



PRESS RELEASE

MARCH 2ND 2011

COMPOSITE INNOVATIONS AND APPLICATIONS AT THE 2011 JEC COMPOSITES SHOW

Paris, Porte de Versailles, 29-30 and 31 March 2011

The JEC Group, as the largest composites industry organisation in Europe and the world with a network of 250.000 professionals, is proud to present the latest trends and innovations from the sector on an area of 46 500 m² (500.000 square feet).

Here is an overview of the expected innovations that may help you to prepare your visit to the 2011 JEC Composites Show. Pictures of the innovations and a list of exhibitors are available from Apocope upon request.

OVERVIEW OF THE COMPOSITE INNOVATIONS APPLICATIONS AT THE PARIS SHOW



RAW MATERIALS – TRANSPORTATION

NIDAPLAST COMPOSITES / Stand J50 – New applications for nidaplast 8 for the transport and haulage industry



Nidaplast is developing **new applications for nidaplast 8 for the transport and haulage industry** (utility vehicles, trucks, ambulances) and presents them on the **JEC Composites Show**. One panel of nidaplast with polyester skin can, as an example, **save over 5kg/m² compared to traditional plywood, representing over 50% of its initial weight**. For rigid 13-metre trucks, this saves **over 500kg per trailer**.

RAW MATERIALS – ENERGY, NAUTISME, ARCHITECTURE, MULTI-SECTOR

AXSON TECHNOLOGIES / Stand Q49 – a new eco resin

AXSON TECHNOLOGIES presents the latest development in stratification epoxy resin with so-named 'green' low CO₂ emitting raw materials. This product joins the range of infusion resins developed for temperatures between 130 and 160°C for making moulds and also large sized parts such as wind turbine blades, boat hulls, plane wings and architectural elements. The trade fair is also the opportunity to introduce our epoxy system for the nautical market. This new system combines easy implementation, less aggression and risk for users and most importantly much faster setting characteristics for easier unmoulding, sanding and painting.

RAW MATERIALS – AERONAUTICS, MULTI-SECTOR

TEUFELBERGER / Stand M71 - Pins connecting composites to metals



Teufelberger and its partners are presenting the T-Igel[®] hybrid pin connection, a unique solution for joining composite structures to metal components. A pin structure is automatically applied to a metal base body (flanges, couplings, etc.). The metal substrate can be stainless steel, aluminium or titanium. The main advantages of the connection are its mass production capability, the potential qualification of the joint and the resulting faultless composite structure without fibre damage. Versatile applications of the T-Igel[®] have already been developed for intelligent composite structures, such as drive shafts, hydraulic cylinders, anchoring devices, structural automotive components, and pipes. www.teufelberger.com

RAW MATERIALS – MULTI-SECTOR

THE MINERAL ENGINEERS / Stand U39 - High-performance fillers

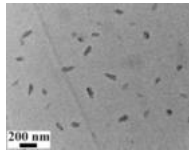


The group's mineral products are used in polymer applications such as plastics, paints and lacquers, but also in their original fields of application in the glass, paper, foundry, ceramics and building-chemicals industries. The Mineral Engineers help to create unique filler solutions by developing innovative and functional high-performance fillers and additives on a mineralogical and synthetic basis. These high-performance fillers are mineral

powders with an extremely high degree of chemical purity, very good chemical resistance and a very low binder requirement. They are widely used in reaction resins such as PMMA. www.hpminerals.com

RAW MATERIALS - MULTI-SECTOR

POLYMER TECHNOLOGIES / Stand R82 - Nanocomposite: lowest cost, higher performance



Polymer Technologies' latest technology makes it possible to produce nanosilica epoxy or hardeners at much lower cost than traditional methods. The elongated nanosilica (aspect ratio >1) further improves the interlaminar fracture toughness as well as the tensile and flexural modulus of the resin/laminate. Adhesion properties on aluminum and composite surfaces are also greatly improved. Its homogeneous dispersion, non-agglomeration of particles and the slight increase in resin viscosity as compared with commercial nanocomposite resins, makes it highly suitable for applications in the automotive, aerospace, adhesives and coatings, building and civil infrastructure, defence, marine, sporting-goods and wind-energy sectors. www.polymertec.com

RAW MATERIALS - AUTOMOTIVE, AERONAUTICS, MULTI-SECTOR

KRAIBURG RUBBER COMPOUNDS / Stand F35 - Rubberize your FRPs – Direct-bonding elastomers



Rubber can now be integrated in FRP parts in a single processing step. The rubber material, which has very good direct-bonding properties, is cured at the same time as the resin. The resulting composites show good haptic and friction properties, greater impact resistance, improved crash and fracture properties as well as excellent vibration-dampening and elastic characteristics. The surfaces are highly resistant to abrasion. www.kraiburg-rubber-compounds.com

RAW MATERIALS - MULTI-SECTOR

TITK / Education and Skills Village - Cellulosic short fibres as reinforcement



Natural-fibre-reinforced plastics are currently used massively in the automotive industry for the production of lightweight, stiff interior panels. Despite advantages such as low density, low price and good mechanical properties, natural fibres also have a number of drawbacks such as naturally conditioned in homogeneity, fogging and odour, and fluctuating prices. In addition to common natural fibres like flax or hemp, significantly cleaner and finer cellulosic short fibres (paper-grade pulp) can also be used. They have considerable advantages compared to the existing property deficits of natural-fibre composites. During the JEC Show, semi-

finished parts using nonwovens and composites made of cellulosic short fibres are shown at the TITK booth (Education and Skills Village). www.titk.de

RAW MATERIALS - AERONAUTICS, MULTI-SECTOR

TOHO TENAX / Stand G58 - A new range of forward-integrated carbon-fibre-based products

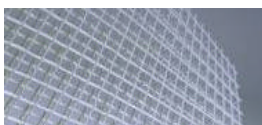


Toho Tenax is developing a range of forward-integrated carbon-fibre-based products that will be integrated into the Tenax® product range. The most advanced of these products are Tenax®-based thermoplastics. Tenax® TPUD is reinforced with a specialised carbon fibre with tailored sizing for high-temperature thermoplastic applications.

www.tohotenax-eu.com

RAW MATERIALS - MULTI-SECTOR

BIAXIAL WARP / Stand F 35 - Knitted 3D structures



Warp-knitted 3D structures have two external surfaces that can be designed freely. The two outer layers are connected while being kept apart by spacer threads from a variety of materials. The resulting complex textile structures combine flexibility and structural stability.

