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Composites are commonplace on race car circuits and in luxury automobiles. But they’re making their way into affordable, mass-produced cars, too. Corporate partnerships are driving new processes and products. By Melinda Skea

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The numbers speak volumes: More than 3,500 attendees from 39 countries visited 219 exhibitor booths and listened to 184 speakers. In the buzz of activity, industry professionals made business connections, learned about new technologies, picked up management and marketing ideas and more.
COMPOSITES 2013:
The Land of Opportunity!

If you attended COMPOSITES 2013, I hope it was as productive for your company as it was for mine. Every year our company returns from the show with a success story and this year was no different. We met with a new wind turbine company and discussed manufacturing parts for them. We now are bidding on this project. What a huge opportunity for us! I was impressed that this company came to COMPOSITES 2013 to learn more about the industry, seek out the latest information about processes and materials and find highly-qualified potential manufacturing partners.

My company also discovered how we might lessen our styrene emissions by using a new additive. While it may take us awhile to learn more about it and experiment with this additive, now is the time to start. We all need to start thinking of ways to reduce our styrene exposure.

COMPOSITES 2013 was a resounding success for ACMA. It had the highest number of attendees in six years (3,520 delegates) as well as an increase in exhibitors (219 total). ACMA offered 115 educational and technical sessions on topics ranging from business management to green composites. The association’s Political Action Committee raised $20,650 to help lobby for our industry. There certainly was a lot going on! The ACMA staff did an exceptional job and deserves a big round of applause.

One of the most inspiring parts of the show was the opening session’s keynote address given by former Navy SEAL Robert O’Neill. He presented leadership lessons that align with his missions, encouraging the audience to “never quit.” Listening to O’Neill, I felt like I met a true American hero! I was also reminded of the heroes in our industry at the annual awards luncheon. Congratulations to John Tickle, chairman of Strongwell, for receiving the ACMA Lifetime Achievement Award and Randy Weghorst, chairman of AOC, for receiving the President’s Award. Both men have contributed to our industry in so many ways and are an inspiration to me. I also extend congratulations to Steve Walling, former CEO of Plasticolors Inc., and Bill Seemann, president of Seemann Composites, who were inducted into the ACMA Hall of Fame. (Turn to page 26 for a comprehensive list of winners of the 2013 ACE and Pinnacle Awards, ACMA Member Awards, Technical Paper Competition and University Poster Competition.)

I can’t wait for the fall of 2014 when ACMA combines shows with SAMPE to bring you the biggest composites show in the United States! You will hear more about it in the months to come. In the meantime, if you have success stories from COMPOSITES 2013, we would love to hear from you. Simply email me at lluchak@milesfiberglass.com or Britt Reynolds, ACMA’s marketing manager, at breynolds@acmanet.org.

Lori Luchak
Miles Fiberglass & Composites, ACMA President
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President's Message
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Unmanned Vehicles in the Armed Forces

With so much attention on reducing the deficit and trimming the federal budget, it’s hard to predict the future of composites in military programs, says John Busel, director of the Composites Growth Initiative with ACMA. But there’s no denying that the military segment has been at the forefront of composite technology. “Over the years, military programs have led the way in advancing the use of composites to meet the many performance needs required, whether it’s on the battlefield or for homeland security,” says Busel.

One area where composites continue to make inroads is unmanned military vehicles. Despite governmental concerns over funding issues, several programs are moving forward – in the air and under the sea.

UAVs Take Flight

The most significant use for unmanned aerial vehicles (UAVs) is to conduct remote sensing missions, better known as reconnaissance missions. The U.S. Department of Defense (DOD) began using UAVs as combat drones and the DOD increased its funding for UAV programs significantly after the 9/11 attacks.

A study from WinterGreen Research notes that the UAV market is poised to grow considerably since aerial drones can implement strategic military missions to strike terrorists without injuring civilians. Glass and quartz fibers are used often in the nose cones, small fairings and sensors. Due to increasing demand for payload capacity and extended performance, carbon fiber reinforced polymer (CFRP) has been the primary material used in the body construction of most unmanned aerial vehicles. Composite Engineering’s BQM-167 Skeeter target drone, which is currently in production, utilizes the latest CFRP technology in its construction.

Engineering’s BQM-167 Skeeter target drone, which is currently in production, utilizes the latest CFRP technology in its construction.

The UCLASS Sea Ghost

Lockheed Martin, the global security and aerospace company, is currently in competition for the U.S. Navy’s unmanned carrier combat contract along with Boeing, General Atomics and Northrop Grumman. Lockheed Martin has been developing the Sea Ghost, an Unmanned Carrier Launched Airborne Surveillance and Strike System (UCLASS) drone. The company released a concept image in June 2012 that gave a glimpse...
of the outside of the aircraft. It depicts a sleek, blended-wing UAV. While Lockheed Martin remains tight-lipped about the inside of the aircraft, the company says the Sea Ghost draws on its work on several Navy programs, including the Joint Strike Fighter F-35C and the RQ-170 Sentinel Unmanned Aircraft System.

The Sea Ghost is a tailless flying wing that's built similarly to the miniature B-2 stealth bomber. The majority of the B-2 is made out of a carbon-graphite composite material that is stronger than steel and lighter than aluminum. It absorbs a significant amount of radar energy.

Due to the nature of the competition, Lockheed Martin has not finalized or disclosed specific details about the design or manufacturing of the Sea Ghost, nor would it reveal the exact use of composites. “All we can disclose at the time is that the U.S. Navy contract calls for a more stealth and lightweight unmanned combat aircraft,” says a Lockheed Martin spokesperson.

In December, a Navy spokesperson said the UCLASS program was delayed until mid-2013. However, the Navy still hopes to have unmanned aircraft on carrier decks by 2020.

Unmanned, Under the Sea

Unmanned underwater or undersea vehicles (UUV) are typically used to detect mines and map out the ocean floor. There are two very different groups of UUVs: Remotely operated underwater vehicles (ROVs) are controlled through a tethered line, while autonomous underwater vehicles (AUVs) operate independently. Since 2008, most AUVs have been designed to mimic nature in both appearance and movement. These vehicles, commonly known as biomimetic vehicles, are sought after because they look natural.

The Robotic Jellyfish – The U.S. Navy, alongside researchers from Virginia Tech and the University of Texas at Dallas, have spent months studying the mechanics of jellyfish propulsion and redesigning the Robojelly, a reconnaissance robot resembling a jellyfish.

The Robojelly, created with Bio-Inspired Shape Memory Alloy Composites (BISMAC) actuators, is fabricated to mimic real locomotive
High-tech sandwich construction using composite materials is ideal for transportation systems. The result is economical, lightweight, fuel-efficient vehicles with superb durability. Flame, smoke and toxicity standards are easily met and surface cosmetics are equal to metal—but fiber glass skins will not corrode.

behaviors of jellyfish. It’s coated with multi-walled carbon nanotubes in a nano-platinum catalyst powder, which creates heat when exposed to hydrogen and oxygen. Then the nanotubes are wrapped around a nickel-titanium shape memory alloy. The exothermic reaction between the metal and the water sparks the shape memory alloy to change its shape, contracting and moving forward. “To our knowledge, this is the first successful powering of an underwater robot using external hydrogen as a fuel source,” says Yonas Tadesse, assistant professor of engineering at the University of Texas at Dallas.

