

Composites Polycon 2007 Showcase

Tampa show attendance is up despite slow economy. ACMA reschedules 2008 show.

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Although the mood on the show floor was somewhat subdued because of a lull in housing starts and a depressed boating market, COMPOSITES & POLYCON 2007, the annual composites industry trade show produced by the American Composites Manufacturers Assn. (ACMA), attracted nearly 4,000 industry personnel (up from 3,700 in St. Louis last year). According to ACMA reports, the Oct. 17-19 event, held at the Tampa Bay Convention Center in Tampa, Fla., posted a nearly 6 percent increase in attendance, drawing attendees from 49 of the 50 U.S. states while 14 percent of the visitors came in from a total of 60 other countries.

The big news at ACMA's 2007 event was that the show's next appearance will be in 2009, to avoid scheduling conflicts with the IBEX show (also see the News item in "Related Content," at left). ACMA has elected to reschedule its event in the first quarter of the year, the timeframe once occupied by IBEX. The specific dates and location for the 2009 ACMA show have yet to be determined.

On the show floor, a number of ACMA's 200+ exhibitors displayed new technologies and showcased innovative applications. The following were among them. For more information about these companies and their products/services, see "Companies," at left.

Airtech Advanced Materials Group (Huntington Beach, Calif.) introduced the new Stretchlon HT-350 series, a high-temperature film addition to its Stretchlon family of bagging films for vacuum infusion applications. Designed for high elongation (some films can stretch more than 500 percent), the product is said to withstand a higher temperature than the company's Stretchlon 200 product. Also, HT-350 can be used with all standard epoxy resin systems (not recommended for use with polyesters or vinyl esters) and reportedly retains its flexibility in low-humidity environments. Also new are Dahltexx Breather Plies, which combine release fabric and air-permeable membranes that allow the continuous removal of air and volatiles but prevent the loss of resin from the laminate.

Alcan Baltek Corp. (Northvale, N.J.) introduced AIREX PXC. 145, a low-density (9 lb/ft³) fiberglass-reinforced closed-cell urethane foam for sandwich structures. Continuous fiberglass is evenly distributed throughout the foam in a proprietary manufacturing process, which gives the foam enhanced compression, shear and bending properties for plywood replacement, says the company. It is available in both rigid sheets and contourable configurations. Also on display at the booth was a robust ProWall shipping container manufactured by Integrated Container Technologies (Everett, Wash.) made with AIREX T91.100 structural thermoplastic core with fiberglass/thermoplastic skins.

AOC LLC (Collierville, Tenn.) discussed an all-new unsaturated polyester backbone for clear gel coats, intended for cultured marble manufacturing. Daniel Oakley, the company's gel coat product leader, presented a technical paper at the show that discussed how the new gel coat, currently in development, will be able to meet EPA-mandated hazardous air pollutant (HAP) levels (less than 44 percent) while still achieving fast cure and retaining good spray characteristics and acceptable clarity.

Baycomp Co. (Burlington, Ontario, Canada) introduced booth visitors to its new continuous fiber-reinforced, recycled polyether terephthalate (PET) tapes, which the company claims have material properties comparable to polyamide or thermoset resin materials. The tapes are available with uni glass or carbon reinforcement in 60 percent and 70 percent fiber volume versions that are 48 inches/1,220 mm wide.

Bayer MaterialScience (Pittsburgh, Pa.) displayed a line of pultruded window frames for home construction made by Inline Fiberglass Ltd. (Toronto, Ontario, Canada) using Bayer's Baydur PUL 2500 polyurethane (PU) resin with glass fiber reinforcement. The pultruded PU, says the firm, allows larger parts with thinner walls that are eight times

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stronger than PVC frames and 40 times less conductive than aluminum. Also in the booth was the Class A panorama roof module of the Opel Zafira, which was fabricated by backmolding a high-gloss thermoplastic film with glass fiber-reinforced polyurethane foam. Webasto AG (Stockdorf, Germany) is the manufacturer of the roof module. Bayer says the film's Baydur carrier layer provides a thermal coefficient of expansion similar to that of aluminum and claims that "all major German automakers are planning to fabricate horizontal exterior components from polyurethane film composites."

