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Challenging CIPP Project Uses AOC Resin

AND MORE

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CROSSLINK

VOLUME 20 2016
THE COLORFUL SIDE OF AOC

AOC offers color dispersion chemistries to meet manufacturing challenges, custom specifications, and color matching requirements for a full spectrum of composite applications. Our comprehensive Chroma-Tek product line is your colorant solution for unsaturated polyester resin systems, as well as the following applications:

- Chemical Thickeners
- Inhibitor Solutions
- B-Side sand C-Sides for SMC/BMC
- Conductive Dispersions
- Urethane Dispersions
- Epoxy Dispersion
- Polyurea – Polyetheramine Dispersions
- Phthalate Dispersions

COLOR, QUALITY, CONSISTENCY

PUT AOC’S SUPERIOR SERVICE, TECHNOLOGY AND CHEMISTRY TO WORK FOR YOU.
INVESTING IN THE FUTURE

AOC is redefining the future of the composites industry. From marine to automotive to infrastructure, we are bringing new uses for composites to a more diverse group of industries than ever before. We never stop improving our products and services. And, we maintain our competitive edge with the best people, processes and technology.

This issue of CrossLink showcases the new industry needs we are meeting, including an enormous resin-infused yacht hull, an aging pipeline rehabilitation, and ultra-lightweight car parts. We have also upgraded our R&D and manufacturing facilities to keep pace with our technical innovation and customer needs. Please read more inside.

We continue to customize our chemistries, improve product performance and exceed customer expectations. And, we will always provide the best resins, colorants, and gel coats on the market — today and tomorrow.

Frederick S. Norman
President and Chief Executive Officer

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Creating Groundbreaking Technology for Today and Tomorrow

AOC has completed a renovation and re-design of the Research and Development facility in the World Headquarters complex in Collierville, Tennessee. Our technical leadership begins here where polymer scientists and chemical engineers develop new formulas to create groundbreaking chemistries for both today and tomorrow’s composite solutions.

The R&D team is focused on two main areas:

- **Today.** Understanding, helping and working with customers to meet today’s unique challenges. From customizing formulas to testing samples, our R&D team makes sure products will perform.

- **Tomorrow.** We anticipate the industry’s new challenges and discover solutions. Our scientists are working on new technology today that will change the industry in the future.

With the latest technology, we can continually improve product performance and exceed customer expectations. And, we will continue to seek the best processes and facilities in meeting the growing need for composite solutions.
Our renovated R&D laboratories are customized workspaces for our experts in each market, from color to corrosion. Here, the R&D team creates customized formulations for our customers and analyzes them through extensive mechanical, chemical and physical testing.

We will continue to lead our industry in groundbreaking technology. Our new R&D laboratories allow us to maintain even better responsiveness to our customers as we test, analyze and modify formulas for their specific needs.

- Tom Folda, AOC Senior Vice President, Technology
HATTERAS INFUSES 90 FOOT YACHT

When Willis Slane founded Hatteras Yachts in 1960, he envisioned a fiberglass yacht that would set the standard of quality and innovation for all other yachts to follow. Today, Hatteras has partnered with AOC to create a revolutionary single piece infusion hull for its new 90 Motor Yacht.

Pioneering a New Process
Hatteras uses the resin infusion process because it is quicker and cleaner than other molding processes. And by working with the AOC technical team to customize the resin to their specifications, Hatteras could ensure that in one infusion step, the resin would fill the entire hull mold before gelling.

The hull is the largest and tallest in the Hatteras fleet, with increased structural integrity and decreased risk of leaks. Hatteras chose AOC’s Hydropel® R015 high performance resin series for this important project.

Structural Advantages
Owners of Hatteras Yachts benefit from the continuous and integral design of the 90 Motor’s one-piece hull. Since the hull is one piece, the stress on secondary bonding areas is reduced and the overall integrity is greatly increased.