The BIOSwimmer™ – The U.S. Department of Homeland Security (DHS) relies on unmanned underwater vehicles to combat criminal activity in and around American waterways. Its Science and Technology Directorate is funding the development of a UUV designed to resemble tuna called the BIOSwimmer. According to the DHS, tuna have a natural body framework ideal for UUVs, which solves some propulsion and maneuverability problems that plague conventional UUVs.

“We’re using nature as a basis for designing and engineering a system that works exceedingly well,” says David Taylor, program manager for the BIOSwimmer at the DHS. In 2009, Boston Engineering Corporation’s Advanced Systems Group (ASG) in Waltham, Mass., was awarded the contract to develop the BIOSwimmer. The UUV uses an onboard computer suite for navigation, sensor processing and communications. “It’s designed to support a variety of tactical missions and with its interchangeable sensor payloads and reconfigurable operator controls can be optimized on a per-mission basis,” says Michael Rufo, director of the ASG.

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

For more stories like this, visit compositesmanufacturingblog.com and search the phrase “military.”
Turning Wind into Water

Marc Parent lived on a Caribbean island and suddenly found himself with no water and no electricity. Like most engineers, he immediately began looking for a solution. Today, that solution has spawned French-based EoleTech, which manufactures wind turbines that produce water literally out of thin air.

Parent solved his water problem by focusing on the coupling between his air conditioning unit and a small turbine. His one-of-a-kind system collected water from humidity in the air and condensation from the AC unit and converted it into potable water.

Later, after returning to France, Parent began looking for similar techniques to produce water but discovered there were none. He realized that the wind turbine application he created was not just unique but also beneficial. The technology could be used to help those in small, remote communities in Asia, Africa, the Middle East and South America to create water, not just collect it from an existing water source.

In 2000 and 2004, EoleTech (with support from large manufacturers like Siemens, Danfoss, Arcelor, Emerson and a variety of small companies) produced two WMS1000 prototypes. “Nearly 30 engineers and technicians, both in and out of Eole, helped develop the WMS1000,” says Thibault Janin, marketing and communications director at Eole Water, a division of EoleTech.

After more than 15 years of research and development, the fourth generation WMS1000 is a 30kW direct drive generator turbine with three fiberglass blades manufactured with epoxy plastic and polymerized at 140 F for 12 hours. The blades generate electricity in the traditional wind turbine fashion and are connected to a nacelle housing a fiberglass composite rotor as well as the condensation and water production components made from a food safe, stainless steel alloy. The hydraulic shaft also is manufactured using steel alloy that minimizes corrosion.

The process from wind to water takes many steps, all of which can be broken down into power generation, water generation and water purification. During the first stage, the turbine generates electricity that enables the entire water generating system to function. In the second stage, air is sucked in through the nose of the turbine through a device known as an “air blower.” As the air is trapped, it is directed through the electric cooling compressor located behind the propellers. The cooling compressor extracts moisture from the air, creating moisture that is then condensed, collected and transferred down the series of stainless steel pipes housed in the tower and into a tank at the base of the turbine. From there, the water is filtered and purified for consumption. The turbine can filter up to 264 gallons of water per day, depending on humidity and wind levels. “That is enough water to provide water for a village or town of 2,000 to 3,000 people,” says Janin.

Not only is the water generating component a novel idea; the turbine was manufactured to require little maintenance. Parent chose a direct drive generator turbine because the gearless box meant less frequent maintenance. The turbine also integrates three levels of wind protection that can withstand winds over 100 mph, including a centrifugal pitch control, a mechanical and electric rotor braking system, and a hydraulic tilted mast that eliminates the need for heavy machinery for repairs and can be secured to the ground during hurricanes or fierce winds.

“We wanted the WMS1000 to work by itself in remote areas that didn’t have access to qualified technical or human resources,” says Janin. “Preventive maintenance includes filter changes three to four times a year, blade replacement once every 10 years and fans should only be changed once in the life of the turbine. Overall, the turbine has an estimated life cycle of between 25 and 30 years.”

In 2010, after spending more than $2.5 million to develop its fifth generation WMS1000, EoleTech group established Eole Water and began marketing its equipment to the Middle East for $650,000 per unit. Tests have been done in France and the United Arab Emirates. “Eole Water is...
a small company and we rely on the expertise of a large engineering group for implementation,” says Janin. “Through French-based SPIE we are connected to 28 countries worldwide. To manufacture the project we also rely on 50 suppliers to manufacture the turbines. We hope one day to design our own components but realize we will always need innovative and competent industrial partners.”

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For more articles on green technology, visit compositesmanufacturingblog.com and click on the “Renewable/Green” tab.

Water Generating and Self-Sustaining
For French-based Eole Water, the goal in developing its WMS1000 was two-fold: to pull moisture from the air to create drinkable water and to create a self-sustaining, off-the-grid turbine. “It is feasible to be self-sustaining at wattages lower than 20kW. However, at 30kW, we faced a problem,” says Thibault Janin, marketing and communications director at Eole Water, a division of EoleTech.

The company collaborated with global supplier Emerson Process Management to create a unique power unit control that would enable the turbine not only to collect energy, but to stabilize it for direct consumption to the user as well as the water production system within the turbine regardless of location.

Interested in seeing how the system works? Watch a short video on YouTube by searching “Eole Water turbine.”

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Cool kits For Composites

Matthew Weaver and his co-workers at Fiberglass Supply embrace an attitude that also serves as the company’s motto – “Itching for Fun.” So instead of using conventional industry-speak to describe the firm (it provides materials and supplies to the composites industry to help clients build lighter, faster, stronger products), Weaver would rather talk about cool waves.

A distant storm over the Pacific Ocean had created swells along the shoreline near the firm’s office in Burlington, Wash., and Weaver enjoyed them on a composite longboard he and the Fiberglass Supply team had made earlier. Weaver then posted a photo of the experience on the company’s blog and also thought of an idea for a video (now posted on the firm’s YouTube channel) that shows how to apply hot coating to surfboard decks.

“Itching for Fun”

At a time when many industry pros enjoy discussing the advantages of composites, Weaver is literally being moved by them – on surfboards, skateboards, paddleboards, kayaks, canoes, sailboards and more.

“Our ‘Itching for Fun’ motto is about ideas, creativity, execution and play,” Weaver says. “We live and breathe that attitude, and we try to pass along our passion and knowledge to others.”

To that end, Weaver works with middle school, high school and college students to build composite skateboards during their industrial education classes. Fiberglass Supply recently designed a curriculum centered around a mold-and-materials kit that introduces students (and their instructors) to the fun and function of composites.

“A student with no experience in composites can safely and successfully build a composite skateboard that is not only cool, but also technologically advanced,” Weaver says. “While students are learning how to work with composites, the teacher can instruct them on issues like sandwich theory, material properties, physics and composite best practices.” (Fiberglass Supply also has developed a surfboard frame kit and two kinds of paddleboat kits.)

