impact on the environment.”

ATC works closely with Glen Raven’s Dickson Saint Clair subsidiary in France, which provides the company with its environmentally friendly EverGreen digital printing fabrics, which are considered the most eco-friendly option on the market today and a leading choice for in-store displays that ATC provides in Europe. Dickson also supplies ATC with a variety of its other PVC printing materials.

A hallmark of ATC is its expertise with digital printing machines in wide and superwide formats on any kind of substrate, including PVC banners, textiles, adhesives, cardboard and rigid substrate. Applications include signage, vehicle wraps for cars, buses and trains, window dressing, interior decorations, displays and point of sale.





ATC Groupe also offers CAM (Computer Aided Manufacturing), layout, slitting, welding and on-site installation. Leading customers, primarily in France and Switzerland, include communication agencies as well as direct customers such as Yves Rocher (beauty care products) and Renault Trucks.

“Dickson is more than a supplier to us; they are a partner who has accompanied us from the beginning of our great adventure in developing superwide digital printing capabilities,” Combes said. “Just-in-time delivery and the technical input from Fabien (Régudy, Dickson graphic market manager) have been essential to our growth, particularly in the realm of their EverGreen product line. We often collaborate with Dickson on new products, using our equipment for trials and evaluation.”

In addition to its commitment to Eco-Attitude, ATC has also signed a Diversity Charter that emphasizes improved internal

communications, annual performance appraisals for employees and continuing training. Diversity Charters are among the latest in a series of voluntary initiatives promoted by the European Commission to encourage companies to implement diversity policies.

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**ABOVE LEFT** Owners of ATC Groupe, left to right, Robert Combes and Christophe Aussenac, sitting atop one of the company’s large-format digital printing machines. **ABOVE RIGHT** The manufacturing center for ATC Groupe, located in the south of France near Lyon, is leading efforts in Europe toward more sustainable practices in graphic applications.









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## SPECIAL NEEDS ADULTS FIND MEANINGFUL WORK AT LIXIT

Lixit Corporation, the largest manufacturer of small animal watering devices in the world, is proving that doing good things for people in need is also good for business. Approximately 60 of the 100 employees at the company's Napa Valley, Calif., headquarters are special needs adults who assist in assembling and packaging products, which are marketed worldwide under 30 different labels.

"The work options for special needs adults are very limited, and even with programs such as sheltered workshops they are still outside the mainstream," said Laurie Corona, Lixit executive vice president. "Our jobs are ideal because we offer a stable environment with work experience under the guidance of specially trained job coaches."

An essential element in the Lixit program is the involvement of professional counselors (job coaches) with agencies serving the disabled. Job coaches monitor the work progress of every individual, offer assistance as needed and determine the ideal work situation for each individual, which can include continued service at Lixit or with another employer.

"It's a win-win for everyone. We have a motivated assembly workforce that is learning new skills in a supportive environment."

Laurie Corona

"Some of our special needs workers have gone on to more independent positions based on their work experience at Lixit, which is really exciting," Corona said. "It's a win-win for everyone. We have a motivated assembly workforce that is learning new skills in a supportive environment."

Assignments for special needs adults are primarily installing caps and tubing on watering devices and packaging finished products. Lixit compensates these workers on a per item basis, which helps control cost and provide an incentive for speedy work.

"They love their jobs. They love coming to work and they are so grateful," Corona said. "It's really exciting for us as a company to offer these opportunities and see the progress that people can make if given a chance."

Lixit Corporation (formerly Atco Manufacturing) was founded by Dr. Frank Atchley in his family's garage in 1968. Dr. Atchley retired in 1994, and his employees purchased the company through an employee stock ownership trust fund. Lixit also manufactures small





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animal feeding devices and animal care accessories and through a subsidiary provides products for the equestrian market, which includes the use of Sunbrella® fabrics provided through Trivantage.

