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By Susan Keen Flynn
From the ACMA Chair

Change within ACMA

There is a lot of change happening at ACMA right now. As we all know from our own businesses, change can be for the better even if it creates some difficult times. Likewise, change can create refreshing outcomes; think of a metamorphosis. Let me describe what I see in the changes that are before us as an association.

First, we have a change in leadership. I am following in a long line of terrific leaders of ACMA. I want to thank Lori Luchak of Miles Fiberglass & Composites for her service as president during the past two years. I expect that she will continue to be a solid resource for me. I would also like to thank Monty Felix of Alaglas Pools for his tenure in the leadership of ACMA. His devotion to the industry and this association is truly from his heart. We are a stronger group because of these two individuals – and all the other presidents who came before them.

My expectation for the next two years is that we will be challenged from a financial standpoint. During the past year, the ACMA Board of Directors explored, evaluated and committed to a new exposition model. The change revolves around moving our annual COMPOSITES exposition from January to October and making the new show a joint production with SAMPE. The downside to this new model is that ACMA will not have our next exposition until Oct. 14-16, 2014. That means almost 19 months between shows, and our show generates a large portion of the association’s operating funds. This is a big change, but ACMA’s leadership has a plan in place to bridge this gap and still provide the same level of quality programs and services to its members. We even plan to launch a new Learning Management System that will bring even more quality education to your company.

Planning for the joint show is well underway, and it will be a fine example of collaboration between two groups with a common goal. We believe that the show will be stronger for ACMA and SAMPE than either of our individual shows. The impact of the new show will be significant. It is expected to generate not only a higher gross number, but more importantly a higher net, which will be used for expanding services and products for the benefit of our member companies.

Enough about change: Now on to the things that will stay the same. ACMA will continue to be the voice of the composites industry in legislative and regulatory affairs. ACMA will continue to assist in the expansion of our markets with its Composites Growth Initiative (CGI) committees. And ACMA will continue to provide training and educational services to our members. I will expand on these topics in future columns, as I know they are all important to our members.

I want to thank each and every one of our members for your participation in ACMA. Please keep it up as we work through all of the changes, building a bigger and better American Composites Manufacturers Association.

Jay Merrell
Norpless-Micarta, ACMA Chairman of the Board
jmerrell@idicomposites.com
During the last 20 years I have worked with a lot of sales and marketing teams. The best teams collaborate and work well together. However, it is far more common to see sales and marketing departments set up as two separate groups, with little to no communication or collaboration between the salespeople and marketing professionals.

Although the insular system is more common, marketing and sales should be viewed as a continuation of one another. Regardless of the industry, sales and marketing overlap at various points along the buying cycle and can provide each other with valuable feedback. Generating leads, managing prospects and closing deals are all part of the same process, but many companies build walls between these groups. That makes everyone’s job harder.

Aligning sales and marketing isn’t just a nice idea for a cooperative work environment. A study by the Aberdeen Group showed that organizations with proper marketing and sales alignment had 20 percent annual revenue growth in 2010.

So we know we need to align the two groups, but what does that look like? The marketing group can’t just generate leads: It needs to produce high-quality leads derived from ideal target prospects that, eventually, lead to higher sales. Sales groups need to focus on more than just the bottom of the sales funnel (leads close to buying) and closing leads. Sales should ideally provide feedback to the marketing group about what works in the field. Sounds easy, but how do they do it?

Connecting actual sales dollars to marketing campaigns is crucial to developing a credible and sustainable marketing strategy.

The first step to integrating marketing and sales is to find out what your sales teams actually do and how they do it. What is their sales process? What steps do salespeople take to move a prospect through the buying process? What types of information and content are they using to communicate value, overcome objections, position competitively, present solutions and come to an agreement? You want to know what an “ideal lead” looks like, and why these leads are so perfect for making a sale.

The next step is to ensure your marketing efforts match the expectations of the ideal prospect. Are prospects getting answers to the questions they ask during the buying process? We train our clients’ sales teams to track the questions prospects ask during sales conversations. These questions form the basis of a solid content strategy and SEO plan. If you can answer questions asked by ideal prospects, then your marketing team is positioning you as the expert and enabling you to develop more sales-ready leads. Content that is focused on ideal prospects is an effective qualifying tool. This qualifying effect brings your marketing and sales teams in strong alignment in terms of messaging.

Once you understand the sales process and match your marketing content to it, the teams should set goals that are specific, measurable and timed. The overall goal is to find out what marketing channels yield the most closed sales and revenue. Connecting actual sales dollars to marketing campaigns is crucial to developing a credible and sustainable marketing strategy. Salespeople should use a customer relationship management (CRM) tool to track the sales process. There are also tools for marketing management to make data capture easy and actionable. These tools show where leads come from and how often they convert to customers. This information can give your team insight into how to optimize your marketing mix and, ultimately, make your sales process more effective.

Finally, each group needs to agree on what they will deliver. Define what constitutes a marketing qualified lead and what needs to happen for it become sales qualified. Just because someone downloads one of your company’s e-books does not mean they are ready for a salesperson to call. Marketing professionals help make sales more efficient when they determine that the lead is a good fit (meets the criteria established when defining the ideal prospect) and is interested in your particular solution.

Two key habits for successful marketing and sales alignment are for salespeople to review leads with marketing and for the marketing team to sit in on sales calls. When marketing hears directly from customers and the sales group can communicate the attitude and outcome of incoming leads, you will be closer to a proper sales and marketing alignment.

Todd Hockenberry is a frequent contributor to Composites Manufacturing magazine and the president and CEO of Top Line Results. Visit www.top-line-results.com/acma.
Trellis Tops  
Busy Shopping Center

Tourists and locals alike spend hours strolling a popular destination located in the center of Waikiki in Honolulu on the world-famous Kalakaua Avenue. The Waikiki Shopping Plaza is home to dozens of well-known merchants, including GUESS, Sephora and Armani Exchange, as well as a few hometown favorites such as Local Motion and Ukulele House. Perched on top of this 30,000-square-foot building is a series of structural trellis systems made from interwoven panels. The trellis systems, constructed from pultruded fiberglass reinforced polymer (FRP), add significant architectural detail to the exterior of the building.

Honolulu-based MGA Architecture LLC collaborated with Plas-Tech Ltd., a custom composites and fiberglass fabrications specialist also in Honolulu, to create the trellis systems. “Our design was inspired by the native Hawaiian culture to induce sensory response and an emotional

This rooftop trellis system, designed by MGA Architecture and fabricated by Plas-Tech Ltd., enhances the aesthetics of the Waikiki Shopping Plaza.
experience while blending in with the urban character of modern-day Waikiki,” says Matthew Gilbertson, president and principal architect of MGA Architecture.

In the early development and design stages, other materials were considered. However MGA Architecture quickly determined that FRP was the best overall solution because it’s lightweight, easy to install and requires low maintenance. In addition, FRP is corrosion-resistant and long-lasting.

Warm Pacific Ocean breezes made traditional materials such as wood, aluminum and steel poor choices for the trellises. The high level of salt in the air in Waikiki invites corrosion, requiring constant maintenance and regular replacement of some or all of the trellises. FRP, however, provides years of beauty with little to no maintenance. Considering the entire lifespan of the structure, the FRP trellis systems will cost less than ones made from traditional materials because of reduced maintenance fees.

“Having our engineering firm design a lightweight system that was strong and durable enough to meet the demands of a large rooftop assembly was definitely a challenge,” says Benjamin Rowe, general manager at Plas-Tech Ltd. “Composites were a key component to achieving the design.”

The Waikiki Shopping Plaza features five connected trellis systems, each consisting of four curved outrigger fiberglass beams measuring 28 feet long, six inches wide and one foot deep. Plas-Tech made the beams using an open molding process. The trellis’ cross members utilize 28 of Strongwell’s EXTRENE® 2 x 6½-foot rectangular tubes—a combination of pultruded fiberglass reinforcements and thermosetting polyester resin systems—per trellis system.

“The combination of the two different manufacturing processes—the open molding process of the beams and pultrusion process of the tubes—provides elements of custom lines by 70 years of expertise in structural core materials. Equally significant, our technical-support team will gladly assist you with core selection and sandwich fabrication technology. For detailed information, contact the world leader in core materials for composite structures.

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FRP structural shapes that they have plans to add more trellis systems on the neighboring building.