Weaver devised the skateboard-kit idea after talking with a high school teacher who was having trouble coming up with a new, hands-on project that would captivate students and make learning about materials more enjoyable. “I figured we could design something that could be a turnkey package – either we could come to class and build a skateboard along with students, or we could deliver a kit along with instructions,” he says. Today, Fiberglass Supply does both.

Learning by Doing

Education through demonstration has long been a focus at the company (formerly Monterey Bay Fiberglass), which for 30 years has provided innovative craftspeople with materials to make their project visions a reality. This year, on the second Thursday of each month, Fiberglass Supply will hold free seminars and demos for interested community members and business leaders. Wide-ranging topics include mold making, vacuum bagging techniques and stitch-and-glue boat building. And education isn’t just on site – it’s online. Since November 2010, the firm has uploaded 40 educational YouTube videos that have been seen a combined 230,000-plus times. (Visit www.youtube.com/user/fiberglasssupply.)

With that kind of emphasis on education and enjoyment, Weaver says, he feels a sense of responsibility when teaching young adults about the nuances of building composite...
Encouraging Minds

To identify schools willing to collaborate with Fiberglass Supply, Weaver attends technical education and teacher conferences. “Some instructors figure their students will get hooked simply by the coolness of building a skateboard, but they also realize it will give them an opportunity to talk about things like math and physics,” he says. “We help them frame things in a way a 15-year-old might better understand. For example, we might note that the 15 psi of pressure needed for the project is the equivalent to a 33-foot wall of water or about three vans.”

That kind of perspective has enabled Fiberglass Supply to capture more than just students’ attention. Last year, the firm won an Award for Composites Excellence (ACE) from ACMA in the Process Innovation Award category for its skateboard kit.

Weaver roots for young skateboard builders to succeed, he says, but also appreciates when students make mistakes. “I want these projects to be successful, but part of me is torn because we learn best from failures,” he says. “Some students invariably are going to get sloppy and cut corners. We want them all to make a great skateboard, but more than that, we want to teach them the value of paying attention to detail.”

By doing so, Weaver and the high-spirited Fiberglass Supply team aren’t just having fun. They’re encouraging the next wave of composites pros.

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Fiberglass Supply won a 2012 ACE award for their skateboard kit. Learn about the innovations, products, processes and equipment that won 2013 ACE awards at compositesshow.org/2013/ace_awards.cfm.
Composites have become vital to our modern life. Apple is researching composite applications for its next generation of iOS devices, and the new Boeing 787 Dreamliner contains 35 tons of composites. Composite materials can be found in a slew of bike frames, tennis rackets, golf clubs, wind turbines, racing yachts and more. Yet when it comes to the automotive world, it’s been a slow road. Carbon fiber reinforced polymer (CFRP) composites arrived on the automotive racing scene more than 40 years ago and were subsequently adopted by high-performance, low-production (and high-cost) vehicles.

Today, not only are composites used in Formula 1 racing and NASCAR circuits, but they have begun to trickle down from the likes of the Lamborghinis, Aston Martins and Porches of the luxury automotive world and into the affordable mass market. And with 16 million passenger cars on the road in the U.S. alone, there is vast potential for composites given the need for lightweighting as OEMs begin to comply with the looming 54.5-mpg CAFE standards for 2025. Yet this trickledown process has been painfully slow. So what is the hold up, and what can be expected for the future of composites in automotive applications?
Supply, Price, Speed

Even though composites are a lighter material and have an impressive strength-to-weight ratio, OEMs are struggling to adopt composites for a variety of reasons ranging from price per pound, insufficient available product and compatibility with the existing system. (The top reasons are shown below.)

In a recent study by Frost & Sullivan Supply Chain Analysis of the Automotive Carbon Fiber Composites Market, senior research analyst Sandeepan Mondal states, “The high costs of carbon fiber and existing production techniques results in higher manufacturing cycle times, which leads to low-volume production.” To become a more viable solution within the general automobile industry, the composites industry has to increase its production time.

“OEMs don’t care as much about fiber or preform; they just want an automobile to be at a certain weight, the manufacturing process and speed to be at an acceptable level and a competitive price point. What the composites industry comes up with to solve those problems will be the challenge,” says John Busel, director of ACMA’s Composites Growth Initiative. “For CFRP to revolutionize automotive production, it needs to get into the main structure of the car, it needs to be mass produced at a certain price point and it needs

Top OEM Concerns to Composite Adoption
ACMA’s Automotive Composites Alliance (ACA) has met with OEMs to determine the top concerns they have to further composite adoption. Meetings like these allow the ACA and the composites industry as a whole to focus its manufacturing processes and R&D on addressing these concerns moving forward:

1. Composites are too expensive (especially CFRP).
2. Composites are difficult to manufacture (especially CFRP).
3. There is an insufficient composites capacity to support widespread automotive use.
4. Cycle times are too long.
5. Engineering design software does not include composites in material databases.
6. Composites aren’t compatible with existing (metal-based) assembly infrastructure.
7. Composites cannot be easily joined to other materials in an automobile.
8. Composites are not as recyclable as other, currently used, automotive materials.
9. Composites are difficult to repair or replace.
to fit into the current assembly line and timeframe, which means it has to take two minutes to make a part not five.” CFRP used to cost $20 per pound, now it’s at around $8 per pound, but that’s in comparison to $1 a pound for glass fiber, 50 cents for steel and $2 for aluminum. “In conjunction with the price point is the production cycle. Historically, composites have had long cycle times. GFRP and sheet molding compound (SMC) are currently used widely in mainstream automobile manufacturing but could always improve. However, CFRP has a much longer cycle time of around 30 to 40 minutes per part, which is not short enough to be a supplier in the heavy volumes of 200,000 plus units a year,” says Terry O’Donovan, vice president of marketing and sales of Core Molding Technologies and chair of ACMA’s Automotive Composites Alliance (ACA). “OEMs have global platforms with high unit turnout per year. If the composites industry wants to really get into the larger automotive market, it needs to invest in more tooling. For example, instead of taking 30 minutes and using five tools per part, make a part in six minutes with one tool – and we’re getting there.” An added factor is fitting into the existing system. The composites industry also needs to figure out how it can combine with the already existing steel and aluminum parts in an automobile to be a truly viable product on a large scale. “CFRP/epoxy composites are best suited for automotive applications,” says the Frost & Sullivan report. “The advantages of high tensile strength, fire retardant properties and high fatigue resistance have created increased awareness of composites among automotive OEMs regarding crashworthiness, styling and parts consolidation.” Automotive OEMs such as General Motors, Ford, Toyota and BMW are delving deep into their processes and materials and they’re turning to composites for help to replace heavier metal parts. The same study predicts that the carbon fiber market will grow to $95.5 million by 2017 at a compound annual growth rate of 30.6 percent, for this exact reason – OEMs need new solutions. However, OEMs are looking at a variety of materials to solve their problems, not just composites. “There is no silver bullet solution,” says Jennifer Ecclestone, manager, GM Engineering Communications. “We are continuously working with our suppliers to develop new solutions and find new materials to meet our goals to improve fuel efficiency without sacrificing driving performance or safety for our customers, and composites are certainly a part of that.” In addition, the Frost & Sullivan study says there is a lack of general
engineering experience among OEMs, making them reluctant to move away from the metal-based assembly lines, which they have already heavily invested in.