SITgrid is a technological breakthrough based on an innovative warp-knitting procedure. Two biaxial glass lattices are joined to a spatial structure with a pile thread. solutions-in-textile.com

RAW MATERIALS - AUTOMOTIVE, AERONAUTICS, PIPES & TANKS, MULTI-SECTOR

VICTREX PEEK / Stand J11 - Metal replacement and weight savings with PEEK



The Victrex PEEK pipe represents the latest advances in both material and manufacturing technology. Raw-material properties and product technology have been combined to produce lightweight, wear- and corrosion-resistant polymer-based pipes and tubes that can be an excellent substitute for metals, providing long-term reliability in demanding operating conditions. Extruded from Victrex PEEK polymer, these pipes and tubes offer superior fire resistance, mechanical strength, abrasion and chemical resistance over a very broad temperature range versus other thermoplastics. Typical applications

include composite pipe systems, aerospace piping systems, production tubing, pipe lining or composite risers. www.victrex.com

RAW MATERIALS - MULTI-SECTOR

ROBERLO / Spanish Pavilion - Penetrating the composite market

Roberlo is a leading European manufacturer of chemical products for different segments, with 40 years of experience and an international presence in more than 80 countries. Roberlo has a great knowledge of the markets and keeps improving day after day to offer the best products and service to customers. Roberlo is currently implementing an expansion project to diversify its markets, focusing on the application of its traditional products (manufactured in its production plant in Spain) to new surface treatment technologies. The company aims to gain a foothold in the composites market. www.roberlo.com

RAW MATERIALS - MULTI-SECTOR

TELENE SAS / Stand D45 - High-performance DCPD formulations enter new era



Telene SAS has developed a new family of high-performance DCPD (dicyclopentadiene) based formulations: the Telene® 1800 series. This product is not affected by water and moisture, so it can be used in processes other than standard RIM (Reaction Injection Moulding), such as hand and machine casting, centrifugal casting, S/R-RIM, RTM, infusion, spraying, filament winding, pultrusion and rotational moulding. Long and short fibre reinforcements, foaming agents and many types of fillers can also be used.

The Telene® 1800 series has also entered the prototyping market where "actual material" prototypes at lower tool cost and more favourable HSE conditions enable shorter time-to-market and true field tests. This also opens opportunity for small series. Exciting opportunities have been identified in various E&E applications, offering the market high yield through low-viscosity systems yet short cycle times, on top of excellent intrinsic electrical properties. www.telene.com

RAW MATERIALS - BUILDING & CONSTRUCTION, MASS TRANSPORTATION, MULTI-SECTOR

ECONCORE / Stand P20 - New-generation aluminum and steel composite panels



The company is introducing a cost-efficient technology for producing the next-generation ThermHex composite panels with steel or aluminium skins. The smart hybridizing of metal sheet with EconCore's thermoplastic honeycomb core brings panel weight to levels that are currently not attainable in mass aluminium or steel panel production. Key advantages: reduced production costs, high flexural stiffness, low weight, high aesthetics, high thermal insulation, eco-friendliness. Applications include panels for visual communication, building facades and interiors, solar energy modules, furniture and mass

transportation interiors. www.econcore.com

RAW MATERIALS - AUTOMOTIVE, MULTI-SECTOR

PURALITE / Stand Picardie Region- Leather-looking composites



The product is imitation leather in standard colours, reinforced with expanded glass fibre that provides the exact appearance of leather. The interest of the product is that it adds a leather surface aspect to a material that is very light, solid and watertight. The imitation leather is treated to resist chemical aggressions and friction. It is particularly recommended for large parts where PU cannot be used, or for small and middle-sized series. www.puralite.fr

RAW MATERIALS - MULTI-SECTOR

5M / Stand Q37- New products from Czech Republic



5M is a major manufacturer of raw materials for composite production (epoxy resins, semipregs, pultruded profiles, sandwich panels). Backed by its in-house laboratory and R&D department, 5M is starting to be more active in the production of final composite parts. The product assortment covers composite sandwich panels for trains (interior walls), glass-fibre parts for aircraft (interior panels, fuselage parts, wheel covers), radomes for antennas, bulletproof equipment and carbon parts for skis. www.5m.cz

RAW MATERIALS - MULTI-SECTOR

AKPA CHEMICALS / Stand N50 - New polymerization initiators



AKPA Chemicals specializes in the production of organic peroxides, initiators and accelerators for the composite and plastics industries. At JEC Composites Paris 2011, the AKPA® booth will exhibit the company's full range of products for various sectors, with a focus on the EFOX® series of polymerization initiators for petrochemical plants. According to AKPA General Manager Kemal Darcan, "JEC Composites is a very important meeting point and opportunity where most international companies can meet face to face with key decision makers from leading chemical companies. The exhibition is getting more global every year with the increasing number of foreign participants, and getting the participation of the chemical sector's different branches."

www.akpakimya.com

RAW MATERIALS - MULTI-SECTOR

ALZCHEM / Stand K50 - From hardeners to accelerators



AlzChem, a leading global supplier of NCN-based chemicals (nitrogen carbon nitrogen), is located in Southern Germany. Besides its core business in the agricultural and nutritional market, one of its main focuses in the chemical industry is the hot-curing epoxy resin market. With its resin additives sold under the Dyhard® brand name, from hardeners to accelerators, the company is devoted to serving the powder-coating, adhesive, printed-circuit-board and composite markets. www.alzchem.com

EQUIPMENT - AUTOMOTIVE, AEROSPACE

LOTORIEL / Stand X56 - An exciting new NDT technique



Thermal Wave Imaging's VoyageIR is based on thermographic signal reconstruction (TSR), which allows unmatched sensitivity comparable to full-scale systems. Due to its flexible architecture, heat source, camera and signal processing can be configured to match the application. Whether its impact damage, trapped water, delamination in composites, or corrosion in Al structures, VoyageIR is ready to go wherever it is needed! The system is

extremely flexible and can use alternative heat sources and IR cameras tailored to specific application requirements. It is ideally suited for on-aircraft maintenance applications, such as the detection of trapped water and impact damage in composite structures, and in field situations where inspection speed and setup time are critical. VoyageIR allows the inspector to set up the system and perform the complete inspection in minutes, compared to current solutions that are often too large, costly or complex for field applications. www.lotoriel.co.uk

EQUIPMENT - CARBON FIBRE PRODUCTION

HARPER / Stand W63 - *Multi-flow oxidation ovens*

Harper now offers unique multi-flow oxidation ovens to complement its world-leading thermal processing solutions, from furnaces to complete process lines for carbon fibre. Available in both research and production scale, Harper's proprietary technology offers parallel, cross, and down airflow directions in a single oven. The uniformity specifications meet or exceed best-in-class for each flow regime.