Why AOC Resin?
Hatteras partnered with AOC to ensure that the resin had the correct properties for this high performance hull. The R015 resin’s specific characteristics included:

- Gel time flexibility
- Low viscosity
- Low exotherm
- Viscosity stability
- Excellent strength and toughness
- Correct wet out characteristics, designed for high glass content

The Hatteras 90 Motor Yacht will debut in 2017.
CHALLENGING CIPP PROJECT USES AOC RESIN

When Bulgarian engineering company Stroitelna Mehanizatsia was tasked with the pipeline renewal of an energy production plant in Kazakhstan, they found that cured-in-place-pipe (CIPP) was the most effective and efficient rehabilitation method. Constructed in the 1950s, the plant’s original pipelines had thoroughly corroded, resulting in pinhole leaks throughout. Some sections of the pipe had already been replaced using open trench excavation, but there were still several areas that required trenchless rehabilitation due to their location. Stroitelna Mehanizatsia contacted AOC to be the resin supplier for this challenging CIPP project.

Challenges
The pipes presented unique challenges, including varying diameters and operating pressures. So the selected liner would need to be lightweight, yet strong enough to withstand high internal pressures. In addition, the combined weight of the liners and resin reached up to 12 tons, making them difficult to maneuver. Workers operated in outside temperatures that ranged from 113° F at midday when the project began in August, to -14° F at nighttime when it concluded in November.

Solution
CIPP offered a superior pipe rehabilitation solution with lower construction costs, rapid installation, minimum excavation and no service disruption. Stroitelna Mehanizatsia paired AOC’s Vipel® L010-PPA vinyl ester resin with Applied Felts’ AquaCure RP® liner, which was specially designed for the application. The vinyl ester resin provided superior mechanical qualities and flexibility while the liner’s PET felt and fiberglass fabrication provided increased strength over a traditional felt liner.

“We are proud of this achievement,” said Pavel Gruev, Deputy Director of Stroitelna Mehanizatsia. “And AOC resin played an important part in this success.”
PIGMENTS THAT CAN WEATHER THE STORM

Pigments can’t stand up to the elements on their own. They require superior color chemistry to help them weather the storm – and the sun, wind and heat, too!

AOC’s specially-formulated UV stable pigments can stand up to the elements. It all starts with the right AOC polymer resin, selecting the correct pigment, and adding the right UV absorbers and stabilizers. Optimizing the correct combination of these ingredients is what makes composites made with AOC UV stable pigments more durable.

To simulate materials being exposed to the elements, we re-create harsh environments in our test labs with artificial weathering machines, such as Xenon Arc, QUV-A, and QUV-B.

VIBRIN® GEL COATS PROTECTION THAT SHINES BRIGHTLY

From showers to truck covers, and lots of products in between, AOC’s Vibrin gel coats create surfaces with vibrancy, strength, and gloss. We offer a complete line of gel coat systems and our scientists are continuously improving gel coat technologies for the future.

Our customers benefit from our industry leadership in resin, gel coat and colorants technologies. Because AOC manufactures both resin and colorants, we serve as the single source for those ingredients in all gel coat formulations. Add the industry’s most advanced manufacturing facilities and most responsive technical service teams and you get gel coats with superior performance.

AOC’s next generation marine Gel Coat will be featured in the next edition of Crosslink.
AOC INSTALLS NEW MIXER AT INDIANA MANUFACTURING PLANT

AOC recently added a new 6,000-gallon mixer at the manufacturing plant in Valparaiso, Indiana. The mixer greatly expands the plant’s capacity to service open mold markets such as tub/shower and cured-in-place pipes. Its installation allows AOC to meet the demand of more customers in more places, underscoring AOC’s industry leadership in these growing markets.

The new mixer utilizes AOC’s proprietary process control and data collection system. Detailed data from every stage of every process is recorded, analyzed and stored to continuously improve quality and consistency from batch to batch.

“This investment helps AOC continue to meet our customers’ needs with the products they trust, and we can now serve them with more responsiveness, flexibility and efficiency.”

