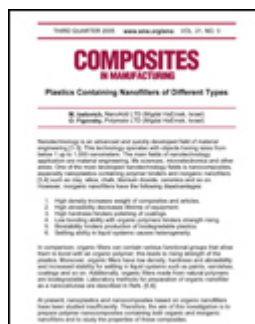


COMPOSITES IN MANUFACTURING

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NEWSLINE

Abrasive Grinding Wheel

A new, all-purpose flexible mesh abrasive wheel for the grinding and light sanding of fiberglass tanks, vessels, hulls and composite structures has been introduced by **Rex-cut Products Inc.** (Fall River, Mass.). Sigma-Screen™ multipurpose discs are depressed-center Type 27 abrasive wheels that feature a blend of zirconia-ceramic abrasive grains bonded to a flexible mesh and come in coarse, medium, fine and very-fine grades. Ideal for grinding, blending and light sanding of fiberglass and composites, these mesh abrasive wheels are chatter free and will not clog. Faster and cooler on fiberglass than solid resin fiber discs, Sigma-Screen multipurpose discs are offered in test

kits featuring two-each of coarse, medium-fine and very-fine to let fabricators evaluate them. These 4.5 in. (11.43 cm) diameter wheels can be stacked on a grinder for longer life. They are also effective for stainless steel, metals, aluminum and wood. The kit is priced at \$18.74. Individual discs are \$1.99 each, supplied in boxes of 10 or 50 discs, with quantity discounts available.

New Piezoelectric Composite Components

Morgan Electro Ceramics (Eindhoven, The Netherlands) introduces its new piezoelectric composite components. Components manufactured with piezocomposite materials offer improvements over traditional transducer materials, which result in increased acoustic performance for medical applications, including medical imaging and Doppler blood flow equipment. MEC's piezoelectric composite materials reduce the cross-coupling that typically occurs between different modes in the ceramic of conventional transducers, enabling medical components to respond in a more precise and predictable manner. Additionally, components manufactured with ME's piezoelectric composite materials reduce spurious activity, offering higher transmit and receive efficiency. Piezocomposite components also provide lower acoustic impedance and improved transducer bandwidth than that of conventional piezoelectric ceramics alone. MEC offers the piezoelectric composites in both 1-3 and 2-2 orientations, in sizes up to 1.5 in. sq (0.000968 m sq) and frequencies from 100 kHz to 12 MHz. In addition, piezoelectric volume fractions can be tailored for any application to enhance transmit and receive response rates.

Components Delivered for First Airbus A400M



EADS Socata (Tarbes, France) has delivered its subassemblies for the first Airbus A400M to representatives of the industrial partners of Airbus Military, EADS CASA and Airbus France. As part of the Component Design & Build Team for the Airbus A400M sponsors, the main landing gear fairings, EADS Socata has been involved in this European program from the preliminary study phase. The sponsors are two, 14 m fairings on either side of the fuselage housing the main landing gear of six sturdy wheels fitted with low-pressure tires specially designed for operating on short and rudimentary runways. The sponsors are of mixed construction, a metal frame covered with composite (hybrid glass/carbon and carbon) panels on the fore and aft parts, to both limit the weight of the structure and make it able to withstand the impact of projectiles thrown up from unmetalled runways. To comply with new safety regulations in the event of a burst tire, the central section has been redesigned with metal panels. Each sponson weighs around 900 kg. They are delivered to EADS CASA fully equipped with electric, hydraulic and fuel circuits installed. The four-nose landing gear doors are made of composite material (sandwich carbon fiber). They incorporate a hinging system developed by the design office, which allows weight reduction without lessening performance. Each door weighs 90 kg. They are delivered to Airbus France's St. Nazaire factory.

Commercially Available Smart Composite Structures

IPTRADE (Newton, Mass.) has completed the development phase of first commercially available smart composite structure. The design and manufacturing effort for the patent-pending smart composite lasted for 18 months and was successfully completed with the help of the company's manufacturing partner, ARC Technologies (). The smart composite structure incorporates multiple layers of piezoceramic (PZT) wafers, enabling it to be at

once a high-fidelity strain sensor and a high-precision strain actuator. According to IPTRADE, key technological breakthroughs include full compatibility with commonly accepted manufacturing practices for glass/epoxy and graphite/epoxy composites. The primary uses of the smart composite are expected to be nondestructive testing (NDT) and structural health monitoring, as well as precision control of elastic vibration.

Owens Corning to Sell Composite Manufacturing Plants

Owens Corning (Toledo, Ohio) announced the planned sale of two glass-fiber reinforcement manufacturing facilities in Battice, Belgium, and Birkeland, Norway. The sale is intended to address regulatory concerns associated with the proposed formation of a joint venture between Saint-Gobain's Reinforcement and Composites business (a part of Saint-Gobain known as Vetrotex) and Owens Corning's Reinforcement business. Owens Corning also announced that the company is in active discussions with Saint-Gobain regarding the potential conversion of the proposed joint venture into an outright acquisition by Owens Corning of Saint-Gobain's Vetrotex business. Should such conversion occur, it is expected that the planned sale of the two manufacturing facilities would go forward to address regulatory concerns associated with the acquisition transaction.