These oxidation ovens go beyond what others offer in simple temperature uniformity. This technology provides improvements in velocity uniformity, velocity range capability, modular construction techniques, advanced instrumentation and control, and superior atmospheric seals. www.HarperIntl.com

EQUIPMENT - MULTI-SECTOR

ZWICK / Stand W64-3 - *New solution for composite testing*



Zwick is offering a patented new fixture which should quickly become a standard for testing fibre-reinforced plastics. The hydraulic composite compression fixture (HCCF), with its hydraulically operated specimen grips, offers several technical and cost-saving advantages compared to the (often troublesome) existing mechanical fixtures.

The open Cframe construction allows simple and fast specimen loading, and easy attachment of extensometers. The specimen alignment and mechanical set-up difficulties often associated with traditional fixtures have been eliminated mainly due to a precise, friction-free guidance system. www.zwick.fr

EQUIPMENT - MULTI-SECTOR

GUNNAR INTERNATIONAL / Stand S75 - *High-speed technical textile cutter live at JEC Paris*



Gunnar International, Weissenberger AG is a Swiss-based company that develops, produces and globally sells high-tech, innovative computer-controlled cutting machines. Gunnar is presenting its Technical Textile Cutter TTC119 live at the 2011 JEC show in Paris. This high-speed single-layer cutter is built to work in all production environments, cutting flat technical materials such as composites (prepregs, dry carbon, glass fibre, aramid fibre, etc.), technical textiles (canvas, vinyl, sail cloths, etc.) and sheet materials (foam, cardboard, etc.).

The Technical Textile Cutter TTC119 is highly versatile and can be used in the automotive, aeronautic, marine, transportation, construction, wind energy and technical textile industries. www.gunnar-int.com

EQUIPMENT - MULTI-SECTOR

AIMPLAS - *Innovative microwave curing system*



An innovative system capable of fully curing several types of resins has been developed by AIMPLAS. The system is suitable for all part sizes and has already been tested with polyester, vinylester and epoxy resins reinforced with glass and carbon fibres. The main advantages of the system include: 100% curing degree, reduced cycle time (minutes instead of hours), reduced waste – only the resin exposed to microwaves is cured, reduced energy consumption—no post-curing in oven, separate filling and curing stages.

The system uses a specially-designed magnetron and antenna. The field of application covers practically the whole composite sector because most resins can be cured under this technology. AIMPLAS has also conducted specific studies for different applications and estimated the cost reductions achieved with the system. www.aimplas.es

EQUIPMENT - ENERGY

RESPECTA / Stand H 66 - *Casting equipment for insulators and busbars*



Respecta has developed a new generation of VacuCast machines for the electrical insulator and cast-resin busbar industry. Customers are now able to use automated process-controlled casting equipment to manufacture top-quality products for high-tech applications, using epoxy binders and high filler contents. The VacuCast DB-VaC11-EP delivers 100% void-free compounds in a very homogenous mixing/degassing operation, continuously or in batches. With over 80% mineral aggregates of quartz powder and silica sand incorporated, this processing equipment is specially protected for better wear resistance to abrasive materials such as quartz. This also benefits customers in other industries like building/construction, where high coarse minerals contents are used in polymer mixtures. www.respecta.com

PRODUCTION - AUTOMOTIVE, MULTI-SECTOR

JACOB PLASTICS / Stand F31 - *New processes for large-scale production*

The innovative new technologies (FIT Hybrid and SpriForm) developed by Jacob Plastics for large-scale production of structures made from thermoplastic fibre-reinforced composites combine forming and moulding processes.



They offer the ultimate design flexibility and mechanical performance while reducing weight by up to 50%. Following the security concepts, these much-more economical new technologies are also expected to significantly increase occupant protection in crash situations. The new processes also achieve high-level functional integration, made possible by the high design flexibility of thermoplastic based, endless-fibre-reinforced composites, as well as the utilisation of the excellent processing possibilities offered by these materials. These processes can meet all sorts of demands, whether on the part of end users (e.g. attractive designs and additional comfort) or manufacturers (e.g. reduced costs), thus replacing existing parts. Benefits: integrated processes (resulting in shorter process chains); short cycle times; excellent energy efficiency; functional integration (combination of product properties); optimum space utilisation; high design freedom; lightweight construction (structure + material); and recyclability. www.jacobplastics.com

PRODUCTION - MULTI-SECTOR

FIBERFORGE / Stand J67 - *Leading-edge Fiberforge technology*



Fiberforge is a leading-edge technology company that focuses specifically on the design and production of advanced long-fibre-reinforced thermoplastic composite parts. The company has developed a breakthrough process to turn composite materials into finished parts faster, more efficiently and at a lower cost than ever before possible. Its leading markets are the aerospace, military, consumer electronics, medical and sporting-goods industries. The Fiberforge process starts with the patented Relay Station, a state-of-the-art lay-up machine that produces Tailored Blanks. To minimize cost, the Relay Station places material only where it is needed, significantly reducing scrap compared with other methods. All in all, the Fiberforge process offers customers the opportunity to take full advantage of the weight and performance benefits of thermoplastic composites, at higher volumes and lower cost than any other competing technology. www.fiberforge.com

PRODUCTION - MULTI-SECTOR

ADVANCED COMPOSITES GROUP / Stand T50 - *Composite tooling with a hard metallic surface*



A new technology has been developed to manufacture composite tools with a hard metallic surface. This innovation combines the light weight, low thermal mass and low cost benefits of carbon fibre composite tooling with the hardness, durability and damage tolerance of metallic mould tools. The metallic surface is an ultra-hard, nanocrystalline nickel/iron alloy coating with a low coefficient of thermal expansion (CTE) that matches the CTE of the composite tool. This coating is applied onto a carbon-fibre composite mould tool using a novel process. www.acg.co.uk