O’Donovan explains that education is a key focus area of the ACA. “We hope to close the education gap as we work with universities as well as develop data engineers can use as they design next gen cars,” he says.

Among composites, OEMs have begun focusing on carbon fiber over glass fiber. “I think CFRP is the focus because its density is lower than that of glass, its stiffness is also higher so it shows great promise in structural applications, not just body panels but the underbody as well,” explains O’Donovan. “We are seeing more use of composites in exterior panels such as roofs, hoods, door skins. The goal to growth is to migrate to structural and the underbody where composites have the advantage of strength.”

Of course, automotive and trucks are multi-material platforms. Each has steel throughout as well as plastics, aluminum, magnesium and composites. “What material takes the lion share of the components in a car is still to be determined,” says Busel. The material usage may hang in the balance, but new partnerships and processes indicate a promising future for composites.

**Partnerships and Composite Collaboration**

In a recent discussion with a well-known U.S. OEM, Busel says the OEM emphasized that it is not looking at composites usage as a niche platform. To meet its yearly, global numbers of approximately 350,000 units of a single vehicle, the OEM needs a steady carbon fiber supply chain. The desire to use composites is there; the industry just needs to maintain a steady supply. For this reason, OEMs are matching up with suppliers around the globe in a new wave of vertical integrations: GM with Teijin and Plasan Carbon Composites, Ford with Dow Automotive Systems, Audi with Voith. “Composites are being widely used in aerospace with the new Boeing and Airbus aircraft. These companies pay top dollar for carbon fiber and consume a lot of the supply. The automotive sector needs to make sure they can get their hands on a large enough supply,” says O’Donovan.

New products are already coming out of these partnerships. In the last quarter of 2012, Ford displayed a prototype it developed with Dow Automotive Systems of its new carbon fiber hood for the Ford Focus. The hood, made of carbon fiber faceskins and a foam core, weighs 50 percent less than the company’s standard steel version. The part is produced by injecting resin over a carbon fiber preform in a slightly open tool, with the injection gate on one end of the mold cavity. As the injection process begins, the resin flows through and over the preform in a small gap located between the upper tool and the preform. During the process the tool is gradually closed at a slight angle, compressing the preform on the end closest to the gate and the resin is forced into the remainder of the preform. This new process means production time of a single hood is fast enough to be employed on a production line – a win for composites.

GM partnered with Teijin to develop a manufacturing technology for molding thermoplastic composite parts in less than a minute. “The technology we developed to mold CFRTP parts within a minute, the ideal time required by automakers for vehicle mass production, enables integrated molding of components,” says Yasunari Hotani, general manager of advanced composites business development of Teijin’s Composites Innovation Center. “This can drastically reduce the number of components used in a vehicle and has the potential for unprecedented weight reductions. Improved production not only makes mass production feasible, but the ability to modify the shape after molding will open the way for recycling, reuse and remolding of thermoplastic composite automotive parts.” These are important aspects in manufacturing, as GM’s Ecclestone points out: “We’re thinking in grams, not pounds, and look at the smallest opportunities to implement light weight solutions.”

GM also has forged a relationship with Plasan Carbon Composites to streamline autoclave methods for automotive parts. It unveiled its 2014 Chevrolet Corvette Stingray body, which includes a carbon fiber roof and hood, at the North American International Auto Show in January. Plasan molded the hood and roof parts through a “pressure press,” which is a high-speed thermoset molding process co-developed with Washington-based Globe Machine Manufacturing. Plasan President Jim Staargaard explains that the pressure press features a 17-minute “button-to-button” cycle. The hood is comprised of two 1.2-mm-thick carbon fiber shells that are hot-bonded together and the roof measures 1.2 mm thick and uses the same resin chemistry and prepreg as the company used to manufacture the roof of Corvette ZR1. “We believe that applications like the Stingray
combined with other advancements in technology and powertrains will lead the focus for the auto industry in the future,” says Ecclestone. “Composites provide a huge opportunity for mass reduction and efficient manufacturing at lower tooling costs.”

As each manufacturer teams up with a supplier, they are focused on different groundbreaking innovations and getting details from them is practically impossible; mum’s the word in terms of composite R&D and placement. “Overall, these groups are looking into new processes in both traditional FRP and CFRP. For example, developing new curing and prepreg fabrics as well as preforms that will reduce cycle times,” says O’Donovan. True, many exciting applications are being developed behind closed doors, but education, partnerships and the work of the ACA ensure that composites have a growing place in the automotive world.

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

With the Carbon Fiber Hype, Where Does that Leave GFRP?

In terms of lightweighting and a composites strength-to-weight ratio, automotive manufacturers are turning to carbon fiber reinforced polymer composites (CFRP) for more and more applications. But that doesn’t mean that glass fiber reinforced polymer (GFRP) is out of the running.

“Some of the GFRP folks are saying ‘wait a minute!’” says John Busel, director of ACMA’s Composites Growth Initiative. “GFRP has shown it is a good, reliable product so why throw the baby out with bathwater?” Just as other materials are conducting R&D into how to make a better, lighter, more affordable product, so are GFRP manufacturers. “There will be wars between types of composite fibers, but really we should all be working together to find many – and the best – solutions for composites within the changing automotive market,” says Busel.

CFRP is useful, and in a sense it’s the “sexy” product at the moment. However, more automotive applications are turning to GFRP for secondary parts such as panels, accessories and more. And as a material that is at a competitive price point, GFRP is and will remain useful as automotive OEMs adapt to more rigorous standards.
One of the major problems facing the American economy is escalating energy prices. The composite manufacturing industry is positioned to provide solutions, offering energy-saving products for markets such as automotive, aerospace, wind energy and infrastructure. The growing demand for lightweight composite products is prompting suppliers to develop specialty fibers.

Specialty fibers are engineered to fit the particular needs of a given product. Some specialty fibers use non-standard materials, while others exhibit extreme or specifically tailored characteristics, such as the addition of boron to prevent corrosion. As opposed to general use fibers, these advanced fibers give composite products an advantage geared toward specific applications.

According to research conducted by Koncept Analytics in 2012, the global sale of glass fibers fell sharply in 2008. This was a direct result of lower demand for composite products during the economic depression. However, the marketplace saw an upswing in 2009 as more composite manufacturers began creating lightweight solutions – such as longer wind blades – for the energy market. It has continued an upward trend ever since. Koncept Analytics expects the composite fiberglass market will continue to grow at a rate of 4.7 percent through 2014. The use of long fibers and other specialty fibers are more prevalent in the thermoplastic market. However, leaders in the composite fiberglass industry – such as Jushi USA, Owens Corning and PPG Industries – predict the industry may soon see a rise in specialty fibers for the thermoset market. Three trends in the composite fiberglass market include the use of long fibers, alkaline fibers and corrosion-resistant fibers.
Long Fibers, Light Weight

The Corporate Average Fuel Economy (CAFE) standard enacted in August 2012 sets strict federal fuel economy and carbon emissions standards for the U.S. transportation industry. To aid in finding a solution for lower fuel consumption, the U.S. composite market is building larger structural products to replace heavier metal parts. This leads to one of the biggest trends in the industry – the need for long fibers and preform materials to build large composite structural parts.