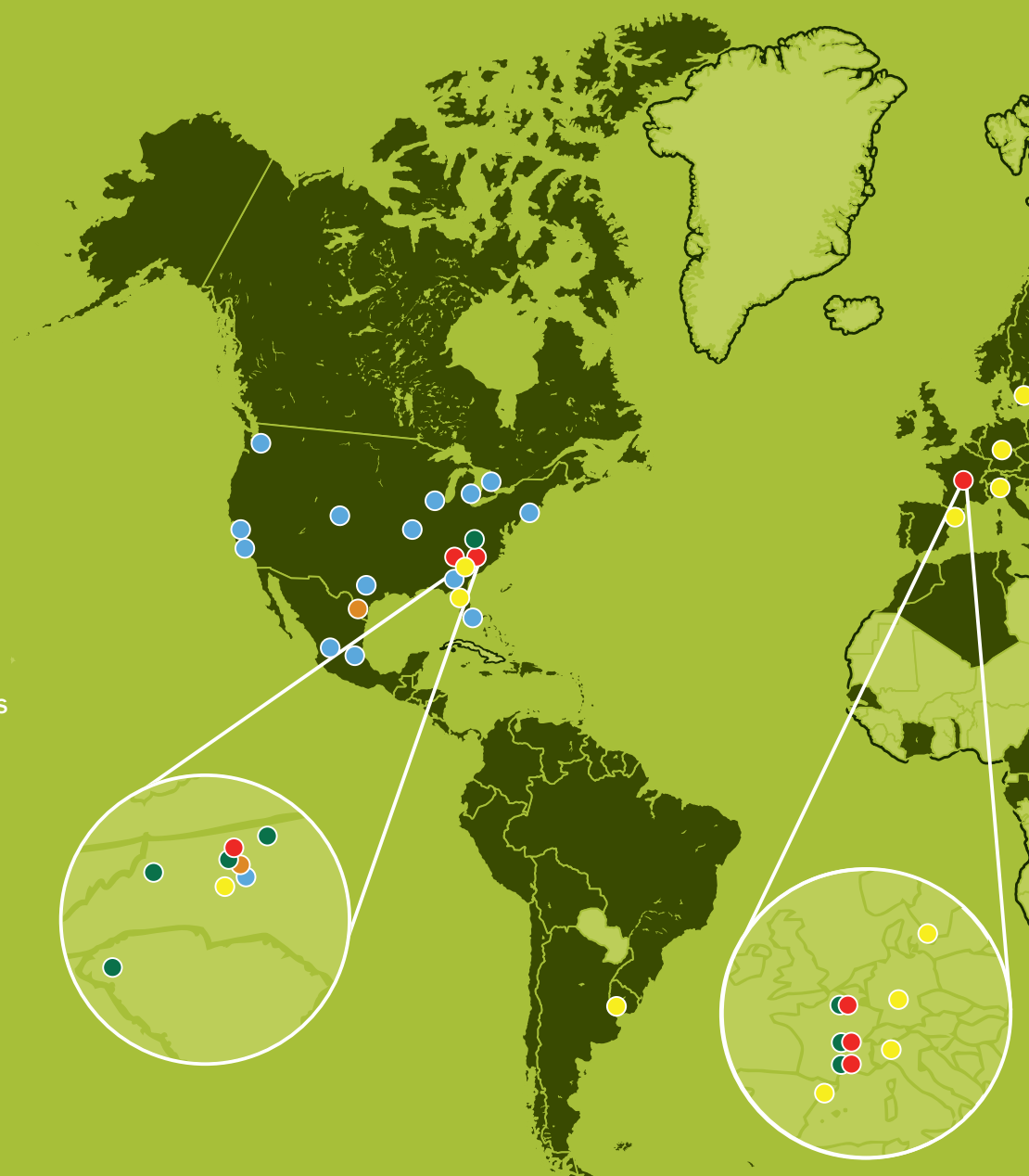
“Our special needs adults program has proven that these individuals don’t have to be separate from society; with a little additional assistance we can shift our thinking in what it means to be disabled,” Corona said. “Lixit is well entrenched in Napa Valley, and through this program we feel as if we are an even more important part of our community.”

1. Laurie Corona, EVP of Lixit. 2. From left to right are members of the team at Lixit responsible for assembling products – Rizalino Razon, Jhumar Pomares, Laurice Taylor and Nicholas Hansen. 3. Lixit employee Nicholas Hansen in the company product assembly area with Wednesday, the dog. 4. Lixit employee Laurice Taylor. 5. Disabled adults are a vital part of the Lixit workforce in assembling animal watering products. From left and counter-clockwise are Melissa Boughn, Justina Gomez, Aljo Tajano and Carlo Robles. 6. Casey Mason is a member of the Lixit product assembly team.