PRODUCTION - MULTI-SECTOR

AEROVAC / Stand T50 (Umeco group) - *The pre-cut formats*



How can you optimise raw materials and increase productivity? Richmond Aerovac introduces films pre-cut to the exact size requirements to improve the process of manufacturing composite parts. Automating film cutting guarantees better performance and reduce the risk of operator error. In addition to increasing productivity, formats also help to optimise the cost of raw materials due to the measured cutting system. Savings of up to 36% can be expected on the quantities of raw material compared with standard manual film cutting. Formats can be joined by sealant tape to create larger formats. They can also be supplied with sealant tape around the entire edge and integrated pleats (bladders with pre-fitted pleats). www.aerovac.fr

PRODUCTION - MULTI-SECTOR

THOMAS TECHNIK / Stand J 64 together with the CFK-Valley - *Fibre-reinforced profiles finally "rounded up"*



Unveiled in 2009, the highly rewarded "Radius-Pultrusion" technology allows the continuous production of curved and bent profiles for the first time. As straight fibre-reinforced profiles cannot be bent like steel or aluminium profiles, this technology is a core development for many upcoming applications of fibre-reinforced materials. Fields of application range from car bumper beams and roof arches, architectural and structural elements for bridges and roofs, to blades for vertical-axis wind turbines. As the technology is not limited to two-dimensional curves, coiled profiles can also be produced for the reinforcement of hoses and tubes. A coil spring currently under development should be of major interest, especially for the automotive industry. www.thomas-technik.com

APPLICATION - AUTOMOTIVE

HUNTSMAN / Stand G65 - *When design meets technology*



This year, Huntsman will unveil the U-Box, an impressive work of technical design proving how it is possible to build an electrical car using environmentally sustainable components, proposing innovative processes to fulfill large series-production demand. The U-Box bundles up differentiated materials, including the renewable properties of flax and basalt fibres used to reinforce composite parts in combination with new toughened resins, as well as a new halogen-free, fire-resistant resin designed for the infusion process, composite wheels and composite bonders covering high strength or temperature resistance requirements to high flexibility.

The U-Box will also integrate flexible organic light-emitting diodes (OLEDs) integrated in the composite structure. Consuming up to 70% less energy than conventional light sources, the OLEDs are made using high-performance, thin barrier (to water and oxygen) coatings designed by Huntsman. www.huntsman.com/advanced_materials

TESTING - MULTI-SECTOR

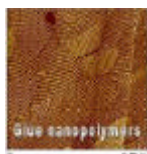
AETECH - Triaxial fatigue testing platform



AETech is an innovative company which develops its activities in the field of mechanical and material engineering as well as in non-destructive testing by acoustic emission technology. AETech focuses on the experimental validation and mechanical characterization of material and structural solutions. This activity particularly focuses on new materials like composites, polymers and new metallic alloys. AETech boasts dual know-how in the material engineering and measurement field, especially in non-destructive testing by acoustic emission which can be used to optimize the qualification of complex structures. AETech has modern, high-performance equipment, such as a triaxial fatigue testing platform with large load capabilities (from 0 to 65 metric tons), modern mechanical testing machines, innovative means of investigation and high-speed, high-energy shock/crash machines. www.aetech.fr

RAW MATERIALS - MULTI-SECTOR

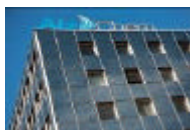
AEC POLYMERS - Structural adhesives for all types of asymmetric materials



AEC Polymers® has developed a new range of structural adhesives with exceptional performance that do not require any primer or surface preparation. These adhesives can be used to assemble all types of asymmetric materials. From the flexible range (400% elongation - 5MPa) to the hyperstructural range (30% elongation - 25 MPa), these products are compatible with open times ranging from 1 min to 1.5 h. Ideal for the assembly of large surfaces (transport, shipbuilding, construction), this range can also be used in mass production. The products are solvent-free and thus safe for users. This cost-effective range replaces standard assembly products and generates production benefits. The exceptional properties of these products make structural bonding possible while allowing for expansion and vibration. The new range will be demonstrated on the company's stand. www.aecpolymers.com

RAW MATERIALS - MULTI-SECTOR

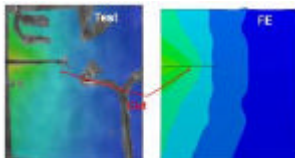
ALZCHEM / Stand K50 -- Innovative since 1908



AlzChem is a leading global supplier of nitrogen carbon nitrogen (NCN) chemicals located in southern Germany. Besides its outstanding core business in the agricultural and nutritional market, one of the company's main focuses in the chemical industry is the hot-curing epoxy resin market. Ranging from hardeners to accelerators, the resin additives are sold under the Dyhard® brand name to the powder coating, adhesive, printed circuit board and composite markets. www.alzchem.com

SIMULATION - MULTI-SECTOR

BISHOP GmbH / Stand J64 - Validation and verification of composite structures



Bishop GmbH offers advanced capabilities in non-linear finite-element analysis of composite structures, more particularly impact, delamination and crack propagation investigations. These analyses are often conducted through the creation of virtual test rigs in order to provide static proof and verification of complex primary structures.

In this field of expertise, Bishop GmbH is one of the leading companies for multi-axial loaded structural analysis such as compression-shear or bidirectional tension-shear loaded specimens. The company has also developed analytical methods for bonded and bolted composite joints. Recent projects include the replacement of existing metallic designs with composite structures for use in aerospace applications. The intended goals were weight reduction and reduced maintenance costs for customers, as well as the design and development of advanced crashworthy helicopter structures. www.bishop-gmbh.com

RAW MATERIALS - MULTI-SECTOR

THE EUROPEAN CONFEDERATION OF FLAX & HEMP / Stand M80 - Ecological and technical value for composites



The European Confederation of flax & hemp – CELC – is the only agro-industrial organization which brings together the whole production chain for flax and hemp fibres, from farmers up to weavers, in 14 European countries. The CELC's Technical Uses Section acts as an interface, identifying the needs of multiple industrial sectors and the industrialization capabilities of the flax and hemp sector for technical applications. Supported by a European scientific committee, the Section has positioned itself as the European hub to group all new applications for these two plant fibres. www.mastersoflinen.com

EQUIPMENT - MULTI-SECTOR

NORDSON EFD / Stand T19 - Equalizer pneumatic 2K dispensing tool



The pneumatically-operated Equalizer 2K dispensing tool accurately dispenses 2-component materials packaged in Nordson EFD 50ml cartridges. The standard Equalizer provides accurate dispensing from 1:1 cartridges, and a conversion kit allows the tool to be used with 2:1 ratio cartridges. Both configurations are designed for use with Nordson EFD electro-pneumatic fluid dispensers.