While long fibers are relatively new, they have attracted significant interest. According to market analyst Lucintel, long fibers have exhibited double-digit growth during the past few years and this trend is expected to continue. In the thermoplastic industry, long glass fiber rovings are injected with thermoplastic material, typically polypropylene, to create lightweight parts. The market for thermoset long fiber applications has not seen the same growth rate. However, manufacturers are using long glass fiber rovings to fill the gap between general fibers and prepregs.

Owens Corning, a leading provider of long fiber material based in Toledo, Ohio, views structural composites as a strategic opportunity for growth in the automotive industry. It is currently investing in global innovation opportunities, such as the creation of the China Composite Center, to encourage further thermoset research.

“The benefits can be huge,” says Ashish Diwanji, head of innovation at Owens Corning. “For example, long fibers allow weight reduction and corrosion resistance compared to general fibers, and it’s easy to process.”

Automotive composites manufactured with long fibers exhibit higher impact resistance and tensile strength than the same part with general fibers. Overall long fibers help reduce, costs and emissions and consume less energy, leading to a positive environmental impact. “The challenge is evolving this new science so we can find the right solutions for our customers quickly,” adds Diwanji. Owens Corning and others are researching new ways to use long fiber composites for production cars.

Audi’s new FRP coil springs, designed to replace steel ones, reduce the weight of the part by 40 percent. The long fibers are twisted into coils and impregnated with an epoxy resin. The material is wound onto a metal alloy core while the fibers are still wet. Finally, the spring is placed in an oven where the core material melts at a temperature of 100 F and the composite hardens. Audi plans to test high-volume production of the springs later this year.

Manufacturers also are interested in preform materials to help increase the production rate of composite products. Ford European Research Center and Dow Automotive Research Center recently showcased a prototype carbon fiber preform hood on a Ford Focus.

The hood is created in a revised injection molding process developed by the Institute of Plastics Processing. To manufacture the part, the injected resin covers the preform while the tool is slightly open. The tool closes gradually and eventually compresses the preform and cures the part under heated temperatures. The new carbon fiber material is capable of high-production speeds and reduces the weight of the part by 50 percent.

Zoltek, Magna Exteriors and Interiors, Benteler-SGL GmbH & Co. KG, SABIC Innovative Plastics, Cytec, BASF, SGL Group, the Fraunhoefer Institute for Chemical Technology and others are all heavily invested in the automotive composite fiber market, which is predicted by Frost & Sullivan to grow at an annual rate of 30.6 percent during the next four years.

Fibers for Longer Blades

The extension of the production tax credit (PTC) has enabled the wind energy market to get back on track. Manufacturers are now making larger turbines to produce higher energy output. Suppliers have created specialty fibers to help wind turbine manufacturers achieve size and weight goals.

For example, PPG Industries in Pittsburgh recently introduced a competitive alternative to carbon fiber...
for longer turbine blades known as INNOFIBER XM fiberglass. The high-modulus glass is made using alkaline earth aluminosilicate. This provides higher modulus and lower fiber density. It is up to 15 percent stiffer than general use fiberglass and can still be produced on large-scale commercial manufacturing operations.

“The multi-megawatt (MW) turbine market, for example sizes greater than 4 MW, is in its early stages of growth,” says Thomas Kerr, vice president of the fiberglass division at PPG. “Products like INNOFIBER XM fiberglass are being strategically positioned by our customers to their customers to further advance this key market application. We see specialty fibers as the long-term fiber of choice to help achieve specific performance results.”

There’s growing interest for advanced composites in the wind energy market. In August, Siemens created the world’s longest wind turbine rotor blades using glass fiber reinforced with epoxy resin and balsa wood to manufacture blades that are 246 feet long. Other companies are developing a technique attaching smaller carbon fiber sections together to create large blades.

Market analysts such as Lucintel and Composite Insights predict that the global market for composites in the wind energy segment will continue to grow. Currently, composites own 38 percent of the market share in wind energy. There’s room to grow, but also plenty of competition from other materials.

Other companies in the wind market, such as General Electric (GE), are threatening to move away from composites and toward other building materials. In December 2012, GE announced a partnership with Virginia Polytechnic University and the National Renewable Energy Laboratory to develop a new architectural fiber to wrap around metal frames. Projects like GE’s are putting pressure on the composite fiberglass industry to remain competitive with other leading materials to maintain a technological advantage in the wind market.

Corrosion-resistant Pipes and Tanks

The natural gas market is making a huge impact on the composites industry. According to the U.S. Energy Information Administration, the recent oil and natural gas boom in North Dakota and Texas has resulted in the lowest dependency on foreign energy in two decades. Companies such as Jushi USA noticed an increase in
demand for composite products in the oil and gas industry in 2012.

“Corrosion-resistant composites are being used in the recovery of natural gas. This is an exciting, growing market for corrosion-resistant fiberglass,” says Ron Adams, vice president of technical sales at Jushi USA. “It’s also an important trend. The U.S. may soon transition from gasoline to natural gas to keep prices down.”

To meet demands of the growing corrosion market, Jushi USA launched a new product known as E6-CR, a boron and fluorine free E6 glass. E6-CR was developed to give composite products added corrosion-resistance in acidic and alkaline environments. It also demonstrates less weight-loss compared to traditional E-glass, according to Jushi USA.

But natural gas isn’t the only market Adams believes will contribute to the growth of products like corrosion-resistant E-Glass. He cites the global urgency to obtain drinkable water. “The water market will be important in the future of composite materials,” he says. “Corrosion-resistant fiber can help extend the lifespan of the composite pipes transporting potable water.”

The Future of Fiberglass
As American markets look for energy-efficient products, composite manufacturers are developing solutions for large structural composites, stronger turbines and corrosive-resistant pipes to meet growing needs. With more demand on the composite industry, fiberglass suppliers are investing in specialty glass research to stay ahead of the curve. The possibilities seem limitless.

“We’re in the process of developing new products in China that you will start seeing in the U.S.,” says Adams. “You can expect some exciting developments for specialty fibers in the years to come.”

ACMA’s Composites Growth Initiatives (CGI) establish standards and specifications that encourage the use of composites in place of traditional materials. There are 12 CGI committees focused on different segments of the market, including two mentioned in this article – automotive (the Automotive Composites Alliance) and corrosion (the Corrosion Control Division). For more information on these committees and ACMA’s Composites Growth Initiative, visit acmanet.org/marketdevelopment/cgi.

