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AND MORE
Visit Us - Upcoming Conferences

SPE Automotive Composites Conference & Exhibition (ACCE)
speautomotive.com
September 9-11, 2015
The Diamond Banquet & Conference Center at the Suburban Collection Showplace, 46100 Grand River Ave., Novi, MI

The International Boatbuilders’ Exhibition & Conference (IBEX)
ibexshow.com
September 15-17, 2015
Kentucky Exposition Center, 937 Phillips Ln., Louisville, KY

The Composites and Advanced Materials Expo (CAMX)
thecamx.org
October 26–29, 2015: Conference
October 27–29, 2015: Exhibits
Dallas Convention Center, 650 S. Griffin St., Dallas, TX
INNOVATION IN ACTION

AOC is bringing composite solutions to a more diverse group of industries than ever before. From guitars to boats to infrastructure, composites are changing the markets they serve. And we continue to develop revolutionary composite technologies with the expertise, innovation and quality that have always defined our company.

Composites made with AOC resins, gel coats and colorants meet the growing needs of these diverse markets. This issue of Crosslink showcases how AOC is managing the resulting customer demand with streamlined manufacturing processes and state-of-the-art equipment upgrades.

We are committed to helping our customers identify the best solutions to meet their needs in today’s growing and changing markets. We will always invest in the people and products that have propelled us to be the leading global supplier of resins, colorants, and gel coats — both today and tomorrow.

Frederick S. Norman
President and Chief Executive Officer
A resurging industry
The boating industry is growing. And, as sales increase and boat manufacturing operations expand, boat buyers continue to raise their expectations for performance, aesthetics and longevity. AOC has the right range of products to meet those expectations.

Quality products
AOC offers a complete line of marine products that includes materials for boat hulls, molding tools and other composite applications. Our quality is matched only by our consistency, which is achieved through sophisticated, automated processes and world-class quality controls.
Exceptional service teams
For customers who have partnered with AOC for decades, and for those who are using our products for the first time, AOC works hard to ensure a seamless experience from initial trials to final product performance. We understand that no two manufacturers share the same process or environmental factors, and we work with customers to find the right solution for their specific needs.

Jeff Arevalos, Structural and Composite Design Engineer at Regal Marine, uses AOC products in Sport Boats and Cruisers at Regal’s facilities in Orlando, Florida and Valdosta, Georgia. “We were so impressed with the technical service from AOC. Having someone come see our operation first hand and help us figure out the best way to use their products shows a supplier who is going above and beyond.”

Resins and gel coats literally form the foundation to every boat. With our technological knowledge, dedication to quality and unparalleled service, AOC is the marine industry’s supplier of choice.
Volunteers Play Peavey Carbon Guitars in Haiti

Volunteers helping a Haitian community build rainwater collection systems, wanted to teach local residents how to play the guitar during their downtime. However, they quickly discovered that playing an over-humidified guitar in Haiti’s wet, tropical climate is difficult. Composite Acoustics provided a solution with premium, carbon fiber acoustic guitars that remain tonally consistent in any climate, ranging from the tropics of Haiti to arid, desert locations.

Composite Acoustics guitars are made from carbon fiber and vinyl ester resins from AOC. They feature a molded one-piece body shaped to form to the contours of the player’s body. Heelless neck joints allow for a streamlined instrument shape that cannot be achieved with wood. To produce the guitars, Composite Acoustics combines extensive hand-crafting with cutting-edge CAD design and CNC machining technology. The result is a lighter, stronger musical instrument that stays in tune longer and never needs adjustment.

While most carbon fiber applications use epoxy resins, Composite Acoustics selected an AOC vinyl ester resin. The vinyl ester blend has numerous advantages. These include increased processing speeds, room temperature cure, low viscosity for shorter mold fill times, complete fiber wet-out, and low laminate exotherm for improved surface aesthetics. The room temperature cure helps reduce energy costs typically associated with the epoxy/carbon fiber laminate post cure process.

“From racing yachts to airplanes, carbon fiber is the material of choice,” says Fred Poole, general manager of Peavey Electronics, which owns Composite Acoustics. “We just took the next logical step—making musical instruments out of it. Our guitars are lighter, stronger and more comfortable thanks to the combination of carbon fiber and vinyl ester resins from AOC.”

Composite Acoustics guitars are perfect for every musician, from garage bands to international acts. “Climate to climate, state to state, it holds the same sound and same tune,” says country music artist Brantley Gilbert. “I couldn’t be happier with these guitars.”