“We will continue to meet the needs of our island client base and produce composite systems for other notable architects and customers,” says Rowe.

Terin Bufford is the communications coordinator at ACMA. Email comments to tbufford@acmanet.org.
An All-Weather Wind Turbine

What better way to test a wind turbine that needs to endure extreme conditions than by installing it on top of a telecommunications tower in Minnesota in the middle of winter? That’s exactly what Windstrip, a sustainable energy startup company in St. Paul, Minn., did. The past two Decembers, the company has placed prototypes of its Savonious-style wind turbine on the telecommunications tower at the Minnesota Department of Transportation.

Savonius wind turbines are a kind of vertical axis wind turbine named after the Finnish engineer who first created them in 1922. They feature curved blades that spin on a vertical rotor shaft and operate by cupping and dragging the wind, which turns the rotor and generates electricity. They do not have to be pointed into the wind and can “catch” wind from any direction.

Windstrip’s research and development team has worked with the University of St. Thomas in Minneapolis during the past four years to adjust the curvature of the turbine’s blades for use on radio, cell and other communication towers. The resulting turbines, which power the tower’s communications equipment, have been optimized for lower wind speeds and are 200 percent more efficient at generating electricity than basic Savonious wind turbines, according to Windstrip.

Sustainable energy company Windstrip installed this vertical axis wind turbine on top of a telecommunications tower at the Minnesota Department of Transportation. Plastics Unlimited, which supplied the composite wind blades and end caps, won an ACMA ACE Award in the Composites Sustainability category for this application at COMPOSITES 2013.

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Most of the company’s wind turbines are part of a hybrid system that employs both wind turbines and solar panels to ensure a continual power supply. This means the turbines can be placed on communications towers just about anywhere – no matter what the weather conditions or how far off the electrical grid. Brian Plourde, COO of Windstrip, says the turbines are also a good fit for “brown” power areas with unreliable grids. Windstrip is currently working with numerous telecom companies to ameliorate power outages to their towers. International interest in the new turbines is high, according to Plourde, particularly from telecom companies in the Middle East, Africa and northeast Asia.

Regardless of where Windstrip systems are installed, the wind turbine’s design requires blades that are light enough to sit atop communications towers, yet durable enough to withstand damage from extreme temperatures, hail, ice, snow and blowing sand. That’s where composites enter the picture.

Plastics Unlimited Inc., Preston, Iowa, manufactures blades for Windstrip’s vertical axis wind turbines. The initial turbine specifications called for plastic, thermoformed parts. As the process evolved, however, it became clear that the blades would be lighter and more durable if they were made from composites. “We thermoformed the first blade and it wasn’t strong enough,” says Terry Kieffer, president of Plastics Unlimited. “Having a composite background, as well as a thermoforming background, it was just natural for us to go to composites right away.”

Plastics Unlimited molds the blades and end caps using its patented TEC (Tooless Engineered Composite)® process. First, it thermoforms a plastic shell out of acrylonitrile butadiene styrene (ABS) plastic. This shell is then bonded to a fiberglass inner layer using vacuum bag infusion. The resulting blades and end caps are 30 percent thinner, yet stronger than the thermoformed originals, according to Kieffer. Each blade weighs 25 pounds. The entire TEC® process, including moving the part between stations and secondary trimming, can be completed in 30 minutes.

Vacuum infusion is key to this efficiency. “As fast as you can lay up your glass and inject your resin and it sets up, you [can] turn that station over again right away,” says Kieffer. “So it’s not like you are sitting there waiting for gel coat to cure.” That speed may come in handy when Windstrip launches pilot installations with several telecom companies later this year.

Kieffer sees composites -- and renewable energy -- as a big part of his company’s future. “We try to do everything as green as possible. That’s why we liked the project when it first came to us,” says Kieffer. “There’s obviously going to be a huge future for composites in the energy field.”

Melissa Haley O’Leary is a freelance writer based in Cleveland. Email comments to mxh144@case.edu.

Get Certified!
ACMA offers the CCT-Wind Blade Repair certification curriculum to help serve the growing demand for composites training in the wind energy sector for servicing and repairing wind turbines. For more information or to register, email cct@acmanet.org.

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Research in CNT Fiber Processing

Although considerable advancements have been made for processing carbon nanotube (CNT) reinforced composites during the past two decades, there are still several technical barriers to overcome to integrate their nanoscale diameters and microscale lengths for use on a macroscopic scale.

Universities around the world are conducting research in CNT fiber processing. Here’s an update on the latest CNT fiber, fabric and composite research at two of them – North Carolina State University (NCSU) and Rice University.

Stretch Winding CNT Composites

Professor Yuntian Zhu’s group in the Materials Science and Engineering Department at NCSU is developing a new stretch winding method to fabricate CNT-based yarn, sheets and paper composites.

Xin Wang, a postdoctoral researcher who works with Zhu, says the group’s research focuses on the most important features of CNTs in composites formed with this new method: the effect of long nanotubes, high-volume fractions, straightness and alignment, and how strongly they are integrated with the polymer.

She currently works on improving CNT alignment and volume fraction to improve the load bearing efficiency. “The industry expects CNTs to increase mechanical strength, stiffness and electrical conductivity in composites,” says Wang. “Our approach is to create structures with a large amount of CNTs and small amounts of polymers.”

The CNTs that NCSU adds to composite structures comprise 50 to 60 percent of their total weight.

Unlike other groups who are adding CNTs to polymers, we’re adding polymers to nanotubes,” says Wang. The group synthesizes its own multi-walled CNTs by chemical vapor deposition (CVD) and combines them with many different thermoplastic polymers and polymeric carbon composites, such as PVA, nylon, epoxy and polyimide.

NCSU’s unique stretch winding and rewinding process is a dry process that forms continuous sheets, like a fabric. The process starts with aligned CNT arrays. “We drop them into a horizontal sheet, wind them onto a mandrel and spray a polymer matrix for molecular integration,” says Wang. “The stretching and rewinding are both done in the same machine using different parts for stretching and rotating to straighten the CNTs. The advantage of this technique is that we start with aligned CNT arrays, so the sheets maintain the alignment.”

Wang says that by straightening the nanotubes in the array, the stretch winding process improved the strength of the composite by 90 percent and the stiffness by more than 100 percent. It almost tripled the thermal conductivity and the electrical conductivity also increased by 50 percent. “These results are far higher than the strongest composites commercially available,” Wang says.

The stretch winding process requires long spinnable nanotube arrays, which Wang says only a handful of research groups in the world can currently produce. The majority use dispersion methods and produce shorter arrays. Her group believes that if they can scale this new technique and make larger samples, the industry will be interested.

“Once the cost is comparable to carbon...” says Wang. "This technique is very promising for future use," says Wang. "Once the cost is comparable to carbon..."
fibers or cheaper, commodities like CNT-reinforced wind turbine blades or utility poles could be a reality.”

**Extruded Fibers Depend on CNT Quality**

A group led by Rice University’s Matteo Pasquali, a professor of chemical and biomolecular engineering and chemistry, invented a wet process similar to polymer processing that dissolves nanotube powders. When the powders are in a solution, the team adds a coagulation liquid to remove the solvent and then shapes the fibers by extrusion.

The resulting fibers are easy to handle, which Pasquali says he didn’t expect. The group uses needles to sew with them and winds them onto spools, handling them like a textile thread. The thermal conductivity is also much higher than expected.

Pasquali’s team is researching wet processing and the relationship between the nanotubes they use and the resulting fiber properties. The researchers work closely with companies that provide the CNTs and share the knowledge gained about fiber performance to help make better starting powders.

While CNT fibers have been around for more than a decade and have been used by several research labs and companies, the difference with this work is how the fibers are made. According to Pasquali, many methods are based on making the fiber at the same time as the nanotubes. “There’s a reaction in a chamber, and fibers are pulled continuously out of the chamber,” he says. “This has an advantage of being a single step, but that means it’s not possible to optimize the tubes and fiber separately.”

Rice University processes fibers in steps. “The CNT manufacturer can create the tubes, clean them and then make the fibers, optimizing each step,” says Pasquali.