Register Now!
The 2013 Corrosion, Mining and Infrastructure Conference (CMI) offers attendees a unique opportunity to participate in comprehensive technical sessions about the power of composites and how they measure up against traditional materials. With superior design flexibility, lower costs, and unmatched durability, composites are rapidly establishing themselves as the “Go To Solution” for end users, design engineers and architects.

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- Mineral Processing
- Infrastructure
- NACE (National Association of Corrosion Engineers)

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COMPOSITES 2013 stimulated the eye with impressive new products and live demonstrations. It also fueled the mind and attendees left Orlando, Fla., with insight to grow their businesses.

The largest composites event in North America provided a spark of energy to an industry that’s intent on communicating its advantages and competing against traditional materials – aluminum, steel, concrete and wood.

“If you only make one good connection or learn about one new type of technology, then the show is more than worthwhile,” says Michael J. Hoke, president of Reno, Nev.-based Abaris Training Resources Inc. “That is what I come for and what is now valuable to me and my company.”

Now that the conference is in the rear-view mirror, here are six themes that resonate from it. Keep them in mind as the industry moves into the future:

1. CONNECTION

Attendees were making connections – with exhibitors, new products and each other – inside the Orange County Convention Center.

“This is a great time to look at your business and see where the opportunities lie,” says Jonathan Sgarlata of Bradley Corporation. “There is so much creativity built into the products and processes that successful solutions require a team effort across organizations. There is no place more streamlined to do that than COMPOSITES.”

For all the merits of online research, email introductions
and video conferencing, nothing replaces meeting face to face. While much of the value of COMPOSITES took place on the show floor and education rooms, connections were made and business was done in hallways, elevators, local restaurants and after-work receptions where attendees met for meaningful conversations.

2. DIVERSITY

Many composites firms have entered new markets and diversified their product lines. COMPOSITES was filled with niche strategies and new opportunities in wind energy, infrastructure/corrosion, international business and other growth markets.

“The global composites material market is on the rise, and we continue to forecast significant growth over the next five years,” said Chuck Kazmierski, program manager of Lucintell, before leading the education session “Growth Opportunities in the Global Composites Market 2013-2018.” He discussed a recent study that predicts growth in sectors such as pipe and tank, transportation, wind and construction.

One example of industry diversification is Robal Glass, a line of products made from a combination of recycled post-consumer, pre-landfill glass and bio-based resins, and sold by Monroe Industries, Inc. The product line’s vanity tops, shower bases, wall surfaces, table tops and more are cast into a variety of shapes, sizes and colors and are designed to help architects qualify for LEED (Leadership in Energy and Environmental Design) points. “A smart manufacturer is not afraid to be creative or scared to try something new,” said John Webster, president of Monroe Industries.

3. SUSTAINABILITY

Eco-friendly composites firms used to be novel. Today, they’re necessary, as the marketplace seeks companies with green initiatives. That trend has made corporate sustainability a key strategy – and a head-scratching challenge – for the composites industry.

“While sustainability in Corporate America is informed by environmental and social activism, it’s really about trying to create economic advantage within the pursuit of social progress,” said Frank O’Brien-Bernini, vice president and chief sustainability officer at Owens Corning, during a General Session at COMPOSITES. “When you look at the opportunity from an environmental lens, comparing our products to aluminum, steel and concrete, we see a tremendous opportunity to grow the composites marketplace.”

Rather than simply teaching attendees to “be green,” multiple sessions at COMPOSITES showed them how to “market green” and win business from sustainability initiatives.

4. REGULATION

Stricter EPA regulations, along with state and federal guidelines on health and safety in the workplace, have increased the need for composites firms to produce and offer products that are both user-friendly and environmentally safe. Strategies for complying with the alphabet-soup of regulation agencies (EPA, OSHA, UEF, etc.) need to begin way before auditors show up, COMPOSITES speakers and attendees agreed.

Sessions on regulatory issues gave attendees “a great opportunity to hear and learn about the latest news, and to interact with others to learn what they have faced and what they are actively doing to adjust,” said Larry Cox, CCM, CCT-I, principal of Structurlite Composites.

5. BRANDING

The composites industry could be much more effective if it didn’t take as long to explain what composites are, and why they matter. That messaging problem was an overarching theme at COMPOSITES.

Many engineering firms and other users of traditional building materials have little understanding of composites and are often reluctant or resistant to change. The onus is on the industry itself to combat that problem, and communicating the benefits of composites to engineers, architects, designers and specifiers is both a challenge and a necessity.

Composites “need to be promoted as a known, track-record-proven material, not some cutting-edge, mysterious material that only certain people are privy to understand,” said Robert Lacovara, CCM, CCT-I, president of Convergent Composites. He pointed to ACMA’s ongoing Load & Resistance Factor Design (LFRD) project as an example of a smart move toward making composites engineering properties known in a widespread way.

6. INNOVATION

COMPOSITES proved the industry is filled with pioneering professionals who understand the importance of exploration, data and new ideas. The Awards Luncheon featured ACE and Pinnacle award winners, celebrating the industry’s innovation. (Meet the winners on page 26.) Also, industry leaders and achievers provided “what’s next” insight during more than 40 education sessions and peer-reviewed technical papers.
Industry veteran Bob Lacovara began his COMPOSITES 2013 educational session with a prediction: “We’ve probably seen the last aluminum commercial aircraft ever developed. Composites are primed for growth in this industry.”

Lacovara, CCM, CCT-I, principal at industry consulting firm Convergent Composites and former director of technical services for ACMA, led the session “Why Aerospace Out-of-Autoclave Processing is Good for the General Composites Industry.”

He began by highlighting the Boeing 787 Dreamliner, the world’s first large commercial jetliner with a fuselage made primarily of carbon fiber composite rather than aluminum, making the plane significantly lighter and more durable. Boeing says the Dreamliner is 20 percent more fuel-efficient than comparable models and predicts it will save millions of dollars in maintenance costs because composites don’t corrode.

“There is a major paradigm shift occurring in the design and manufacturing of commercial aircraft,” Lacovara said. “Traditional metal designs, which have been used to construct airliners for years, are developing into composites designs. Our industry is at the leading edge and making its way into flight-critical applications, and there’s a projection for huge future demand of composites in the aircraft industry.”

Most structural components have traditionally been manufactured with autoclave processing, Lacovara said. These issues have resulted:

• Equipment is capital intensive.
• Operational costs are high.
• Energy consumption is high.
• Pressure vessel size limits component size.
• There are no means to make in-process adjustments.
• Cycle time is slow.
• Capacity might not keep pace with projected composites growth.

“There aren’t enough autoclaves available to accommodate the increase in production rates the aircraft industry is going to require,” Lacovara says. “At the same time, new manufacturing methods are available that can produce aerospace-like properties at lower costs. Those methods present a huge opportunity for the composites industry.”

Today’s composites professionals crave advice that’s practical. Many of them specialize in specific market segments and want to hear from peers and experts whose real-world experiences can help them win business.

To that end, Michael J. Hoke addressed everyday issues facing decision-makers in the automotive market, including damage repair, recyclability and production cycle times. He also talked about how composites firms can work together to solve the market’s challenges and win business.