Options include a stand mount that leaves hands free to position components, and a transfer kit to down pack from 2K cartridges to Nordson EFD syringe barrels. www.nordsonefd.com

RAW MATERIALS - BUILDING AND CONSTRUCTION, SANITARY, MULTI -SECTOR

DSM / Stand G45 - DSM's bio-based resin for artificial stone

Specialised in bio-based and bio-renewable composite materials, DSM is aiming to develop a potentially limitless resource of advanced building materials. Palapreg® ECO P 55-01 is a resin with the highest bio-renewable content on the market ever without sacrificing processing standards or product performance. DSM's product portfolio now includes artificial stone with the highest bio-renewable content in resin. Artificial stone consists of fillers and stones and is widely used in various indoor & outdoor decoration and architectural structures, including flooring, walls, and kitchen & bathroom countertops. Composite materials with quartz particles (ca. 95%) are the more commonly used. The particles are bound by the bio-based resin. www.dsm.com

EQUIPMENT - CARBON FIBRE PRODUCTION

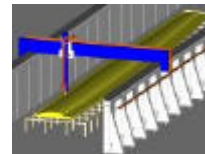


DURR - Effective, energy-optimized exhaust gas treatment for carbon fibre processes and recycling

A reasonable amount of heat energy is required for the fibre oxidation ovens and carbonization furnaces used in the production of carbon fibre. Substances such as hydrogen cyanide (HCN), ammonia (NH₃), carbon monoxide (CO), tar and other VOCs are discharged from these ovens and furnaces, which can cause serious environmental pollution as well as danger to the human health if they are not treated properly. The Ecopure® VAR technology is a direct-fired thermal oxidiser system that was installed by Dürr. A VAR system consists of a refractory-lined oxidation chamber, a burner unit and injection nozzles and lances, through which the exhaust gas from the carbon fibre oxidation ovens and carbonisation furnaces is directly injected into the oxidation chamber. www.durr.com

EQUIPMENT - MULTI-SECTOR

ERBO GmbH / Stand X64-8 - New suction procedure for five-axis milling machines



Erbo GmbH is presenting a world first in the field of suction technology for milling machines. Previously, suction extraction had been impossible for five-axis milling machines. Erbo has developed a procedure that provides an optimal solution for such machines. A combination of high-pressure suction and custom-made evacuation nozzles for each individual tool allows suction directly at the tool tip.

Dust and chips are captured directly via a movable joint device that can move along every axis. They are then fed to the high-performance extraction system. www.erbo-gmbh.de

PRODUCTION – AERONAUTICS, MULTI -SECTOR

FASER INSTITUT / Stand J64 - Accelerated heating of water-soluble mandrel material



The method was developed to meet the challenge of heating an RTM moulding tool, where parts of the tooling are surrounded by a complex fibre preform and therefore thermally insulated. An inconsistent temperature sequence can significantly impair quality.

The use of a water-soluble material results in homogenous heating, thus adding more room for complex-geometry parts and improved quality. No additional heating coil or similar needs to be added to the mandrel for heating purposes. Instead, the new patented method uses the water-soluble mandrel material itself as

an electrical resistance heater. To this end, the outer area of the mandrel is reinforced with an additive that produces a defined or specifically varying electrical conductivity in the mandrel material. Heating rates of more than 40°C/min can be achieved to accelerate the process. www.faserinstitut.de

APPLICATION - AUTOMOTIVE

FASTER / Stand L80 - Racing car, prototype, composites



Faster has been designing, manufacturing and preparing racing cars, prototypes and concept-cars for the automotive industry for more than 25 years. The company has developed a wide-ranging expertise over the years: research and development, mechanical engineering, sheet metal work and composites.

The company can design and implement any project, from a single component to a complete vehicle.

In the composite sector, Faster can design and build any composite tooling or parts using the most appropriate technologies: prepregs, carbon wet lay-up, kevlar, infusion moulding, thermoplastic composites,

etc. www.faster-racing.fr

TESTING - AERONAUTICS

FILL / Stand R74 – Ultrasonic inspection – NDT for the aerospace industry



Fill is presenting one of the fastest universal ultrasonic inspection systems at the JEC Show 2011 in Paris. This ground-breaking product has been developed in cooperation with Fill's partner FACC and sets new standards in the automated inspection of composite aircraft components. The system is distinguished by a particularly dynamic movement of the inspection heads, while maintaining extreme precision. The "ultrasonic linear inspection system" is equipped with ten NC axes and guides two ultrasonic inspection heads over the test part. Fill is developing a complete production programme for the aerospace industry – from production simulation to component testing. www.fill.co.at

PRODUCTION – AERONAUTICS, MULTI -SECTOR

FLUGZEUG-UNION SÜD - Vacuum process material distribution



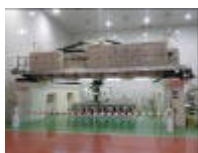
Flugzeug-Union Süd (FUS) is the official distributor for the Richmond/Aerovac range of vacuum bagging and tooling materials in Germany and other German-speaking countries.

Aerovac vacuum bagging products include a cost-effective range of vacuum bagging films up to 12 m wide (Vacfilm 400Y, Vacfilm 450V...), reusable vacuum bagging systems with a silicone membrane, a complete range of consumable materials and tooling for the resin infusion process, and composite tooling.