The researchers at Rice found they need skinny and long tubes, which are currently 5 to 10 micrometers long and 1 to 3 nanometers thick. Pasquali indicates that fiber properties would improve if the tubes were even longer. He also says they need highly repeated carbon CNT sidewalls, with no defects. “It doesn’t matter if the walls are single, double or triple, only that the walls have to be structurally perfect. Quality of the CNTs matter. That’s a major finding,” he says.

“Processing in steps with our method, the CNT manufacturer can create the tubes, clean them, and then make the fibers, optimizing each step. Our research is helping expand knowledge about the properties and functionality.”

Debbie Sniderman is CEO of VI Ventures LLC, an engineering consulting company.

Email comments to info@viellc.com.
Fun in the Sun

Composites that will hurdle, splash and glide you through summer.

By Melinda Skea

The temperatures are rising across the U.S. and as they do, people are itching to enjoy the outdoors. What many people don’t know is regardless of whether they’re screaming (in delight or terror) at an amusement park, making waves in the water or carving their own path of adventure, composites often help facilitate the fun. As you head out this summer, don’t forget to add these composite fun-in-the-sun nods to your to-do list.

GateKeeper Roller Coaster

Selling Point: Speed and inversion

The GateKeeper roller coaster made its debut on May 11, 2013, just in time for Memorial Day park goers. This new ride – one of five wing coasters in the world – is located at one of the oldest amusement parks in the U.S., Cedar Point in Sandusky, Ohio. The coaster takes riders on a 2-minute-and-40-second adrenaline rush thrill-ride across 4,164 feet of tracks. Designed and built by the Swiss engineering firm Bollinger & Mabillard Consulting Engineering, who are known for pioneering new technologies such as the inverted roller coaster, the GateKeeper touts a speed of 67 miles per hour, making it the fastest wing roller coaster in the world.

If you’re making your way across the amusement park, perhaps to more grounded rides, it’s likely you’ll see one of the three golden colored 32-passenger trains, which are...
made of eight fiberglass and steel coaches containing four seats per coach, hurtling past you. Taking more than two years to plan and build, the GateKeeper has the longest drop (164 feet) and most inversions (six) on a wing coaster. It’s advisable to fasten your seatbelt, hold on tight and try to smile for the camera.

**SeaGlass Carousel**

**Selling Point: View the ocean through the eyes of a fish**

Dubbed by local media as the “21st Century Carousel,” the SeaGlass is an aquatic-themed carousel designed for adults and children alike. It is located in New York’s Battery Park, and according to the designers, is an apt home and theme for the ride since it is where the New York Aquarium stood from 1896 to 1941. The new ride, listed as one of *Interior Design* magazine’s 100 Big Ideas, will simulate fish-swimming patterns and feature fish, dolphins and angelfish instead of the usual fanfare of horses or other land-loving mammals. The merry-go-round will also place riders inside one of 30 fiberglass fish, designed by Broadway set designer George Tsypin, instead of on top of them. The animals are programmed to dart in several different directions based on four rotating tracks within the carousel and are equipped with LED light fixtures and audio systems programmed to impress all sea-goers.

The creative masterpiece of New York-based WXY Architecture, the $12 million state-of-the-art merry-go-round is slated to open in October. Upon completion, SeaGlass will be 46-feet wide with a spiraled turntable designed to simulate the ocean floor. WXY Architecture’s Claire Weisz says, “In addition to a carousel, it’s a theater. For people of all ages, it will create one of those moments when you feel great to be in New York City.”
Jet Surf
Selling Point: From England to France in 30 minutes
Give an engineer who also happens to be a Formula 1 fanatic free reign, and he’ll come up with an ingenious idea like the Jet Surf, the newest motorized surfboard. Sure to be the latest craze among water sports enthusiasts this summer, the Jet Surf, developed by the Czech Republic-based company of the same name, was eight years in the making. Described as a cross between a surf board and a Jet Ski (but more similar in spirit to a snowboard), the Jet Surf can reach speeds of 40 mph. It differentiates itself from other motorized surfboards due to its size, weight and power. If you are having a hard time deciding between flying or taking the train on your summer holidays to Europe, you could purchase the Jet Surf for a mere $11,000 and cross the English Channel in 30 minutes!

The boards are handmade with carbon fiber, weigh approximately 27 pounds and have a range of nearly 50 miles that allow the rider to take on big swells as well as enjoy calmer waters. “We use only the best materials because Jet Surf is being used in extreme conditions,” says sales manager Michal Lošták. It has a 100cc two-stroke engine attached to the back as well as a miniature water jet that propels riders forward as they use their body weight to steer from side to side. If you’re worried about losing the valuable piece of equipment, have no fear – the electronic leash attached to the surfer’s wrist acts as both a throttle and an emergency kill-cord. The 2.5 liter engine allows a user to surf wave after wave for up to two hours, so apply sunscreen liberally.

AirEthic Inflatable Boat
Selling Point: Saving the earth while cruising around it
Make less waves as you’re out and about this summer – both in the water and on the carbon footprint. The AirEthic inflatable boat, designed by French-based Zodiac Recreational, is a new semi-rigid boat best described as an assembly between a rigid composite hull and an inflatable boat. Launched in April 2012 and presented at the International Boat Show in Paris at the end of that year, the purpose of the new project is to reduce the environmental impact of the Bombard AirEthic. The new semi-rigid boat is a series-produced vessel and includes recyclable thermoplastic materials, bio-sourced materials, clean processes and an electric motor.

For the first eco-designed boat for Zodiac, the
company partnered with Dehondt – Flax Technic and Fimalin, both based in France. While Zodiac has been using composite materials for this type of boat for a long time, the AirEthic’s composite hull was manufactured using the RTM process with flax-fiber reinforcement to reduce the hull’s environmental footprint.

According to the team, not only do composites give the boats the desired strength-to-weight ratio, but utilizing flax (a biosourced plant fiber) reduces the environmental impact of the composites used by the team. The company says this is an important factor moving forward as consumers’ growing concerns about environmental impacts increasingly weigh in their purchasing decision. This principle, they say, could apply to most of Zodiac’s composite parts in the future.

**Cykno Bike**

**Selling Point: Vintage meets new age technology**

If you are traveling in Italy keep your eyes open: You just may see a James Bond or Braveheart lookalike riding around on a vintage-looking electric Cykno bike – all part of the company’s ad campaign. The Cykno debuted at Milan’s Design week in May to rave reviews. The brainchild of engineer Bruno Greppi, the bike blends Victorian style with a sci-fi spirit through hand-trimmed leather and extensive use of carbon fiber.

The Cykno is composed of a monocoque frame, radial spokes wheels and front fork made in carbon fiber and stainless steel pipes. It has a centrally-mounted motor on a carbon cradle and radial brake master cylinders with carbon fiber levers. The bike contains an inside-the-frame 250W or 500W battery, which powers the peddler for 37 miles before it needs a recharge.

The 57-pound Cykno was created to meet the needs for mobility as it maintains a low environmental impact. According to the website, the Cykno will be “made to order” online worldwide and delivered within a few weeks. Each customer can customize the leather upholstery and accessories for a truly old-meets-new experience.

**Fliz Bike**

**Selling Point: Paragliding for city living**

Designed by German-based engineers Tom Hambrock and Juri Spetter, the Fliz has no pedals and no seat. Instead, riders hang in a harness suspended from the bike frame that goes over their shoulders and push themselves forward. Winner of a Merit Award at the Taipei International Cycle Show and currently in the running for the prestigious James Dyson Award, the concept is that as riders build momentum, they can place their feet on special treads near the rear wheel to cruise along.

The engineering team says they created the Fliz as a velocipede based on the first bike – the “Laufrad” – as a way to promote healthy, ecological mobility in overcrowded urban spaces. The FRP and carbon fiber laminate frame integrates the rider and works like a suspension while the harness, which is custom-built for each rider, adjusts their position and has a five-point fastener for a quick and easy release.

These features reduce pressure in the crotch and distribute body weight, allowing for a comfortable, ergonomic ride that’s a cross between running and ...
biking. However, the bike does maintain the usual steering, hydraulic brakes and wheelbase. This unique design also opens up the possibility of use for rehabilitation exercise therapy or for those with limited leg movement, meaning happy travels for old and young alike.