Hoke’s session, “Carbon Fiber use in New Automotive Applications – Promises & Problems,” was one of 10 sessions at COMPOSITES 2013 in the Market Applications track. These sessions were geared toward attendees who focus on key vertical markets and who have customers and prospects with niche-specific projects.

Hoke, president of Abaris Training Resources Inc., presented an overview of current and near-term automotive composite structures and dedicated much of the session to the auto industry’s crashworthiness and repair training problems.

“Composites have been used in high-tech race cars since the early 1990s, but high costs and long production cycle times have kept the materials out of ordinary street cars,” Hoke said. “This is changing due to many advances in the technology and creative partnerships between auto manufacturers and carbon composite material suppliers. The push for highly fuel-efficient cars, which are light but also have excellent crashworthiness characteristics, is a big factor enabling these technologies.”

But to penetrate the auto market, Hoke says, composites pros need to acknowledge and address these shortcomings of using composites in the niche:

• When using carbon fiber, costs are still high relative to steel.
• Crashworthiness is possible, but requires new design philosophies and extensive testing.
• The ability to repair vehicles is amply demonstrated by aerospace experience, but cost-effectiveness depends on an application’s complexity.
• Typical carbon fiber composites are often handmade and expensive.
Edward Newsom started his COMPOSITES 2013 educational session “Product Liability Risk Management” admitting that attorneys aren’t beloved. “Most folks don’t much like lawyers,” said Newsom, partner of Smith Moore Leatherwood LLP. “But on those rare occasions when you need one, you want a lawyer who is going to go out swinging and never back down from a fight.”

Newsom and Steven Henry, another partner in the law firm, have represented composites companies in lawsuits. They shared insight on reducing corporate exposure to product liability litigation.

Product liability is all-encompassing. It is liability for a product you manufacture, design, assemble, formulate, sell or for which you provide a component. “Anybody in the product chain can be subject to product liability,” said Newsom.

Henry suggested that companies conduct product liability risk assessments to minimize the potential for product-related incidents as well as to comply with all laws and regulations, help with the provision of a defense if an incident occurs, and evaluate products and incidents through a product liability audit to help prevent or minimize future problems.

“The real goal is to create the evidence of good faith and product safety consciousness that’s necessary to minimize your company’s liability and defend against any product liability claim,” said Henry. He shared six steps for reducing your company’s risk in product liability:

1. **Perform a product liability audit.** Ask questions about product safety, safety standards, design and development, labeling specifications for warnings, documentation concerning installation, product recalls and more.
2. **Design a reasonably safe product** by staying abreast of state-of-the-art technologies, adhering to industry standards, keeping active in ACMA and correcting design defects as you learn of them.
3. **Manufacture the product as it was designed and without fault.** Use quality materials and components, monitor the manufacturing process, inspect completed products and document everything.
4. **Incorporate adequate warnings** and instructions to eliminate risks that could be eliminated through reasonable design.
5. **Train your personnel** on product liability.
6. **Create a post-sale feedback system.** Obtain product-performance information from distributors, sellers and end users.

**Six Tips for Reducing Your Company’s Product Liability Exposure**

**In Wind Market, Knowing What Hasn’t Worked is Key**

As the use of wind turbines continues to increase around the world and become more technologically advanced, composites can be part of the solution for making them lighter, larger and more efficient.

The blades, generators and electrical systems of a wind turbine have historically been the largest areas of focus because ultimately the efficient conversion of mechanical energy into electrical is the overall intent. Similar to the automobile industry, the goal of wind turbine makers is to lessen the component loads and decrease part count.

But most wind turbine blades are made with a hand lay-up process, which can lead to manufacturing defects and lack of consistency. As the wind energy industry moves toward more composite material use in wind blades, manufacturing processes that have been pervasive in the aerospace and defense industries for the manufacturing of blades, wings and fuselages need to be used more often.

Gary Kanaby is director of sales and marketing for Wind Energy at MFG Wind, a brand operated by Molded Fiber Glass Companies (MFG). MFG has pioneered composite product advances and serves as a top wind energy supplier of blades, nacelles and spinners.

Kanaby led the COMPOSITES 2013 education session “Wind Blade Failure Identification and Prevention.” One of his key points: Blade building is difficult, and understanding what hasn’t worked can lead an eager industry toward better designs and preventive maintenance. Wind blades are produced at prices not far from less demanding composite structures, yet are expected to perform much like an aerospace part, he said.

Wind blades are exposed to harsh environmental conditions and perform more than 1 billion cycles over their design life of 20 years, Kanaby said. Understanding common failure issues and market-entry barriers like the ones below can lead the composites industry to better designs and maintenance, he said:

- Incomplete infusion
- Glass movement during the vacuum process
- Huge capital investment
- Absence of long-term contracts
- Uncertainty of the market due to short extensions of tax incentives and lack of a long-term energy policy
President’s Award
Randy Weghorst, chairman of AOC, received this year’s President’s Award from Lori Luchak, president of Miles Fiberglass & Composites and ACMA. Weghorst has been a significant contributor to the planning of ACMA and its joint venture with SAMPE. He also helped lead ACMA’s Composites Growth Initiative and several ACMA committees.

Lifetime Achievement Award
Strongwell’s Chairman John Tickle, middle, received this year’s ACMA Lifetime Achievement Award from Lowell Miles and Lori Luchak of Miles Fiberglass & Composites.

Tickle has more than 20 years of involvement in the composites industry and contributes significantly to the industry. He has served on the Government Affairs Council and the ACMA Board. Tickle was president of the association from 2007 to 2009.

Hall of Fame Inductees
Bill Seemann, right, and Steve Walling, middle, were inducted into the ACMA Hall of Fame by Lowell Miles and Lori Luchak. Seemann, president of Seemann Composites, has been involved in the creation of approximately 30 patented products and processes and served on numerous ACMA and SAMPE committees. Walling, former CEO of Plasticsolors Inc., was responsible for the company’s strategic direction, which is fitting since he applied that same focus to ACMA, helping the association develop and refine its strategic plan. Walling served on ACMA’s Board of Directors from 2007 to 2010.

Outstanding Volunteer
Dan Witcher of Enduro Composites was given the ACMA Outstanding Volunteer Award for his involvement while at Strongwell in establishing the Load and Resistance Factor Design standard from its initial concept to its final publication by the American Society of Civil Engineers. Lori Luchak presented the award.

Awards for Composites Excellence (ACE) Winners, Sponsored by Composites One, CCP and Ashland

Best of Show
Tsunami Barbell Flexible Composites Barbell, Flexi-StiX, LLC, Anderson, S.C.

Composites Sustainability
Helical Turbine Blades & End Caps for Savonius Wind Turbine, Plastics Unlimited, Preston, Iowa

Equipment Innovation
MTI® (Membrane Tube Infusion) Goes American, German Advanced Composites, Miami

Infinite Possibility for Market Growth
DOW/CFT Tequatic Plus™ F-50 Fine Particle Filter Vessel, Ershings, Inc, Tulsa, Okla.