- Mike Diehl, AOC’s Business Manager

EXPERT PARTNERS IN LIQUID MOLDING

Liquid molding processes (LMP), such as resin transfer molding (RTM) and infusion, are gaining more popularity as manufacturers look for faster ways to produce better parts, and create more environmentally–friendly work facilities.

LMP can create products with many advantages:

- Low labor
- Faster cycle times
- Better reproducibility

- Low VOC emissions
- Clean environment
- Less waste

LMP also allows fabricators to produce structural parts with high glass content or parts with a Class A finish, many of which are required in automotive applications.

AOC has experts dedicated not only to customers who already use LMP, but also to customers who want to convert from open mold processes to closed mold by using LMP. More than just recommending the correct resin, the AOC team helps customers in selecting and optimizing the use of catalysts, fillers, molds, production processes — and even how to best set-up a production line for maximized efficiency.

Through AOC’s LMP lab, our team can mimic many of the processes that our customers use and help them find the best way to approach a project, saving them both time and money.

Liquid Molding Processes can help fabricators produce better products, faster.

In photo: Dan Cox, Bill Sears, Noel DeJesus, James Chaplin, Fred Norman, Matt Watkins, Phillip Hale

In photo: AOC’s Ryan Spidle and Daniel Rodriguez create test parts for customers in the LMP lab.
AOC’S CARBON FIBER RESIN USED IN ECO-VEHICLE

Students from the Politechnic University in Warsaw entered an ultra-efficient eco-car made with carbon fiber and AOC resin in the Shell Eco-marathon in Rotterdam, the Netherlands. One of the world’s leading student engineering competitions, the Eco-marathon challenges young engineers from around the world to design, build and drive energy-efficient vehicles.

The vehicle’s design features smooth contours and a teardrop shape that reduces aero drag. The students crafted the door covers using AOC R058. This resin combines the performance of epoxy resins with the processing speed of unsaturated polyester resins. Formulated for liquid molding processes, R058 creates lightweight composite parts with exceptional strength-to-weight ratios.

R058 infused through the carbon fiber 10 times faster than an epoxy resin. The faster gel time process and no post-curing system completed the fabrication process four times faster than a system using epoxy. AOC is working with Politechnic University to make all the body parts of later models using R058.

NEW HIRES POSITION AOC FOR EXPANDED GROWTH

AOC welcomes new team members who will strengthen our presence as a leader in the global composite industry.

“Our people are our strongest assets, delivering AOC’s industry-leading composite solutions to customers around the world. Our newest team members bring the skills and experience to drive our continued growth.”

Fred Norman, AOC President and Chief Executive Officer

Wolfgang Abele has joined AOC as a Corrosion & Infrastructure Market Development Specialist where he will customize customer solutions with our comprehensive line of Vipel® corrosion resins. Before joining AOC, Abele worked as a Technical Development Leader for Mitsui Plastics, Inc. in Houston. Abele has nearly 40 years of product development technical sales experience in the resins and plastics industries. He has a Bachelor of Science from The University of Philadelphia, a Master of Business Administration from The Citadel, and a Master of Science in Textiles with polymer emphasis from North Carolina State University.

Brian Robertson has joined AOC as the Product Leader of Specialty Products. Before joining AOC, Robertson worked as the Technical Director for specialty gel coat supplier Sogel Inc. in Quebec. Prior to that, he was the Technical Manager of gel coat and resin technologies for the Valspar Corporation. Robertson brings 35 years of experience in the composites industry to his role at AOC. He has Advanced Diploma in Biological Science Technology from Canadore College in North Bay, Ontario.
AOC LAUNCHES NEW WEBSITE

AOC’s new website makes it easier to connect people with the information they need. From product details to literature and case histories, information is easy to find. Visit AOC-Resins.com today to learn more.

Contact your sales representative or sales@AOC-resins.com for more information.
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