**Karma42**

**Selling Point: Giving added boost to a daily commute**

The Karma42 is a new electric bike designed by ST Electric Cycle, based in Deerfield Beach, Fla. It utilizes cutting-edge advancements to create a ride specifically for the environmentally-conscious commuter. The Karma42 is a traditional bike that uses a 5-level motor, giving the rider power options and needed boosts along the way. Composite adoption cuts the weight, thus increasing the performance of the bicycle and increasing battery time, says the company. Manufactured through hand lay-up and compression molding, the bike weighs roughly 42 pounds and utilizes a carbon fiber T-Angular tube design frame, which gives it an incredible strength-to-weight ratio compared to aluminum and steel frames. This also makes the Karma42 one of the lightest electric bikes on the market. Its monocoque design allows for increased performance, giving it a rigid frame that can more easily handle the dents, potholes or added weight of a rider, making it the perfect week and weekender ride. So pull out a map and pack a picnic to explore the great outdoors!

Melinda Skea is a freelance writer based in Washington, D.C. Email comments to mskEA@icloud.com.

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Innovative composites applications like the ones in this article are featured weekly in ACMA’s *Industry Digest – Composites in the News* e-publication. Subscribe now by emailing subscriptions@acmanet.org.
**Wilson Boynton**  
**Hometown:** Toronto  
**Alma Mater:** Canadore College and UCLA  
**Age:** 56  
**Hobbies:** Exploring the wilderness and scuba diving

Wilson J. Boynton graduated from Canadore College in Ontario, Canada, in 1978 and pursued a career in the helicopter industry. After two years, he joined Great Lakes Airlines – later known as Air Ontario – to handle airplane maintenance, inspections and repairs. The airline received its first advanced technology airplane in 1987, a Bombardier Dash 8-100, but it was severely damaged after three weeks.  
“Of the 80 technicians working, none were trained in composites structural repairs,” says Boynton. He tried to find government approved training courses in advanced composites, but they were only offered in the U.S. “So I attended the University of California, Los Angeles and decided to bring my composites knowledge back to Canada.”  
In 1992, Boynton started Renaissance Aeronautics Associates Inc. (RAA). In 1996, the company became the first privately owned training institute in Canada for teaching advanced composites aircraft structural repair. Through the years, RAA has taught repair courses worldwide.  
In 2005, Boynton introduced Advanced Composites Training (ACT), the training division of RAA. Boynton says RAA is the only facility to have both Federal Aviation Administration (FAA) Inspector Authorization (IA) approval and the Canadian Council for Aviation and Aerospace accreditation, making RAA the only company to offer an audited advanced composites training program.

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**By Terin Bufford**

*Composites Manufacturing* magazine’s B.E.S.T. recognition program highlights the Bright, Energetic, Skilled, Trailblazers of our industry. This year, we acknowledge seven fascinating professionals who were nominated by their peers for their dedication to the composites industry. These winners represent company owners, researchers, engineers and innovators. They continue to promote composites growth through pioneering research, educational programs and game-changing technologies. With more than 100 years of combined composites knowledge, this collection of the industry’s B.E.S.T. symbolizes the passion and drive for advancing the industry.
“He is possibly the most knowledgeable individual concerning composite repair.”

Boynton’s company has trained both seasoned veterans and new engineers. “He is possibly the most knowledgeable individual concerning composite repair from the most basic to structural repairs beyond the manufacturer’s structural repair manual,” says Daniel Deshong, senior inspector at Atlantic Coast Aircraft Services Inc.

Boynton believes that once an individual obtains an essential understanding of the fundamental material technologies, the possibilities are endless. “There’s a shortage of aircraft composite repair workers, and by 2017 there will be in excess of 400,000 jobs available in this field,” Boynton says.

In his free time, Boynton enjoys exploring the wilderness with his wife of 33 years and two daughters.

Jeff Huffman was so excited to capitalize on a business opportunity that he left Central Missouri State University in 1989 to turn an idea from a college paper he wrote into a thriving business. He and his father, who was in the cabinet industry, began making cultured marble vanity tops, tubs and showers. Together, they created Master Marble Inc. (MMI). Huffman has been running MMI for more than 20 years with his father, Leland, and youngest brother, Rick.

Through the years, MMI grew substantially, but Huffman wasn’t content with the status quo. “We gave our research and development team the task of creating different aggregates for use in our products,” he says. In 2009, Huffman and his team developed a product called Travina – crushed seashell and recycled glass fillers used to create durable surfaces. Travina’s recycled glass is used in slab products that replace granite.

“Jeff is always looking for ways to improve the products he creates with the composites and recycled materials that most of us would toss aside.”

Approximately 15 manufacturers around the U.S. buy Travina products to install in kitchen countertops. Developing Travina products was a major shift from creating cultured marble. However, Huffman says the engineering process is relatively the same. “I call it the ‘barefoot engineering process’ simply because we had to use what we had to create something new,” says Huffman. “We’re still using a polyester resin and our same kind of catalyst, but we’re using a different aggregate.” From this process, MMI discovered how to color the recycled glass, placing the company in a different league than most recycled glass manufacturers, says Huffman.

“Jeff is always looking for ways to improve the products he creates with the composites and recycled materials that most of us would toss aside,” says Jerry Ratway, manager of sales and business development at Flooring Resources Group. According to Huffman, MMI’s commitment to using recycled materials keeps more than 155 tons of glass from going to landfills. He hopes to expand that number exponentially.

Jeff Huffman
Hometown: Lee’s Summit, Mo.
Education: Central Missouri State University
Age: 46
Hobbies: Boating and scuba diving

Peter Pfaff believes he was destined to follow in the footsteps of his mentor, Brandt Goldsworthy, whom he calls the “Godfather of pultrusion.” Goldsworthy hired Pfaff out of college as sales manager at Glastrusions Inc., a company that manufactured pultruded fiberglass products. “Goldsworthy was just so passionate about composites that it made you want to get involved,” says Pfaff. “I enjoyed the pultrusion technology so much that I figured I could sell this stuff myself.”

After five years, Pfaff asked Goldsworthy to sell him a pultrusion machine so he could launch his own business. In April 1978, Pfaff created Glasforms Inc. in San Jose, Calif., and later moved the company to Birmingham, Ala. Through the years, Glasforms grew to be the second largest pultrusion company in North America. Glasforms pioneered the development of several materials and product applications, the most significant being epoxy resin fiberglass high-voltage insulators – best known as polymer insulators. These insulators are much lighter and ballistic resistant. They serve as the biggest export item for the company. Last fall, Pfaff sold Glasforms to PolyOne, but he still serves as president of the company.

Peter Pfaff
Hometown: San Jose, Calif.
Alma Mater: University of California, Santa Barbara
Age: 62
Hobbies: Watching the San Francisco Giants
“When fiber loading levels increase, it will cause a massive growth in the demand for composites.”

According to Pfaff, the biggest change the pultrusion industry will face in the future involves thermoplastic resins with high fiber loading levels. “When fiber loading levels increase, it will cause a massive growth in the demand for composites,” he says.

Pfaff enjoys spending time watching the San Francisco Giants play baseball with his two daughters and his grandson.

Growing up with a passion for sailing, Peter Smith found himself drawn to the marine industry. He attended the University of Michigan, graduating in 1979 with a degree in mechanical engineering. Smith has dedicated more than 30 years to the marine industry, starting out at Hinckley Yachts in Portsmouth, R.I., in the early 1980s. There he became familiar with everything from hand lay-up to vacuum infusion and post curing to gain a broad-based knowledge of composites. The company primarily used hand lay-up techniques with a focus on straight e-glass and polyester resins. Smith was instrumental in Hinckley’s transition to infusing all its parts with carbon and Kevlar/e-glass as well as a variety of core materials.

Nearly a decade ago, Smith left Hinckley Yachts to join Morris Yachts, where he once again introduced the vacuum infusion process to help evolve the company from hand lay-up and allow the use of more advanced resin systems. Today, he is the company’s chief engineer. “My official title is chief engineer but that spreads over a lot of things such as sales support, production support, product design, product development and so on,” says Smith.

Early adoption of infusion has been the biggest transformation for both Hinckley Yachts and Morris Yachts because products are lighter, stiffer, stronger and more cost effective. “Although several people were skeptical about infusion, it has proven to be a less expensive option,” he says.

Co-workers praise Smith’s enthusiasm and work ethic. “Day in and day out, Peter finds creative solutions to the thorniest of problems,” says Stephen Mullane, production director at Morris Yachts. “His energy is infectious, and his attitude inspires all of us.”