About Composite Acoustics®

Composite Acoustics is a division of Peavey®, one of the world’s largest makers and suppliers of musical instruments, amplifiers and professional audio systems. Founded in 1965 by Hartley Peavey as a one-man shop, the company distributes more than 2,000 products to over 130 countries.
Mexico Installs Steam-Cured CIPP System

In early 2015, a culvert under the surface of the Mexico-Tuxpan Highway near Puebla, Mexico, was nearing collapse. Corrosion from frequent storms led to exposed steel and falling pieces, which posed a risk to the 10,500 vehicles that travel on the highway daily.

Tubepol, a cured-in-place pipe (CIPP) provider based in Mexico City, rehabilitated the deteriorating culvert using AOC’s Vipel® L704-AAP, an isophthalic-based resin. This resin provides the corrosion resistance, durability and toughness required for CIPP applications.

While Mexico typically relies on traditional methods, such as open-cut trench excavation, this was not an option for this project. Traditional methods would disrupt traffic on the busy 310-kilometer stretch of highway between the capital, Mexico City, and one of the country’s most important harbors, Tuxpan, on the Gulf of Mexico.

Tubepol and AOC worked closely on the CIPP project, the first of its kind in Mexico. “We needed a functional tube capable of handling ground loads and settles,” says Engineer Jorge Pérez-Gavilán, Tubepol’s field foreman. Because of the ground’s pronounced slope, Tubepol opted to install the liner using compressed air and cure it with steam. Steam curing also provided an enormous time advantage, taking only three hours to cure the liner.

Tough conditions prevailed during the installation, including fog, rain and even a flood. But thanks to its excellent wet-out and cure properties, the Vipel® resin performed to specifications.

About Tubepol
Tubepol is a full-service CIPP provider located in Mexico City. It solves customers’ pipeline issues, offering video inspection, pipe fabrication, installation, curing, and final inspection. Tubepol also provides free educational seminars on CIPP to maintenance chiefs at government organizations and private companies. For more information, contact Rodrigo Zavala, at (+52) 1209-0152 or email ingenieria@tubepol.com.
CUSTOMER HIGHLIGHT

SMC Helps Automakers Meet Fuel Efficiency Goals

Sheet Molding Compound (SMC) has played an important role in automotive manufacturing for several decades. With today’s race to meet rapidly increasing CAFE (Corporate Average Fuel Economy) standards, automakers are once again turning to SMC as an economical alternative to high speed (HS) steel and aluminum. SMC formulated with AOC’s comprehensive line of SMC resins and additives meets the need for lighter, more fuel efficient vehicles while offering additional benefits in design, production, and operation.

Benefits at Every Turn
SMC is ideal for designing automotive parts that require a superior surface quality. Its physical, chemical and thermal qualities allow more flexibility in the design process, which facilitates the creation of unique shapes ideal for creating attention-grabbing vehicle panels. Its highly-refined surface finish retains Class A smoothness and exceptional gloss resistance even when exposed to high temperatures during the painting process. And unlike metal, SMC doesn’t rust or corrode, and resists nicks and dings that are frequently encountered in today’s crowded parking lots.

SMC also offers many advantages in the manufacturing process. Its fast cycle time allows for high-volume production of dimensionally accurate components. SMC has significantly lower tooling investment and fits seamlessly into existing manufacturing and assembly processes. Also SMC eliminates the concern over galvanic corrosion associated with the use of dissimilar metals and/or carbon fiber reinforced composites. It is ideal at annual volumes of up to 150,000 units per year.

For the vehicle owner, lightweight SMC body panels translate to better gas mileage and/or higher performance due to improved horsepower/weight ratio. As a plus, SMC typically requires less maintenance and fewer repairs, which keeps the vehicle looking new for many years.

In addition to supplying critical SMC raw materials, AOC provides suppliers with customized SMC formulations, unparalleled customer service and technical support.

<table>
<thead>
<tr>
<th>SMC Density</th>
<th>Specific Gravity</th>
<th>% Mass Reduction vs Standard SMC</th>
<th>% Mass Reduction vs Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>1.9</td>
<td>--</td>
<td>30%</td>
</tr>
<tr>
<td>Medium</td>
<td>1.6</td>
<td>15%</td>
<td>38%</td>
</tr>
<tr>
<td>Low</td>
<td>1.2</td>
<td>37%</td>
<td>46%</td>
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</tbody>
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AOC offers materials for standard, medium and low density SMC, all with the same exceptional Class A surface finish.