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**GLEN RAVEN GLOBAL LOCATIONS**

- Corporate
- Distribution
- Manufacturing
- Sales/service
- Logistics
- Countries sold into

**Corporate**

- **Glen Raven, Inc.**  
Glen Raven, NC  
336.227.6211

**Glen Raven Custom Fabrics**

- **Glen Raven Custom Fabrics, LLC**  
Glen Raven, NC  
336.227.6211
- **Glen Raven Custom Fabrics Anderson Plant**  
Anderson, SC  
864.224.1671
- **Glen Raven Custom Fabrics Norlina Plant**  
Norlina, NC  
252.456.4141
- **Glen Raven Custom Fabrics Link Spinning**  
Glen Raven, NC  
336.227.6211

- **Glen Raven Custom Fabrics High Point Showroom**  
High Point, NC  
336.886.5720

**Glen Raven Technical Fabrics**

- **Glen Raven Technical Fabrics, LLC**  
Glen Raven, NC  
336.227.6211
- **Glen Raven Technical Fabrics Park Avenue Facility**  
Glen Raven, NC  
336.229.5576
- **Glen Raven Technical Fabrics Burnsville Facility**  
Burnsville, NC  
828.682.2142

**Trivantage**

- **Trivantage, LLC**  
Glen Raven, NC  
336.227.6211

- **Consolidated Distribution**  
Mebane, NC 27302  
877.540.6803

- **Southern CA**  
City of Industry, CA  
800.841.0555

- **Northern CA**  
Hayward, CA 94545  
800.786.7607

- **Colorado**  
Denver, CO 80239  
800.786.7609

- **Florida**  
Miami, FL 33172  
800.786.7605

- **Georgia**  
Lithia Springs, GA 30122  
800.786.7606

- **Illinois**  
Elmhurst, IL 60126  
800.786.7608

- **Missouri**  
Maryland Heights, MO 63043  
800.786.7603

- **New Jersey**  
Somerset, NJ 08873  
800.786.7602

- **Ohio**  
Cleveland, OH 44113  
800.786.7601

- **Texas**  
Irving, TX 75061  
800.786.7610

- **Washington**  
Seattle, WA 98188  
800.213.1465

- **Canada, Trican Corporation**  
Mississauga, ON,  
Canada L5T 2H7  
800.387.2851

- **Mexico, Tunali Tec Cuernavaca**  
Jiutepec, Morelos, Mexico  
011.52 777 362-0636

- **Mexico, Tunali Tec Guadalajara**  
Guadalajara, Jalisco, Mexico  
011.52.333.6573660



Glen Raven, Inc.  
1831 North Park Avenue  
Glen Raven, NC 27217  
336.227.6211  
glenraven.com



## Glen Raven Logistics/ Transportation

- Glen Raven Logistics  
Altamahaw, NC  
800.729.0081
- Glen Raven Logistics  
Laredo, TX  
956.729.8030
- Strata**
- Strata Systems, Inc.  
Cumming, Georgia 30040  
800.680.7750
- Strata India  
Mumbai Head Office  
011.91.22.4063.5100
- Strata India  
Hyderabad Sales Office  
011.91.40.4003.7921
- Strata India  
Daman Plant  
011.91.260.2220160

## R.J. Stern

- R.J. Stern  
Wilkinson, WV  
800.292.7626
- DICKSON-CONSTANT**
- Dickson-Constant  
Wasquehal, France  
011.33.03.20.45.59.59
- Italy  
Gaglianico, Italy  
011.39.015.249.6303
- Spain  
Barcelona, Spain  
011.34.93.635.42.00
- Germany  
Fulda, Germany  
011.49.661.38082.0
- Scandinavia  
Göteborg, Sweden  
011.46.31.50.00.95

## Dickson Coatings

- Dickson Saint Clair  
Saint-Clair-de-la-Tour, France  
011.33.04.74.83.51.00
- Dickson PTL  
Dagneux, France  
011.33.04.37.85.80.00
- Dickson Coatings USA  
Atlanta, GA  
404.495.5994
- Glen Raven Asia**
- Glen Raven Asia  
Suzhou, JiangSu, China  
011.86.512.6763.8100
- Beijing Office  
Beijing China  
011.86.10.6870.0138
- Sunbrella/Dickson Global Offices**
- Northern Latin America  
Fort Myers, FL USA  
239.466.2660

- Southern Latin America  
Montevideo, Uruguay  
011.598.2601.3143
- Greater China  
Shanghai, China  
011.86.21.5403.8701
- North Pacific Region  
Shanghai, China  
011.86.21.5403.8385
- Vietnam  
Ho Chi Minh City, Vietnam  
011.84.98.3128022
- Indonesia  
Jakarta, Indonesia  
011.62.21.5289.7393
- South Pacific Rim  
Sydney, Australia  
011.61.2.9974.4393
- South Africa  
Port Elizabeth, South Africa  
011.27.41.484.4443