Smith, who currently resides in Somesville, Maine, is the father of four and has been married for 10 years. While the family enjoys skiing together, Smith remains a fan of sailing.

Kevin Spoo graduated from college with a degree in chemistry and hauled manure for his uncle while searching for a job. In 1974, he joined Interplastic Corporation and found the chemistry of polyester resins fascinating. Spoo decided to research resins and composites. “I was very intrigued by all of the different processes people were using to transform composites into finished projects,” he says.

Spoo worked for several companies in the 1970s and 1980s. In 1987, he joined Phillips Petroleum, where he spent four years developing processes for molding thermoplastic composites such as pultrusion, vacuum forming and compression molding. In 1991, Phillips left the thermoplastics market. While the company offered to retain Spoo, he was unsure what role he would play. Then in 1992, he had an interview with Owens Corning that he says completely changed his life. “My heart was set on composites, and I knew that anything I did in the future had to deal with composites,” says Spoo.

Owens Corning allowed Spoo to use his background in resins and pultrusion to get involved in a variety of composites arenas. This winter, he celebrated 21 years with the company. Spoo is a senior research associate at Owens Corning, though he prefers no title at all. “There are a lot of projects that come along on the application side and the product development side, so I gave up the title a long time ago,” he says.

Through the years, Spoo has been involved in...
numerous ACMA committees and CGIs, including ACMA’s Pultrusion Industry Council (PIC), the PIC’s Load and Resistance Factor Design (LRFD) Subcommittee, the PIC’s Technical Subcommittee, the Fiberglass Grating Manufacturers Council, Corrosion Control Division, the Transportation Structures Council and Technical Papers Committee. He credits these committees and others with researching what people really want.

Many of Spoo’s peers recognize his passion and devotion to advancing the composites industry. “Kevin Spoo combines deep expertise in composites with a solid data driven methodology,” says Peter Emrich, senior vice president of technology at Molded Fiber Glass.

Spoo and his wife have been married for more than 30 years and have two children.

Robert Vito
Hometown: Kennett Square, Pa.
Alma Mater: Drexel University
Age: 51
Hobbies: Watching movies and playing chess

Working as an adjunct professor for 18 years at Penn State Great Valley, Robert Vito was enticed by a student’s question: What if you could make a bulletproof vest lighter, stronger and more flexible? “Not only would you be able to make a soldier safer and better prepared for battle, but you’d also be able to take over and dominate sports,” says Vito.

Vito dedicated 10 years and $10 million to this research, and in 2008, he created Unequal Technologies, a company that produces protective equipment for athletes and the military. Unequal® brand products feature a military-grade three-layer composite fortified with Kevlar®. The technology has been used in more than 10,000 vests for troops.

Unequal Technologies quickly gained recognition in the sports arena from teams such as the Philadelphia Eagles, which reached out to Vito in 2011 to protect its star quarterback, Michael Vick. “ESPN has selected us as one of the top technologies that made a difference in sports,” says Vito.

In the last year, the company has been contacted by the commissioner of Major League Baseball, X Games competitors and professional boxers. “The most surprising call we received came from Tom Cruise, who was looking for the best possible protection after enduring significant injuries while filming the last ‘Mission Impossible’ movie,” says Vito. “We’re moving from military to sports to Hollywood!”

“ESPN has selected Unequal® as one of the top technologies that made a difference in sports.”

But Vito is most proud of the custom defibrillator covers his company created at the request of the Children’s Hospital of Philadelphia. One of its patients was a young girl with a passion for diving. Vito built a concealed defibrillator cover into her swimsuit, allowing her to continue diving without worrying about the impact on her defibrillator when she hits the water.

Vito and his wife of 11 years have two daughters. One plays softball and wraps Unequal tape – a baseball tape with Unequal’s Armor Skin™ in the center – around the handle of her bat to absorb the shock from each pitch.

Dan Witcher
Hometown: Bristol, Tenn.
Alma Mater: University of Tennessee, Knoxville
Age: 58
Hobbies: Fly fishing and golfing

Dan Witcher spent the first 15 years of his career as a structural engineer working with steel, concrete and heavy construction materials for bridges and structural facilities. While working as a consultant in 1991, he was looking for potential materials for a building exposed to salt air within a major chemical complex in Tennessee. He considered using composites; however, none met all the needs of the structure. “But that sparked my interest in composites,” says Witcher.

In 1992, Witcher began working for Strongwell to develop its structural engineering group and grow the use of composites in structural applications. “We were blessed to have a lot of great success at Strongwell with composite bridge constructions and buildings all over the world,” he says.

After 20 years at Strongwell, Witcher joined Enduro Composites last fall as the vice president of engineering. He heads Enduro’s engineering and quality departments as well as three plants – two in Houston and one in Freeport, Texas.

Witcher is chairman of the Pultrusion Industry Council’s (PIC) Load and Resistance Factor Design (LRFD) Subcommittee, in which he has been heavily involved for more than six years. The PIC has developed an American National Standard Institute (ANSI) standard called the Industry Guidelines for Fabrication and Installation of Pultruded FRP Structures. “It will allow

“Without the work of dedicated members of the composites industry like Dan, the LRFD standard would not have become a reality.”

engineers and architects to use composite products in large structural jobs,” says Witcher.

“Without the work of dedicated members of the composites industry like Dan, the LRFD standard would not have become a reality,” says Ellen Lackey, professor of engineering at the University of Mississippi.

Married for 34 years, Witcher has four children – two are registered civil engineers. He believes that composites are currently in the early stages of structural materials and have a bright future.

Terin Bufford is the communications coordinator at ACMA. Email comments to tbufford@acmanet.org.

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What People Are Saying About ACMA’s New Website

“Nice design. Nice color. Easy to navigate!”
“Great Site!”
“Well designed and easy to navigate.”
“Looks great! Easy to use.”
“It’s Fantastic!”

See what they’re talking about at www.acmanet.org
Airline passengers often get peanuts or pretzels, but designers of those planes prefer sandwiches.

Composite sandwich panel constructions, typically made from synthetic foam cores or honeycomb materials bonded to carbon-epoxy face sheets, have mechanical properties that make them ideal for cabin flooring, stowage bins, galleys and lavatories. Honeycomb is lightweight and offers high mechanical strength, durability and corrosion resistance.

So when a three-member team at M.C. Gill Corporation met recently to discuss ideas for improving core materials used in the aerospace industry, it faced an interesting question: How could they improve upon material that was already well accepted in the market? Should they even bother discussing a new approach?

“Yes” was the answer, and an innovative core material was the result.

A New Way to Fill Honeycomb with Foam

The team at M.C. Gill, which has been manufacturing core materials since the 1980s, realized that hollow cells in a conventional honeycomb’s core accommodate air through which heat, noise and vibration can be transferred. They believed that filling those cells with a dampening material would provide better acoustic and thermal insulation properties, and could improve resistance to compressive and shear loads in service.

One conventional way to fill honeycomb cells – pressing low-density foam into the empty cells – limited the process to very-low-density phenolic foams, and the process generates unwanted dust as the foam breaks down, says Matthew Lowry, director of research and development at M.C. Gill. The dust typically interferes with the bonding of the facing to the core, and can contaminate other materials in the sandwich layup process, he says. Another option – filling honeycomb cells with non-foamed material and allowing it to foam – is messy and requires additional steps to produce a slice of core ready for making a part.

“We thought, ‘What if we could put a secondary coating on the core that would foam when the core was used to make a sandwich construction?’” Lowry says. “This method meant the end user wouldn’t have to handle foam. We could control the density and properties of the foam and the material could be processed just like a regular piece of core. That’s when the project went from ‘what-if’ to ‘a-ha.’”

M.C. Gill’s ingenuity led to the formation of a patented
technology called GillFISTS®, a system of coating and filling the honeycomb core with material that expands under heat and pressure. The company’s scientists conducted a series of tests to analyze the technology’s thermal conductivity and insulation, acoustic management and damage tolerance (using high-impact-resistant sandwich structures with and without GillFISTS, exposed to impact from a 1-inch-diameter spherical dart). Those tests confirmed the technology’s ability to thrive in applications requiring heat resistance and noise control.

“The acoustic benefits are very interesting because they are achieved with very little additional weight to the sandwich construction,” Lowry says. “This offers the potential to reduce weight in the aircraft by replacing some or all of the heavier conventional means of managing sound.”