With the addition of the Aerovac product range, FUS can now offer to the composite industry the most complete range of vacuum process consumables from the leading manufacturers in this field, including high- and low-temperature vacuum films, release films, breathers and bleeders, reusable vacuum bagging systems, resin infusion materials and tooling, and Schnee Morehead® sealant tapes. FUS is now a 100% subsidiary of EADS Deutschland GmbH.

www.fus-online.de

EQUIPMENT - AERONAUTICS



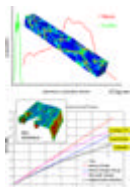
FOREST-LINÉ / Stand P 56 - New generation of tape-laying/fibre placement solutions

Forest-Liné has been continuously improving the carbon-fibre prepreg layup technology, now offering the Atlas/Access V2 tape laying solution and the Atlas FP fibre placement system. The Forest-Liné V2 tape layer shows major advantages: high feed rate, more than doubled since 2006; productivity up to 132 lbs/hr (60 kg/hr) for complex double-curvature parts; optimized scrap rate, ranging from 5 to 10% depending on part complexity; layup capability for non-developable surfaces, slopes, ramps and pad-ups; 100% traceability;

supervision with compilation of production events and high accuracy with tape positioning within 0.5 mm. The Atlas fibre placement system simultaneously lays down 12 to 32 tows to produce large aircraft fuselage parts. www.forest-line.com

SIMULATION - MULTI-SECTOR

E-XSTREAM / Stand V18 - Non-linear multi-scale modelling platform



Digmat is a non-linear multi-scale modelling platform for the simulation of composite materials and structures. It is used to perform detailed analysis of materials on a microscopic level, and derive micromechanical-based, anisotropic and non-linear material models consistent with experimental measurements. It also couples information from processing simulations with FEA via an improved material description.

The Digimat programme makes it possible to perform in-depth investigations of composite materials with arbitrary matrix materials (e.g. plastics, rubber, metal, etc.); predict the mechanical properties and the thermal and electrical conductivity of composite materials; couple injection moulding with FEA for short-fibre-reinforced

plastics and couple lay-up simulation with FEA for laminate structures. www.e-xstream.com

RAW MATERIALS - MULTI-SECTOR

HAUFLE COMPOSITES / Stand W64-7 - Chemical- and wear-resistant thermoplastic composites



Haufler Composites is a manufacturer of custom-made semi-products consisting of carbon fabrics and thermosetting or thermoplastic matrices. The company produces high-performance CF/PEEK boards consisting of woven carbon fabric and PEEK (polyetheretherketone). Its upgraded thermoplastic semi-products for demanding applications are the result of its expert knowledge and constant customer-focused research.

Custom-made carbon fabric/PEEK boards are compression-moulded by Haufler Composites in thicknesses up to 80 mm. These semi-products display superior properties like stiffness, exceptional chemical and abrasion resistance, very low thermal expansion, thermal stability up to 250°C, low moisture absorption and X-ray transparency. www.haufler.com

EQUIPMENT - MULTI-SECTOR

HILGER KERN / Stand E57 - Metering and mixing systems



The Hilger u. Kern/Dopag Group is offering a metering and mixing system for the production of fibre-reinforced plastics. The Eldomix 603 is a solvent-free gear metering system used to process low- to medium-viscosity multi-component materials such as polyurethane, epoxy and other resin systems for the production of fibre-reinforced-plastics. The machine is fed by pressure vessels positioned on a moveable chassis. The system can be used in processes such as RTM, RIM and filament winding. Its main benefits include a variable mixing ratio; a variable, flow rate, pressure or regulated volumetric flow; and shot dispensing or continuous flow capabilities.

www.hilger-kern.com

R&D - MULTI-SECTOR

IK4 RESEARCH ALLIANCE / Spanish Pavilion



Through its eight centers, IK4 Research Alliance develops composite-related activities that cover the following technological areas: materials, manufacturing and processes, preforms, cutting and machining, inspection, testing, composite material structural design, and structural monitoring.

This diversity enables IK4 to come up with new solutions for all kinds of applications in very different sectors: transport, construction, energy, power, machinery, capital goods or biomedicine.

Among other new developments, the Alliance offers ultra-light, multi-functional, environmentally friendly, or halogen-free fire-resistant materials. www.ik4.es

RAW MATERIALS - MULTI-SECTOR

ILIUM / Stand T31 - New technology in glass fibre reinforcements



Ilium specializes in manufacturing structural fibre glass reinforcements. Thanks to a new patented technology, Ilium has developed a range of glass fibre reinforcements for the composite industry which combines the advantages of existing products

without having their downside. Main advantages: no chemical binder, no stitching, good deformability and wet-through, thermoformability at low temperature, easy to cut, no fraying, very good surface finish without any additional surface tissue. Their main fields of application are RTM, light RTM, infusion, press moulding, pultrusion, hand lay-up and continuous lamination. Potential markets include wind energy, marine, pipe renovation, industrial parts, automotive parts, transport and ski. www.iliun.pro

PRODUCTION - MULTI-SECTOR

INNOVALIS AQUITAINE / Stand T20 - Aquitaine Region: 15 innovative companies



The regional innovation agency, Innovalis Aquitaine, provides support to hundreds of innovative projects in industry or services companies. The agency has led companies to the JEC Composites Show for a number of successive years, providing a regional booth where innovation leaders can display their knowhow and latest achievements. The "Composites and advanced materials" network in Aquitaine is thus readily accessible to visitors with insight into key technologies such as nanostructural products, thermostructural composite materials or new organic materials. In 2011, Innovalis Aquitaine will gather 15 companies under the banner: "L'Aquitaine Composite". Innovalis Aquitaine is supported by the Aquitaine Regional Council, OSEO, the

French Ministry of Education and Research, the DIRECCTE and the European Union (ERDF funding). www.innovalis-aquitaine.org

RAW MATERIALS - MULTI-SECTOR

INVENT GMBH / Stand J64 - Innovative CNT material for industrial applications



Carbon nanotubes (CNT) need to be available in a well manageable form and maximized concentration to take advantage of their exceptional characteristics. Invent GmbH successfully developed such a material with an exceptionally high CNT content of 50 up to 60%. This composite is based on a polymer matrix with embedded CNT. The main characteristics of the material are a high electrical and thermal conductivity, high stiffness and low density of only 1.3 g/cm³. Surface treatments such as metallization and lacquering are also possible. Parts with an extremely high absorption capacity can be produced by use of special treatments. The expansion of production for commercial applications will be considered at a later stage. www.invent-gmbh.de

PRODUCTION - MULTI-SECTOR

KOLLER / Stand L80 - Shape milling



Koller is a high-tech modelling company specializing in milling complex shapes and equipped with high-capacity five-axis CNC milling machines with linear motor drives.