Innovation in Green Composites
Low Density Commercial Truck Inner Fender, The Composites Group, North Kingsville, Ohio

Most Creative Application
Large Acoustic Wall and Ceiling Panel Assemblies, Kreysler and Associates, American Canyon, Calif.

Process Innovation

James E. Maas Pinnacle Award

Outside of the Box Award
The Compact Patio Bar, built by Coplin Manufacturing of Tolleson, Ariz., and submitted by ACS International of Tucson, Ariz.

Technical Paper Winners
Thirty-six final papers, each offering state of the art, in-depth looks into processes, applications and materials, were reviewed by a committee, which were narrowed down to the best of six categories. Dr. Ellen Lackey, professor at the University of Mississippi, won Best Overall Technical Paper for Comparison of Alkali Solution and Moisture Exposure of Pultruded Composites. Winners received plaques in the following categories:
Design and Engineering
The First Worldwide Field Application of FRP Composite Rebars in Reinforced Water Treatment Plant Tank: Design & Construction
Dr. Brahim Benmokrane, University of Sherbrooke

Green Composites
Life Cycle Assessment of Composite Shipping Container Floors Compared to Conventional Wood Flooring
George Pavlovich and Shen Tian, Bayer

Market Applications
Composite Biomaterial Roof Panels
Andrea Kraj, Composites Innovation Centre

Manufacturing and Processes
A Study Comparing Electric Cartridge, Oil & Pressurized Water Heating for Composite Molding
Kip Petrykowski, Single Temperature Controls

Materials
Exterior Wall Assembly Material Screening Process for NFPA 285
Dr. Nicholas Dembsey, Worcester Polytechnic Institute

Pultrusion
Comparison of Alkali Solution and Moisture Exposure of Pultruded Composites
Dr. Ellen Lackey

ACMA members can access all technical papers at acmanet.org/member-resources in a month. Full-conference attendees have access to all technical papers and educational session presentations from COMPOSITES.

University Poster Winner
New this year was the Best and Brightest Student Poster Competition, sponsored by CCP, which recognizes the most innovative and trailblazing student research. David Branscomb of Auburn University won with his entry titled Design Process for Open Architecture Composites.

What People Are Saying About ACMA's New Website
"Well designed and easy to navigate."
"Looks great! Easy to use."
"Great Site!"
"It’s Fantastic!"
"Nice design. Nice color. Easy to navigate!!"

See what they’re talking about at www.acmanet.org
A Gem at COMPOSITES 2013

One of the hidden treasures at COMPOSITES 2013 was the ACMA Composites Growth Initiative (CGI) committee meetings. That is a mouthful, so let me explain. ACMA is the only association actively working to grow the composites market through our Composites Growth Initiatives. Because composites penetrate so many different markets, we have 12 committees within the CGI that focus on particular segments or manufacturing processes. These range from the Architectural Division to the Utility & Communications Structures Council. The committees enable companies to work together on projects to open markets that are of such a broad scope that no single company could do it alone.

Our CGI committees have changed building codes, created new design standards for composites, launched educational websites for end users and met with OEMs. They are also a clearinghouse for the 75+ RFPs the CGI receives each year for composites projects that ACMA distributes to its member companies.

Many of our more than 550 member companies belong to a CGI committee. In addition, ACMA has launched a marketing committee made up of the most talented people in the composites industry to work together to promote composites. The committee also will be developing marketing materials for member companies and CGI committees.

Here are some of the projects the CGI committees are currently working on:

- Exhibiting at trade shows that target potential customers
- Setting up outreach meetings with OEMs
• Revamping and re-launching websites
• Collecting industry data and studies that can be used to promote composites
• Developing stories that can be turned into articles for publications read by engineers and architects
• Working on standards and industry guidelines
• Developing data to show that composites emit less carbon to use than other materials
• Working on recycling composites

And a whole lot more! There is so much going on that we’re devoting the entire month of March to our CGI committees. If you’re an ACMA member and don’t belong to a CGI, you’re not getting all you can get out of your membership. To learn more, contact John Busel or Jonathan Roberts through our new website at acmanet.org/marketdevelopment/cgi. Only ACMA members can belong to CGIs – so if you’re not a member, call Paul Hirsh at 703-682-1665 or email him at phirsh@acmanet.org. CGIs are just one of the many benefits of ACMA membership.

Tom Dobbins, CAE
ACMA Chief Staff Executive

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Jiangsu Jinding New Material Co., Ltd.
Rugao, Jiangsu, China

MB Super Abrasives
Columbia, S.C.

MultiCam LP
Dallas

QuakeWrap, Inc.
Tucson, Ariz.

New CCTs
Ed Baniak, CCT-CM
Ashtabula, Ohio

Juan Barrera, CCT-S
Santiago de Queretaro, Queretaro, Mexico

Victor Barrera, CCT-S
Santiago de Queretaro, Queretaro, Mexico

Omer Bender, CCT-LRTM
Largo, Fla.

Michael Brown, CCT-OM
Lakeland, Fla.

Casey Brown, CCT, CCT-VIP, CCT-WBR
Jamestown, R.I.

Peter Buffinton, CCT, CCT-VIP
Swansea, Mass.

Alejandro Cruz, CCT-S
Santiago de Queretaro, Queretaro, Mexico

Tim Deluca, CCT-LRTM
Kent, Wash.

Peter Emrich, CCT-CM, CCT-VIP
Ashtabula, Ohio

Christine Ericksen, CCT-VIP
Ashtabula, Ohio

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Only ACMA members can belong to CGIs. If you’re not a member, call Paul Hirsh at 703-682-1665 or email phirsh@acmanet.org.

March is CGI Month

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Destination Information
The refreshed and dynamic ACMA website – www.acmanet.org – was launched at COMPOSITES 2013. The new website offers a wealth of easy-to-navigate resources and features available nowhere else – more than 700 pages.

“We are excited about the new look and feel of the redesigned website. But more importantly, we look forward to the opportunity to better serve our members and our industry with the information they need to advance and grow their business,” says ACMA President Lori Luchak of Miles Fiberglass & Composites.

Visit acmanet.org for regulatory information, news on composites advocacy, tips for running your business and much more.

Professional Development
In the Mile High City
The 2013 Corrosion, Mining, Infrastructure Conference (CMI), May 15 and 16 in Denver, offers attendees a unique opportunity to participate in comprehensive technical sessions about the power of composites and how they measure up against traditional materials. CMI provides more than 28 professional development hours of programming to choose from and four educational tracks. The wide-ranging program selection offers recent technical research, best practices, design insights and a broad range of composite solutions. When registering, attendees can request an electronic certificate to verify completed hours via the online registration form.

- Track 1 - May 15: Architecture - 6.5 hours
- Track 2 - May 15: Mineral Processing - 6.75 hours
- Track 3 - May 16: Infrastructure - 7.5 hours
- Track 4 - May 16: NACE - 7.5 hours

For more information, visit ACMA’s website at acmanet.org/meetings. To register for the conference, email events@acmanet.org or call Lori Bocek, ACMA’s assistant manager of conferences and marketing, at 703-682-1655.