Today, honeycomb with GillFISTS can be processed in a vacuum bag, autoclave or conventional press. Foam density is a function of the coating formulation and can be tailored over a broad range of densities, Lowry says. Because whole blocks are subject to the process and the foam generates in-situ, the bonding of the facing is relatively unaffected. Also, he says, it is possible to produce machined core parts with GillFISTS and selectively coat sections of the core if a customer has a unique application.

A New Sealant for Foam Cores

3A Composites, a material supplier based in Cham, Switzerland, has more than 50 years of experience manufacturing structural core materials (such as closed cell foams) and balsa products. It recently sought a way to reduce the amount of resin absorbed by foam, which in effect would lower the weight and cost of making composite sandwich parts in resin infusion processes.

Decision-makers in the marine, wind energy, industrial markets and others often prefer PET (polyethylene terephthalate) foam cores because the material is easy to use and can produce composite parts with a high level of consistency, says Philipp Angst, director of product management at 3A Composites Core Materials. “Currently, the major problem with PET is that the resin uptake is higher than comparable polyvinyl chloride (PVC) foam, which limits its cost advantage in infusion applications.”

Motivated to ease the problems associated with resin uptake, 3A Composites began developing technology to give its PET foam, AIREX T92, an advantage over competitive core materials like styrene acrylonitrile (SAN) or PVC. It developed a new surface sealant for PET foam cores called AIREX SealX.

“We can now reduce the resin taken up by the core’s surfaces during infusion processes by about 50 percent,” says Marc Anderson, director of sales and marketing at Baltek Inc., a subsidiary of 3A Composites. “The reduc-
Cork, known for its use in low-tech applications like wine bottle stoppers and bulletin boards, now shows promise as the core material in composite sandwich structures for use in high-tech automotive, aircraft and energy applications.

Reduction in resin will reduce overall weight and fabrication costs of the end product – two targets that are very high priorities for our customers.”

Researchers at 3A Composites had to overcome several obstacles to create SealX, including finding the optimal balance between minimum resin uptake and good core-skin adhesion, Angst says. The company says SealX reduces resin uptake in balsa core by approximately 80 percent and composite weight by 35 percent, and it predicts that the new balsa surface sealant could significantly curb the weight and cost of balsa sandwich panels.

Products using the sealed foam include wind turbine rotor blades, motors and parts for infrastructure applications. The technology was recently demonstrated by 3A Composites customer Pauger Yachts, which used SealX to reduce the weight of its Balaton Blue Ribbon Regatta 50-foot catamaran. The carbon fiber and epoxy sandwich composite hull infused with SealX helped the team reduce the weight of the boat and complete the course in record-breaking time, Angst says.

Today, to help composites firms perform life cycle assessments for various sandwich structures, as well as promote its AIREX polymer foams and BALTEK balsa wood lines, 3A Composites offers a tool called the Hybrid Core Calculator. It uses life cycle data for the most common sandwich skins and core materials to calculate the environmental footprint of a sandwich structure. Environmental impacts are calculated for each phase of a product’s life cycle, and measurements include primary energy consumption, greenhouse potential and water consumption.

The Drive Toward Soy-Based Foam
Deborah Mielewski, chemical engineer and technical leader of the plastics research group at Ford Motor Company, is responsible for developing the next generation of sustainable automotive materials. She is credited with developing the first soy-based foam.

“Even though we’re focused on bio products, lightweighting is a critical issue facing the auto industry,” she says. “We’re going to see the replacement of steel components with plastic components, and it will likely be with carbon fiber reinforcements to make high-end composite materials. My focus for natural fibers is to replace current plastic fibers that are weaker than glass fiber. There is an even bigger demand right now across the industry for high-performance plastic composites.”

Mielewski says Ford faced technical challenges associated with the soy-based foam project, including a funny odor and shape on the first day of testing, but the company launched the foam in the seat cushions of a new Mustang and received great publicity. Since then, she says, “We’ve witnessed an amazing migration of biotechnology into automotive production. Now, approximately 75 percent of all Ford vehicle headrests have soy in them. Seat cushions typically use a 12 percent soy content minimum and the head rest uses 25 percent. Now we’re focused on creating a biodegradable product that uses biomaterials. The soy-based foam cannot biodegrade, so it still goes to landfills like the petroleum foam it just replaced.”
A New Perspective on Cork

The pleading-for-silence phrase “Put a cork in it!” has new meaning, especially when it comes to composite applications.

Cork, known for its use in low-tech applications like wine bottle stoppers and bulletin boards, now shows promise as the core material in composite sandwich structures for use in high-tech automotive, aircraft and energy applications. Researchers at the University of Delaware are investigating the use of cork for those projects, particularly because of its ability to mitigate sound.

“It’s energy absorbing, tough, lightweight and impact resistant, and it has excellent vibrational and acoustic damping properties,” says Jonghwan Suhr, assistant professor in the Department of Mechanical Engineering and faculty at the Center for Composite Materials. He says instead of lining the interior of aerospace parts with several inches of fiberglass, a cork sandwich core will decrease weight and increase dampening performance.

Advised by Suhr, recent University of Delaware master’s program graduate James Argainis led the research with help from postdoctoral researcher Hyung-ick Kim. (Argainis now works for the Naval Air Systems Command in Lakehurst, N.J.) Their findings, recently published in the online, open-access journal Scientific Reports, gained the attention of Portuguese-based Amorim, a producer of thermal and acoustic insulation materials based on natural raw cork. In an email to Suhr, a company representative praised the detail of the study. A group from Amorim plans to visit the university soon to learn more about the work, Suhr says.

Argainis’ graduate research focused on exploring natural material-based sandwich composites with enhanced noise mitigation. Cork turned out to be one of the most promising alternatives to traditional sandwich structures. His team compared sandwich structures made from a natural cork agglomerate core with those using a core made from a high-quality synthetic foam called Rohacell. Carbon-epoxy was used as the face sheet material with both cores.

“We achieved a 250 percent improvement in damping performance using the cork-based materials, with no sacrifice in mechanical properties,” Suhr says. “Also, cork radiates little to no noise and is inexpensive. It’s also sustainable and environmentally friendly because there are no carbon emissions associated with its production.”

Suhr sees the potential for application of cork-based sandwich structures in not only aircraft cabins but also car engine mounts, launch vehicle fairings and wind turbine blades.

In the next phase of the project, the team will investigate the low-velocity impact of these materials, he says.

Darin Painter is a freelance writer based in Cleveland. Email comments to darin@writingmatters.com.
A Man with a Mission

As incoming chairman of the board of ACMA, Jay Merrell is poised to lead the association into the future.

By Susan Keen Flynn

During college, Jay Merrell spent his summers working as a mechanic in the maintenance department of IDI in Noblesville, Ind. “I moved equipment, repaired compounding mixing machines, did electrical work and handled welding and machining tasks,” recalls Merrell. “The factory was hot and noisy, and my hands were dirty every day!” But that didn’t deter Merrell from ultimately joining IDI, a business founded by his father, John Merrell, in 1966.

Today, Merrell is vice president of Norplex-Micarta and IDI and incoming chairman of the board of ACMA. Norplex-Micarta manufactures high-performance thermoset composite materials. IDI is a custom formulator and manufacturer of thermoset molding compounds for molders and OEMs. Its bulk molding compounds, sheet molding compounds and new Structural Thermoset Compounds™ are used in a variety of markets, including military, aerospace, transportation, alternative energy and marine.

Merrell is interested in future opportunities for ACMA and the industry as a whole. “I believe the composites industry is going to grow faster than the rest of the economy,” he says. “Will it grow in double digits? Probably not. But it will probably grow a few percentage points faster than the national economy. Composites have a great deal to offer.”

A Nose for Business

Merrell is a native of the Hoosier State. “I was born, raised and will probably die in Noblesville, just north of Indianapolis,” he says. He grew up in the family business, which entered the composites market in the mid 1970s. After earning a degree in management from Purdue University in 1982, Merrell joined IDI full time. Since then, he has worked in nearly every department, from customer service to technical sales and material development.

Working in a family business is a mixed blessing. “The challenge is that you have to work with family; the advantage is that you get to work with your family,” says Merrell, who oversees corporate management alongside his brother, Tom, president of Norplex-Micarta and IDI. “You have an over-arching desire to make good decisions because you are affecting your parents, siblings and kids.”