Their services: Designing, manufacturing and machining of blanks in polystyrene, sprayed or sheet polyurethane foam, extruded or sheet epoxy resin, wood, and medium density fibreboard (MDF), among other materials; Creating scale models for land transportation (automotive); Creating master and scale models for marine industry tank tests; Creating special tooling for the aviation and railway industries. www.koller.fr

EQUIPMENT - MULTI-SECTOR

KRETZER / Stand Q58 - Aramid scissors, now also with curved models



The classic way to cut textile fabrics is by using scissors, however, standard scissors do not cut glass fibres or other aramids. For this reason, Kretzer Scheren Solingen designed the Finny TecX1 and Finny TecX2 series, scissors that cut where others cannot. Their special grinding and high-grade stainless steel give a nice, easy cut on aramid materials. The TecX1 scissors are made for glass fibre and light aramids, while the TecX2 are for heavy aramids. Their stable, durable plastic handles are equipped with a smooth soft-rubber grip and do not blister the fingers. Models with large loops make it possible to work while wearing gloves. The new Finny Tecx curved models are the first curved scissors with plastic handles worldwide. They are perfect to trim edges and clean surfaces. www.kretzer.de

EQUIPMENT - AERONAUTICS, MULTI-SECTOR

CRENO / Stand M79 - Universal 5-axis milling and ultrasonic machining centre



Twenty-five years after its first ultrasonic machine, Creno has developed an advanced new concept for honeycomb component machining. The Creno 5 Axis Ultrasonic is a high-accuracy, high-volume milling machine with the added versatility of ultrasonic technology that provides maximum flexibility and a high level of productivity. This innovative machining technology combines the benefits of ultrasonic systems (no chips, less waste, better quality) for honeycomb parts and the advantages of milling systems for others composites or aluminium components. The machine is provided with an automatic tool changer

for knife sonotrode, disk sonotrode, milling tools and probes. www.creneau.fr

EQUIPMENT - MULTI-SECTOR

LECTRA / Stand T17 - Cutting optimization



Lectra provides a range of solutions that include equipment, software and services specific to their business challenges. Lectra cutting room solutions are adapted to a variety of production models (mass and diversified production, small and medium runs), and deliver significant savings in terms of production times and material consumption, all while maintaining quality. Lectra has also developed a set of exclusive services integrated at the heart of the intelligent cutting room. Lectra's service contracts guarantee a maximum level

of equipment uptime (98%), streamlined maintenance operations, and give access to best-in-class expertise. These unique services are made possible by advanced technology and software embedded in the Vector[®] automatic cutting machine. www.lectra.com

RAW MATERIALS - AERONAUTICS

MAGNOLIA PLASTICS / Stand M73 - introduces two new low-density epoxies

Magnolia Plastics, USA, recently developed two low-density, flame-resistant epoxies for aerospace applications. Magnolia 7068 A/B is a lightweight (0.80 g/cc) epoxy with excellent compressive strength at -55°C to 82°C and can be used for core fill, insert potting/bonding or honeycomb panel edge fill on both primary and secondary metal or composite aircraft structures. Magnolia 7020 A/B is an ultra-lightweight (0.70 g/cc) and fast setting, multi-purpose epoxy designed for interior applications such as core fill, insert potting/bonding or honeycomb panel edge fill. www.magnoliaplastics.com

EQUIPMENT - MULTI-SECTOR

MASNADA / Stand L65 - Standard and tailor-made MCD, PCD and CVD-D cutting tools

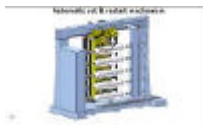
Masnada provides drilling, turning and milling solutions for composite materials. The range includes special grades of PCD, special geometries, ISO inserts, drills, milling tools, and more.

The company produces tools using natural diamond, the best grades of PCD and now the new CVD-Diamond thick film brazed with vacuum and cut with a laser. This new material is 50 to 60% harder than PCD, increasing tool life by 3 to 10 times.

www.masnada.eu

EQUIPMENT - AUTOMOTIVE, MULTI-SECTOR

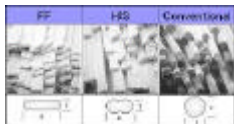
MIKROSAM / Stand M75 - Automatic cut & restart mechanism for impregnated fibres



Mikrosam will be presenting an award-winning automatic cut & restart mechanism for wet impregnated fibres (patent pending) for the first time at the JEC Show 2011. This automatic cut & restart mechanism is intended for use in filament winding applications to reduce the time necessary to prepare the winding process, cut the fibres when winding is finished, keep the fibres while the new mandrel/liner is mounted, and restart the winding process. The system can be used for any type of fibre, glass, carbon, kevlar, etc. www.mikrosam.com

RAW MATERIALS - AUTOMOTIVE, MULTI-SECTOR

NITTOBO / Stand P75 - Epoch-making unique-shaped glass fibre for FRTP



Nittobo has developed a new type of glass fibre, the FF and HIS variable-shape glass fibres, designed to improve the performance of FRTP (fibre reinforced thermoplastic) moulds. While conventional glass fibre has a circle-shaped cross-section, the cross-section of FF fibre is ellipse-shaped and that of HIS is cocoon-shaped. The width-to-thickness ratio of the fibres is about 4 for FF and 2 for HIS.

FF and HIS fibres reduce mould shrinkage and warpage, while providing good mechanical strength with little difference between moulding flow direction and transverse direction. Their superior flowability reduces defects and processing time. They are also most suitable for fine applications with a smooth surface. Their most impressive advantage is that they achieve easy moulding even with high glass fibre content reinforcements. FF and HIS fibres are therefore particularly suitable for moulding high-elasticity and high-strength reinforcements. www.nittobo.co.jp

APPLICATION - WIND ENERGY

OLLYHWA - Synchronizer, cable core wire, carbon fibre fabric, VAWT



Carbon fibre vertical axis wind turbine (VAWT) is wholly carbonized production ranging from 2KW to 100KW. It is known as the low carbon design practice of new generation of wind power generator that is cheaper, smaller in size, higher capacity, much easier to install, maintain and complements with our living environment. Carbon fibre synchronizer enhances the durability and antifriction characteristics than the conventional synchronizer where the surface is laminated with our carbon fiber fabric using specialized technology that changes its coefficient friction parameter and strengthens its antifriction property. www.ollyhwa.com.hk