First-time exhibitor **Black Bros. Co.** (Mendota, Ill.) showcased its line of laminating and roll coating machines. Potential applications include adhesive spreading, panel cleaning, and cold- or hot-roll laminating. Among the offerings were adhesive coaters and spreaders, ranging in widths from 26 inches to 158 inches (660 mm to 4,013 mm). The company also makes a full line of laminating equipment including hot-roll presses and air-operated platen presses as well as material handling options, such as a pneumatic panel feeder, a laminate indexing station, a scissors lift and more.

BYK USA (Wallingford, Conn.) showcased its BYK-C 8000 polymeric coupling agent that enhances mechanical properties of filled, ambient-cure resin systems by forming strong chemical bonds between the inorganic filler and the resin. Testing reportedly has shown that the additive can improve a resin's flexural strength by more than 50 percent, with a reduction in viscosity, which means the thickness of cast polymer can be reduced to make part production more economical, says the company.

CASS Polymers of Michigan Inc. (Madison Heights, Mich.) showed its line of Adtech Plastic Systems products and Tool Chemical Composites tooling planks. On display was the company's venerable "Red Stuff" filled urethane tooling plank. Appropriate for patterns, low-rate molds or high-volume foundry patterns, Pattern Plank PP-1052 is dense (71 lb/ft³) with high compressive strength and a reasonable coefficient of thermal expansion.

Collano Inc. (Sempach-Station, Switzerland and Greenville, S.C.) exhibited its line of structural adhesives for a range of applications. New at the show was Collano A8 7110, a flame-retardant paste adhesive for sandwich construction that, the company says, combines the characteristics of two-part polyurethanes with silicon adhesives. The material remains elastic after cure, helping bonded components withstand pressure waves and vibration. Also on display were multilayer film adhesives that make it possible to bond otherwise incompatible substrates. The products also handle additional functions. For example, the films can incorporate a water-impermeable layer to resist moisture ingress when used to manufacture skis and snowboards.

Distributor **Composites One** (Arlington Heights, Ill.), per tradition, conducted live demonstrations as part of its Closed Mold University Technical Seminars. The demos featured a fully operational closed-molding shop, where technicians produced 2-ft catamaran hulls using light RTM. Hatch covers also were produced using closed cavity bag molding (CCBM). In addition, the crew vacuum infused a 15-ft skiff hull on each of the three show days. Composites One was joined in the effort by suppliers, industry experts and organizations, including 3M, Airtech, Alcan Composites, Arctek Inc., Arkema, Cook Composites & Polymers, Chemtrend, Chomarat, Dynabrade, Glascraft, ITW Plexus, Owens Corning, Progress, RTM North and Vectorply Corp.

Creafill Fibers Corp. (Chesterton, Md.) reported a lot of interest in its high-quality alpha cellulose fibers. Creafill fibers reportedly have a coefficient of thermal expansion of zero, which helps to make them a functional, nonabrasive additive for composites that can reduce shrinkage and cracking and increase part "green strength" at minimum dosing levels. The company also cellulose fibers as an alternative to wood flour in wood plastic composites (WPCs), designed to replace natural and pressure-treated wood in residential decking, fencing and other outdoor applications. (For more on WPCs, read "Wood-filled Composites Jump Off the Deck," in this issue. See "Related Content," at left.)

Just two weeks before the show, exhibitor **Fiberex Glass Corp.** (Leduc, Quebec, Canada) announced that it has entered a joint venture agreement with Taishan Fiberglass Inc. of Shandong, China. E-CR glass production from the joint venture will be marketed by Fiberex Marketing International, a wholly owned subsidiary of Fiberex, primarily for piping applications in the Middle East, says the company. About its announced intention to enter the market as a supplier of carbon fiber, Fiberex officials would say only that de-

velopment of its carbon fiber line is proceeding slowly.

A supplier of basalt fiber and reinforcement products, **Hengdian Group Shanghai Russia & Gold Basalt Fiber** (Shanghai, China) exhibited at the show for the first time, offering the fiber in various forms and claiming to have a stable supply of raw basalt. Hand-outs were available showing the excellent fire performance of a basalt fiber/resorcinolinic resin system from Shea Technology (Reno, Nev.).

Henkel Corp. (Rocky Hill, Conn.) exhibited Frekote Aqualine C-600, a new water-based, wipe-on release agent for large wind turbine blade applications. The release is a low-VOC, nonflammable, water-based emulsion that is designed to allow good release of very large structures, offering multiple releases before recoating.