John Merrell retired a decade ago, but his influence continues. “Learning business practices and philosophies from my dad is the highlight of my career,” says Merrell. “I had a good 20 years working for him and with him.” Perhaps the most valuable lesson John taught his son is the importance of customer service. “The customer comes first,” says Merrell. “It’s something that all of our locations and people follow, and it flows out of our family management practice.”

Merrell’s commitment to customer service reveals itself in all his business dealings, whether it’s with co-workers, customers or suppliers. “Jay conducts himself in a very open manner with a keen sense of humor. He treats everyone with the utmost respect,” says former ACMA Board member Gary Landsettle, commercial vice president for North America, Ashland Performance Materials. He has worked with Merrell as a supplier for 10 years.

Today, one of Merrell’s primary functions at Norplex-Micarta and IDI is overseeing global corporate health, safety and environmental issues. He visits each plant
Vision for ACMA

Merrell’s interest in safety and regulatory issues is what led him to ACMA more than 10 years ago. The first event he attended was an educational session on styrene and the science behind it. “It was a valuable program, and our company became an ACMA member right after,” says Merrell.

“The benefit and beauty of ACMA is you are not alone,” he says. “You meet other people with similar ideas and problems, and you work together as a group to further the composites industry.” Merrell has certainly done his share to advance composites. He has served as chair of ACMA’s Finance Committee and Government Affairs Committee, participated in the association’s National Lobby Day since 2008 and been a member of the Political Action Committee since 2010.

Merrell was elected to the ACMA Board of Directors two years ago and served as president elect/treasurer. During his two-year term as chairman of the board, his goal is to help the association grow the marketplace through its Composites Growth Initiative (CGI) committees, educate members on best practices and influence regulatory and legislative issues that impact composites.

Merrell says this last piece – government affairs – is “nearest and dearest to my heart.” Composites manufacturers face a host of compliance issues, from EPA requirements to OSHA standards. “If you don’t comply, you’re out of business – or you will be at some point,” warns Merrell. “To me, making sure the composites industry is not overburdened by regulatory and bureaucratic issues is very important.”

Landsettle says Merrell is well-suited to represent ACMA. “As a fabricator his entire career, Jay can easily relate to all the issues and challenges our industry faces and provide strong leadership to guide us forward and make composites the material of choice for designers, architects and engineers,” he says. “His ability to find common ground and reach consensus among ACMA leaders will serve the industry well.”

Away from the office, Merrell enjoys outdoor activities such as hunting, backpacking and gardening. He and his wife Anne have four children – three in college and the fourth one headed there this fall. (As a Purdue alumnus, at least once a year to inspect them and perform audits of systems, records, safety plans and training. He meets with employees to discuss specific issues and inform them of any new requirements. “We try to over-comply with any regulations,” says Merrell. All Norplex-Micarta and IDI plants are ISO 14001 certified.

Implementing a quality management program and focusing on safety has helped IDI significantly improve its corporate culture, says Merrell. “We have instituted numerous reporting and tracking systems that allow us to dissect what actually happens on the plant floor,” he says. “Then we can redesign systems, layouts and equipment as needed.”

Q & A with Lori Luchak

Q: What accomplishments has ACMA achieved during your leadership that you are most proud of?
A: Bringing the largest composites show to the U.S. – the combined ACMA/SAMPE show in October 2014. It is the culmination of a lot of work by leaders in the industry, and I’m proud to be a part of it. Also, the leadership of ACMA really strategized ways to think outside the box and move the organization forward. For instance, we’re exploring the use of grants to open doors to grow composites. In addition, the Composites Growth Initiative (CGI) has developed into a great program for ACMA. The hard work and dedication of our board of directors and staff is really going to pay off moving forward.

Q: What is your fondest memory of serving as chair of ACMA?
A: Having the honor of presenting ACMA awards at COMPOSITES 2013 to the heroes of our industry with my hero, my dad!

Q. What excites you most about the future of the composites industry?
A: We have a great opportunity to help save energy through lightweight products, rebuild America’s infrastructure and develop new materials and processes that will further U.S. competitiveness.

Q. What strengths does Jay Merrell bring to the table as the incoming ACMA chairman of the board?
A: Jay is from a family business as I am. The ups and down of working in family businesses prepare you for dealing with adversity and handling a variety of issues. Jay also is a deliberate thinker: He sits back and ponders issues, then makes a decision when it’s clear what should be done.

Merrell cringes when he notes his daughter will attend in-state rival Indiana University.) For years, Merrell was active in the Boy Scouts of America and ended a term as District Chairman for Hamilton County last December. Now he’s ready to take the leadership reins at ACMA and help propel the industry forward.

“If we can get engineers and other end users to embrace the change from traditional materials to composites, this industry may grow in double digits,” says Merrell. “There is tremendous opportunity for composites.”

Susan Keen Flynn is managing editor of Composites Manufacturing magazine. Email comments to sjflynn@keenconcepts.net.
If you missed this year’s ACMA Composites Build America National Lobby Day, May 22-23 in Washington, D.C., you missed a major success. Representatives from more than 30 ACMA member companies, as well as representatives from the Society for the Advancement of Material and Process Engineering (SAMPE), came with a singular mission: to advance the composites industry.

This year’s event featured a first-ever Federal Market Growth Symposium that provided attendees with crucial insights for the future of the industry. Numerous Federal officials from agencies such as the U.S. Army Corps of Engineers and the Federal Highway Administration discussed how their programs envision composites addressing critical national priorities.

Following the symposium, attendees heard from former U.S. Representative Kenny Hulshof (R-Mo.) and Andy Wright, a former congressional chief of staff, on how to conduct a successful meeting with a member of Congress. They encouraged composites industry professionals to emphasize their roles in their communities and demonstrate that issues are critical to supporting job growth back home.

Opportunities to network with national leaders included the ACMA Political Action Committee reception with Representative Marsha Blackburn (R-Tenn.), vice chairman of the House Committee on Energy and Commerce. Blackburn is a champion of the composites industry and leads efforts in the House to increase the efficiency and responsiveness of the Federal government and ease the regulatory burden on manufacturers across the country. The event also featured a Capitol Hill open house for members of Congress and staff displaying composite products and illustrating their importance to solving national problems and supporting nationwide economic growth.

The hallmark of Composites Build America National Lobby Day was dozens of meetings where ACMA members urged leaders to support composites. By meeting with their members of Congress as constituents, industry professionals had the unique opportunity to show the direct link between our issues and jobs and growth back home.

A core issue on the event’s legislative agenda this year was H.R. 2034, the Advanced Composites Development Act, sponsored by Representative Mike Michaud (D-Maine). The bill provides for the creation of university-private sector research consortia under the direction of major Federal agencies such as the Department of Defense, the Department of Energy, the Department of Transportation and the Department of Homeland Security. By combining the advanced research capabilities of major universities with the technical knowledge and resources of the private sector, the consortia will develop new applications for composites materials to address urgent national needs.

Lobby Day attendees also urged leaders to promote the use of composites in rebuilding our national infrastructure. The current infrastructure funding package, signed into law by President Obama in July 2012, requires states to employ life-cycle cost analysis when contracting for infrastructure improvements. If implemented properly, the new parameters should significantly expand the use of composites in that sector. Members of Congress were asked to contact the Department of Transportation and urge it to monitor the implementation of the life-cycle cost analysis provision.

ACMA’s longstanding push for bringing high-quality science to Federal chemical risk assessment programs such as the Report on Carcinogens (RoC) was central to
the Lobby Day message as well. ACMA is leading a multi-industry coalition that is working with Congress to reform these programs and ensure that they are transparent, efficient, responsive to stakeholders and employ the best quality science to arrive at correct conclusions. These reforms are crucial to our industry-wide push to remove the improper listing of styrene from the RoC and to make the Federal assessments of styrene and other chemicals useful to promoting worker safety and public health.

The major industry presence in Washington pressing for congressional support was essential to pushing these issues forward. But it is not the end of the battle. Even if you weren’t able to be in Washington in May, you can make a crucial difference for your company and the entire industry.

The old tenet “Write your Congressman” is as important today as ever. ACMA has prepared draft letters and informational briefs on these issues asking representatives and senators for their support. Visit acmanet.org/compositesadvocacy to learn how to get your members of Congress to support the composites industry.