Structural Parts Made by Laser Sintering

Besides the numerous nonstructural parts made by Windform XT that can be found in the Ilmore engine, the 2007 innovation project is a real turning point in the creation of racing engines. If this project is successful, the future of the engine and frame production will have the green light toward really new and interesting delivery times, costs and performances. The new challenge is the optimization of the camshaft cover for the newest Ilmor engine. The camshaft cover is the structural part that supports the bearing of the camshaft, directly applied on the four-stroke, 800 cc engine head. Inside there is also the lubricant oil. The average working temperature of this part is between 130°C and 140°C. The most critical aspects of the motorcycle engine camshaft cover are the centering and maintenance of its position on the seats and the oil capacity. Its performance is fundamental as far as the reduction of the weight, time and cost is concerned. This part is usually CNC machined or cast and then machined: its limit is the unquestionably long lead time. The aim is to extend plastic laser sintering technology and application to new components, combining it with traditional metals, which enables creating a composite sintering metal. The advantages of this new innovative method are principally the versatility and the speed, while its limits could be the mechanical characteristics of plastic that are inferior to some metallic alloys or to laminated carbon. Around a mainframe in metal-ceramic matrix (aluminum MMC0, a shell made by carbon-fiber-filled resin (Windform XT) was created. The shell is therefore the result of powder sintering using high-performing CRP-developed material, directly from a mathematic model in a few hours. The main areas of the part (camshaft seats) are made by a series of simple cutting and welding processes, while the prototype shell has the complex shape. The seats were realized in MMC (metal-matrix composites) to offer further weight savings, increased stiffness and exceptional strength and fatigue resistance. Windform XT is a versatile material that can be CNC machined directly from "HIPped" billets forged or formed by using extrusion or rolling techniques. Contact **CRP Technology** (Modena, Italy) to learn more.



Premium Pneumatic Cylinder Testing

BA Ultra is a premium pneumatic cylinder tubing that offers 300°F (149°C) operating temperature and a very low coefficient of thermal expansion. BA Ultra provides a smooth, self-lubricating wear surface that prevents pistons from sticking. BA Ultra can be used to replace honed and chromed steel, stainless steel and aluminum tubing with no additional machining required. For more information, contact **Amalga Composites Inc.** (West Allis, Wisc.).

New Series of Pneumatic Nutrunners



Ingersoll Rand (Annandale, N.J.) has extended its nutrunner product line again to include the new AQ^ series pneumatic nutrunners. Engineered for industrial and assembly professionals, the AQ6 series has a torque range of 15 to 90 Nm and is ideal for critical fastening applications that require precise torque control. Like the AQ4 series, QA6 series nutrunners can be used on hard or soft joints, including plastics, composites or metals. The new

nutrunners feature ergonomic grips that provide operators with greater comfort during periods of extended usage. Additionally, QA6 series nutrunners utilize externally adjustable shutoff clutches and conveniently located reverse rings for easier operation. The nutrunners have maximum torque outputs of 90 Nm and run off lube-free motors. They are easy to maintain and service, which means less downtime, and are fully customizable to the operator's application in both straight and angle configurations. The third and final addition to the QA family of nutrunners — the AQ8 nutrunner — is scheduled for release in late summer and will have a maximum torque output of 225 Nm.

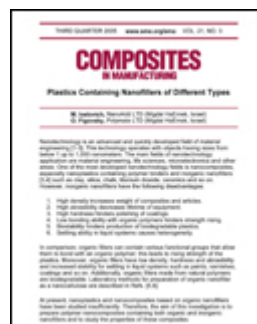
Alcoa Wins Prestigious R&D Award

A team of research scientists and engineers from **Alcoa** (Pittsburgh) has received an R&D 100 Award for the development of a new generation of aluminum-lithium alloys for the aerospace industry. The R&D 100 Awards are given annually in recognition of the world's most significant technological innovations. The award-winning product, aluminum alloy 2099, has characteristics that have played a pivotal role in helping the aerospace industry meet the increasingly stringent mission requirements for structural efficiency, weight reduction, sustainability and cost. Since its commercial arrival in 2006, aluminum alloy 2099 products are creating significant benefits for aerospace industry stakeholders, our environment and air travelers by enabling increased fuel efficiency and producing less CO₂ emissions; reducing the cost of ownership and use; and improving the durability, reliability and safety performance of aircraft. The commercialization of aluminum alloy 2099 required coordination between Alcoa's global technology organization and Alcoa's production facilities to meet aggressive customer timelines, demonstrating Alcoa's ability to take technology from the lab through operating plants to deliver a product to the customer.

Although reasonable efforts are taken to ensure the accuracy of its published material, SME is not responsible for statements published in this quarterly.

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CANCOM 2007

August 14-17, 2007 (Winnipeg, Manitoba, Canada)
Canadian Association for Composite Structures and Materials

The International Conference on Structural Analysis of Advanced Materials

ICSAM 2007

September 2-6, 2007 (Patras, Greece)
The University of Patras

Nanocomposites 2007

September 5-7, 2007 (Las Vegas)
Executive Conference Management

7th Annual Automotive Composites Conference and Exhibition

September 11-13, 2007 (Troy, Mich.)
Society of Plastics Engineers

Materials Science & Technology 2007 Conference and Exhibition

September 16-20, 2007 (Detroit)
American Ceramic Society

GREAT LAKES 2007 Exposition & Conference

September 18-20, 2007 (Grand Rapids, Mich.)

SME Motorsports Charlotte

October 2-4, 2007 (Charlotte, N.C.)

Collaborate 2007

October 17-18, 2007 (Fort Worth, Texas)
Society of Manufacturing Engineers

Fibre Reinforced Composites Conference 2007

December 9-12, 2007 (Nelson Mandela Bay, South Africa)
Council for Scientific and Industrial Research

WESTEC 2008 Exposition & Conference

March 31-April 3, 2008 (Los Angeles)
Society of Manufacturing Engineers