Innegrity LLC (Greer, S.C.) exhibited its INNEGRA very-high-modulus polypropylene (HMPP) fiber that reportedly offers specific tensile strength and modulus similar to fiberglass but at a much lower density. INNEGRA S is optimized for strength, and INNEGRA E is optimized for very low dielectric properties. The company also presented an interesting concept: INNEGRA S can be used as a core between skins of carbon fiber to reduce the cost of an infused solid carbon laminate by 40 percent.

KMT Robotic Solutions Inc. (Auburn Hills, Mich.) introduced its new CamPro CAM-to-robot software, which seamlessly converts CAD/CAM milling and trimming paths into complete 6-axis robot programs. According to the company, the software enables manufacturers to make the most of their previous investments because personnel trained on SURFCAM or other software tools reportedly can easily make the transition to robotic system control.

Laminex Div. of Bondo Corp. (Atlanta, Ga.) had several unique new products, including LEXZAR M-PACT gel coat replacement. The new material is a spray-on polyurea designed for use in open molds. It replaces traditional thermoset gel coats, offering improved impact resistance and toughness properties, no VOCs and faster application time, says the company.

Magnum Venus Plastech (MVP, Kent, Wash.) conducted a demonstration of its new Patriot SSB light RTM system in its booth. Although such demonstrations historically have been confined to outdoor areas, the company sealed the molding equipment within a clear enclosure (photo at right). The demo included the closed-mold injection of a carbon fiber race car seat with comolded metal inserts. The process took 15 minutes from the start of injection to the demolding of the part, using a water-based flush system for the injections. The MotoCat feature on the system allows for a change in catalyst percentage, initiating part cure after just a 70-second mold fill.

Materials Innovation Technologies (Fletcher, N.C.) showed a remarkable high-rate preforming technology, dubbed three-dimensional engineered preform (3-DEP), that borrows from slurry molding technology that is traditionally used for paper audio speaker cones. A programmable forming tool on a gimbaled mount is submerged in a tank containing a slurry of fibers and water, with no binder. The process controls the flow velocity in the tank, the head motion and vacuum level to achieve precise, near net-shaped preforms with oriented fibers, in less than two minutes, with any type of fiber including hybrids. The company is testing and validating the process under a Phase II SBIR grant.

McClellan Anderson (Schofield, Wis.) described its new P.E.T. Center — Prototyping, Education and Technology. The in-house center has a 4-axis Super Hornet filament winder as well as other equipment to produce full-scale parts, using either wet winding or towpreg, for design assistance, training or part production.

Reichhold (Research Triangle Park, N.C.) touted its new Dion 31616-00/ 31100-00 low-styrene, impact-resistant, toughened urethane hybrid resin for the SMC and pultrusion markets, compliant under California air quality rules. Molded parts reportedly achieve the flexibility and toughness of polyurethane as well as the strength, stiffness, and temperature resistance of unsaturated polyesters. The resin has better impact properties than vinyl esters, says the company, and it is compatible with carbon fiber sizing and nano-additives.

Syrgis Performance Initiators (Helena, Ark.), formerly Norac Inc., displayed the new company name and brand at the show. Syrgis Performance Products acquired the or-

ganic peroxides business from Norac in late September, just weeks before the show. Norac's long-time leader Ken Weber has retired and Doug Hubbard was introduced as the company's new business manager.

3M (St. Paul, Minn.) introduced its Clean Sanding Discs for dry sanding of gel coat, composites, and other materials. These discs reportedly provide up to two times the life of many conventional discs and are designed for use with 5-inch and 6-inch random orbital, self-generated or pneumatic vacuum sanders. The discs integrate patented multi-hole patterns that are said to reduce disc loading and increasing disc life. The discs are available in the company's Hookit brand 360L construction in grades P220 to P1000, as well as 3M's 236U Hookit Gold in grades P80 to P500, and 216U A-wt. paper discs in grades P220, P320, P400 and P600.

Tricel Honeycomb Corp. (Gurnee, Ill.) showed off several new automotive applications of its honeycomb products, including load floors for the 2007 BMW X5 model and sunshades for GM, Toyota and BMW. The display was an encouraging sign that composites can be and will be spec'd for high-volume parts. The company's paper honeycomb is combined with Bayer's Baypreg polyurethane molding process to produce the components.