You can take it one step further. Throughout the summer months, congressional leaders spend much of their time at home meeting with job creators and touring their production facilities. Your company provides much needed jobs in your community and elected leaders need to hear your story. Visit them at community meetings and townhalls. Even better, invite them to tour your plant. Seeing innovative and essential products being made by workers in their own communities will demonstrate how important our industry is to the national well-being.

Building a relationship with your elected officials is a worthwhile investment. Make the most of the summer and take action for composites.

MJ Carrabba is a member of the government affairs staff at ACMA. Email comments to mcarrabba@acmanet.org.
When athletes dramatically improve their performance we say they “upped their game.” We know that didn’t come easily. They worked to become stronger or to hone their skills, but that hard work paid off in improved performance. ACMA has upped its game. Like an athlete, it came from hard work. ACMA’s Strategic Planning Committee, under the leadership of Randy Weghorst from AOC, identified four strategic objectives for the organization. I’ll touch on two.

One objective was to take our trade show COMPOSITES to the next level by providing an even more comprehensive offering of educational programming and expanded show floor. ACMA has achieved that goal by launching a joint trade show with SAMPE, which will bring the industry the best of both organizations’ previous shows and a whole lot more. The show will take place in Orlando, Fla., Oct. 14-16, 2014.

The other initiative we are pursuing is government grants for programs that will benefit the industry. While it’s still early in the process, we have identified a number of promising opportunities to enhance ACMA programs, such as our Certified Composites Technician (CCT) program. We are also exploring grants that would provide research and development resources and expertise to different market segments, like automotive.

When athletes up their game they must sustain the level of effort or they will lapse back to their previous level of play. It is no different with your industry association. For ACMA to sustain this level of performance and continue to thrive, we need to continue growing membership and volunteer support.

That means we need you to get in the game. As any of our active members will tell you, the value you will get back in knowledge and opportunities will far exceed the time commitment you make and dues you pay. So what are you waiting for? Call me at (703) 525-0511 and get in the game today!

Tom Dobbins, CAE
ACMA Chief Staff Executive
ACMA Conference Digs Down into Composites

Record-breaking attendance and a sold-out exhibit hall with 33 exhibitors marked the close of ACMA’s Corrosion, Mining, Infrastructure and Architecture Conference – Digging Down and Building Up with Composites – on May 15-16 in Denver. During the conference, 200 attendees participated in more than 30 education sessions in four tracks. The wide-ranging program selection offered technical research, design insights and a variety of composite solutions.

Topics covered in the four tracks included the following:
• The Architecture Track featured architectural visionary Greg Lynn, who was named one of TIME magazine’s most innovative people of the 21st century. Speakers from a variety of perspectives presented applications and real-world challenges of composites as an emerging construction material.
• The Corrosion Track, developed by the National Association of Corrosion Engineers (NACE), focused on using FRP to control corrosion in industry applications, equipment inspections, and FRP pipe and fitting designs.
• The Infrastructure Track included sessions on FRP applications in bridge infrastructure, improving glass FRP rebar longevity and using carbon composites in telecom tower strengthening.
• The Mining Track offered the latest technical research and best design practices for hydrometallurgy as well as case studies and practical applications that have helped the mining industry evaluate which materials are best suited for their project needs.

What’s New at www.acmanet.org?
• More Than 900 NEW Technical Papers – 10 years of archived studies presented at the Annual Conference of the Society of the Plastics Industry Inc.
• Composites Build America Advocacy Center – Make your voice heard in Washington. Briefings, draft letters you can download and personalize and contact information for your representatives on the Hill.
• Federal Markets Symposium – Presentations given by senior leaders from several Federal agencies on programs affecting the composites industry.
• LCI Comparison Tool – Quickly assess how formulation and process changes affect the life cycle impact of polymer composite parts from cradle to gate.

Save the Date

ACMA
Serving the Entire Advanced Materials and Composites Industry Throughout the World

Oct. 14-16, 2014
Conference & Exhibition
Orange County Convention Center
Orlando, Florida

www.acmanet.org
New CCTs:
The Certified Composites Technician (CCT) program is designed to strengthen industry standards, elevate production performance, upgrade individual levels of knowledge and skill and offer public recognition to those who demonstrate a prescribed level of expertise in a specific composites specialization. ACMA congratulates the newest CCTs.

James Allsopp, CCT
Bristol, R.I.

Keith Assailly, CCT-C
Winnipeg, Manitoba, Canada

Don Balizet, CCT
Massillon, Ohio

Scott Barlow, CCT-VIP
Boothbay Harbor, Maine

Rick Beans, CCT
Massillon, Ohio

Jason Blanco, CCT
Winnipeg, Manitoba, Canada

Dale Cary, CCT
Massillon, Ohio

Jeffery Champagne, CCT-C
Winnipeg, Manitoba, Canada

Greg Claussen, CCT
Seattle, Wash.

Randall Clemons, CCT-C
Selkirk, Manitoba, Canada

Bruce Clifford, CCT
Massillon, Ohio

Curtis Dather, CCP-WBR
Verdigr, Neb.

Richard Fairfield, CCT
Charlotte, N.C.

Daniel Fehrenbach, CCT
Massillon, Ohio

Elias Frick, CCT
Bristol, R.I.

Daniel Gagne, CCT-VIP
Brunswick, Maine

Philip Herold, CCT
Bristol, R.I.

Rob Jack, CCT
Wake Forest, N.C.

Ian Jurgilas, CCT-VIP
Harpswell, Maine

Jeffrey Kirby, CCT
Navarre, Ohio

Kent Langenwalter
CCT-VIP, CCT-LTRM
Greensboro, N.C.

Jason Luckinbil, CCP-WBR
Yankton, S.D.

Tony Ma, CCT-C
Winnipeg, Manitoba, Canada

Don Markley, CCT
Orrville, Ohio

Bryan Minges, CCT
Temperance, Mich.

Kurt Neher, CCT-VIP
Montpelier, Va.

Jordi Odlin, CCT-VIP
Cape Elizabeth, Maine

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- Open Molding
- Solid Surface
- Vacuum Infusion
- Wind Blade Repair
- CCT Instructor

www.acmanet.org/cct
For more information on the CCT program, email cct@acmanet.org.

New Members:
Carolina Technical Fabrics
Baton Rouge, La.

Charles Composites
Okeechobee, Fla.

Fiber-Fab Inc.
Gervais, Ore.

Knauer Industries
Joliet, Ill.

Logical Energy Solutions LLC
Sioux Falls, S.D.

For more information on becoming a member of ACMA, email membership@acmanet.org.

Chemical Processing Symposium 2013
November 6 & 7, 2013
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Managing Corrosion with Non-Metallics

Discover
How composites are used to design better, stronger, more reliable chemical processing systems

Engage
In presentations featuring case studies and practical design insights that demonstrate corrosion management from conception through inspection

Join chemical companies and the composites industry to explore today’s chemical processing challenges.

Register before October 14 for Early Bird Rates
Exhibitor and Sponsorship Opportunities Available

For more information, visit www.acmanet.org/meetings or contact events@acmanet.org
CM by the Numbers

Our writers unearthed these fascinating figures while researching articles for this issue of Composites Manufacturing.

1,710 riders
Approximately 1,710 people can ride the new GateKeeper roller coaster at Cedar Point Amusement Park in Sandusky, Ohio, each hour. Learn how the roller coaster—and six other summer adventures—incorporate composites on page 10.

800 pounds
The helical-shaped turbine blades and end caps Plastics Unlimited manufactures for the Windstrip vertical axis wind turbine weigh a combined 800 pounds. Turn to page 6 to discover how the wind turbines are used in telecommunications towers.

50+ tenants
More than 50 tenants, including stores and offices, call the Waikiki Shopping Plaza home. An FRP trellis system adds pizzazz to the building, located on the bustling Waikiki Strip in Honolulu. Learn how the architectural composite structure was made on page 4.

10+ years
After more than 10 years of research, a team at Rice University led by Professor Matteo Pasquali (seated) unveiled a new carbon nanotube (CNT) fiber that looks and acts like textile thread and conducts electricity and heat like a metal wire. For more on the team’s research, as well as CNT fiber processing at North Carolina State University, turn to page 8.