AOC’s low density SMC offers weight savings comparable to aluminum, but unlike aluminum — it allows automobile manufacturers to avoid the expense and disruption of re-tooling their assembly processes.

Left: Lincoln MKS
Above: Chevrolet Corvette
AOC Expands Global Manufacturing Capabilities

**Gelcoat Mixer**
Due to increasing demand for gelcoat products, AOC installed a new 2,200-gallon mixer at its manufacturing plant in Collierville, TN. AOC gelcoats are used in a variety of products such as bathware, electrical applications, wind energy, boats, recreational vehicles, and heavy trucks. This expansion in Tennessee, coupled with the additional manufacturing resources at AOC’s plant in Guelph, Ontario, increases distribution capacity to meet customer’s growing needs.

**Emulsion Mixer**
AOC expanded manufacturing capabilities at its Mexico City plant with the addition of a new emulsion mixer, which creates a key ingredient used in fiberglass manufacturing. The mixer produces stable emulsions which meet customer specifications and improves process efficiency. AOC’s plant in Guelph, Ontario has additional emulsion mixing capabilities. Utilizing two locations with this specialized mixing ability will increase AOC’s capacity and flexibility to meet customers’ needs.

**UK production**
AOC’s UK plant added a new formulation vessel to its two existing vessels. Additionally, they created a new high-tech processing space to house all three units. The integration of the new vessel into AOC UK’s formulation program underscores AOC’s adaptability to a growing demand for proprietary resins. With this addition, the upgraded facility has more than twice the capacity to manage continuing sales increases.
AOC Mexicana Named BRP Gold Supplier

AOC Mexicana was recently named the Gold Supplier of the Year by Bombardier Recreational Products (BRP), global leader in the design, manufacturing and distribution of motorized recreational vehicles. The award is the premier recognition for supply chain partners who demonstrate distinguished performance in quality, service and costs. AOC Mexicana supplies BRP’s SEA-DOO division in Mexico where they produce up to 175 SEA-DOO hulls a day.

BRP uses a stringent list of criteria to evaluate suppliers for its award program, including no field warranty issues or major product defects, implementation of cost reduction initiatives and on-time delivery. AOC Mexicana achieved 100% on-time delivery, zero returns and provided invaluable technical support — support which helped BRP implement a brand new molding process that combines closed mold and open mold technologies.

Check out SEA-DOO.com to learn more about BRP watercrafts made with AOC products.
New Hires Position AOC for Expanded Growth

AOC recently welcomed several new team members who will strengthen our presence as a leader in the global composites industry.

“Our people are our strongest assets, bringing the benefits of AOC’s innovation and service to customers around the world. Our newest team members bring the proven experience needed to drive our continued growth.”

Fred Norman, AOC President and Chief Executive Officer

Paul Chang has joined AOC as the Plant Manager of the facility in Guelph, Ontario. He has a Bachelor of Science in Chemical Engineering from the University of the West Indies and a Master of Business Administration from York University. With over 20 years of manufacturing experience, we look forward to leveraging the skills, experience, and insight he brings to AOC.

Harley Carlsen has joined AOC as a Technical Service Representative for our gelcoat team. Harley has over 24 years of experience in the composites industry, including marine-related manufacturing management and technical sales experience. With an extensive background with all composites processes, Harley brings both meaningful customer service skills and expert product knowledge to his role at AOC.

Mike Siegel has joined AOC as the Product Leader for Corrosion and Fire Retardant resins. As a career professional in the corrosion industry, Mike has extensive background in vinyl ester and polyester resins. Mike will lead AOC’s Vipel corrosion-resistant resins, which have become the choice building material in corrosion markets including water and wastewater treatment, industrial tanks and pipes, and chemical processing.

AOC Transitions to New Hazard Communication Standards

AOC has changed the format for all labels and Material Safety Data Sheets (MSDS) to meet new international Occupational Safety and Health Administration (OSHA) standards. We now use the term “Safety Data Sheets” (SDS) instead.

OSHA outlined one standardized SDS format and prescribed the wording and hazard symbols on labels. AOC implemented these changes prior to the June 1, 2015 deadline. Distributors may ship products using the old labels until December 1, 2015.

New Label Format

New Safety Data Sheet (SDS)
AOC is a leading global supplier of resins, gel coats, colorants, additive and synergistic material systems for composites and cast polymers. AOC develops technology, lives quality, and delivers service better than any other resin supplier.

For more information, go to AOC-RESINS.com.