RAW MATERIALS - MULTI-SECTOR, SPORTS & LEISURE, MARINE, AUTOMOTIVE



OXEON / Stand T23 - Spread tow fabrics for ultra-light composites

Founded in 2003 in Sweden, Oxeon has quickly established itself as the market leader in spread tow reinforcements. This year at JEC, Oxeon will present the next ground-breaking innovation that will result in a more complete range of products for optimized composite reinforcement solutions. Cars using TeXtreme® won both the team and the driver championship in the Formula 1 series. Bauer's new ice-hockey stick Supreme Totalone and golf manufacturer Fujikura's new Blur shaft have both benefited from TeXtreme®. Fanatic Windsurfing have released their new premium board FreeWave TeXtreme. Baltic Yachts' has obtained promising surface finish results, which open up new possibilities. www.oxeon.se

EQUIPMENT - MULTI-SECTOR

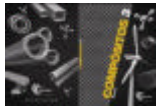
AIRTECH / Stand M64 - the innovators in vacuum bagging and composites



Airtech delivers on its commitment to customers to reduce touch labour costs significantly with the new, huge CNC ply-cutting machine in Airtech Europe. With a 216-m² cutting bed, the machine enables Airtech to custom cut & kit products to fit perfectly over composite parts on the mould tool. This will significantly reduce moulding cycle times and improve part quality. Also new from Airtech is the TB G48, a cost-effective, high-temperature carbon-fibre tooling board for mould support, jigs and fixtures that reduces tooling cost and improves performance. www.airtechonline.lu

RAW MATERIALS, PRODUCTION, APPLICATION - MULTI-SECTOR

ABMACO - Innovation in Brazilian products



The Brazilian association of composite materials Abmaco will introduce composite products comprised of green resins and natural fibres. Abmaco will also highlight composite lampposts and products manufactured with the new RTM-S process (combining thermoset and thermoplastic materials), and release the "Green house" Abmaco concept and its latest book, "Composite 3 – Market". www.abmaco.org.br

RAW MATERIALS - MULTI-SECTOR

BASALTEX / Stand K74- Fire-resistant basalt-reinforced natural composites



Basalt fibres are used more and more in composite applications such as automotive parts, corrosion-resistant products, sport items, friction applications, high-pressure vessels, construction, and the marine industry.

At the JEC 2011, Basaltex will show prepreg basalt fabrics with a bio-based resin. Combining the unique fire-resistance properties of basalt fabrics with those of the bio-based resin makes it possible to produce 100%-natural fire-resistant panels with no toxic emissions. Preserving the integrity of the basalt fibres at high temperatures is a major advantage in fire-resistant composites. Additionally, the bio-based resin does not contain free formaldehyde, avoiding the problems that occur with phenolic resins. Potential markets are high-risk fields such as public transportation, the oil & gas industry, construction and aeronautics. www.basaltex.com

EQUIPMENT – AERONAUTICS, MULTI-SECTOR

FONTIJNE GROTTES - Heated vacuum presses for thermoplastic composite materials

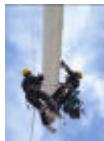


Fontijne hydraulic laboratory platen presses are used in the polymer-processing, rubber, laminating/wood and aircraft industries. They can be used to produce thermoplastic samples for R&D and quality control. The company recently developed a new press control system, Lab Pro-View. One major improvement is the new process preview feature, which makes it possible to see directly what has been programmed. Besides the values (temperature, pressure, etc.), the preview feature also shows the program commands, together with the actual press cycle predicted. In practice, this will eliminate trial and error, reducing costs due to time and cost savings.

www.fontijnegrotnes.com

RAW MATERIALS - WIND ENERGY

GURIT / Stand K44- New blade repair system



The Renuvo blade repair system offers a fresh and novel approach to the blade-repair market. The system provides solutions for damage arising from production, transportation and in-field use. Traditional wet laminating materials must normally be used above +15°C, as they can suffer from bi-product and handling issues. Summer- and winter-grade versions of the Renuvo MPS (Multi-Purpose System) and Renuvo PP (prepreg) are available to cope with most conditions.

The Renuvo product range has transformed the conditions for repair by using UV light from Renuvo lamp technology to cure materials in minutes. Benefits include: over 50% reduction in structural repair time; low-odor, zero-VOC resin; styrene and amine free; GL certified product range; extended weather window for repair from +5°C; zero post-cure for repair; compatible with all types of blade construction including prepreg, epoxy infusion and polyester infusion. www.gurit.com

RAW MATERIALS – AERONAUTICS, MULTI-SECTOR

HEXCEL - New developments in carbon fibre



This year, Hexcel will again be showcasing this breakthrough intermediate-modulus carbon-fibre technology, which has 20% higher tensile strength and 10% higher modulus than the HexTow[®] IM7 fibre used in many of the world's best-performing aerospace prepregs.

PrimeTex[™] is a range of carbon fabrics processed for a smooth, closed weave and uniform cosmetic appearance. The fibre tows are spread in both the warp and weft direction, delivering a unique aesthetic appeal and improving mechanical performance, allowing Hexcel to produce 160 gsm 3K with 99% closure ratio where others weavers propose much more open fabrics. PrimeTex[™] fabrics have a more uniform weave because the filaments

in each tow are spread out, creating a thinner and more closely woven fabric that provides better mechanical properties and less porosity in a composite. They can also be used to lower the weight of composites where weight saving is a prime objective. PrimeTex[™] can be made with larger tow fibres without weight increase. www.hexcel.com

R&D - MULTI-SECTOR, SPORTS & LEISURE

THE INSTITUT FÜR VERBUNDWERKSTOFFE / Stand D32- Bicycles, bicycles



In cooperation with Canyon Bicycles, IVW has achieved many developments for mountain bikes (MTB) and racing bikes with a number of innovations, including a world record bike. At its market launch, the stiffness-to-weight-ratio of the racing bike frame proved superior to all competitors. Within a research project to improve the comfort of racing bikes, IVW developed a quantification method and built prototypes with significantly improved comfort. Vibrations were reduced by up to 50%. These results found their way into products like the Canyon CF SLX 2009 or the new VCLS seat post. www.ivw.uni-kl.de

RAW MATERIALS - MULTI-SECTOR

NABALTEC / Stand M 81- Viscosity-optimized Apyral for high flame retardancy

Nabaltec offers a broad range of viscosity-optimized ATH products for the production of flame-retardant materials based on liquid resins. In many cases, the flame resistance of the material is important, but the smoke development must also be low in case of a

fire. The decisive parameter in processing highly filled resin compounds with technologies like SMC, BMC, hand lay-up or pultrusion is their viscosity. With growing loads of Apyral®, the relative viscosity of a resin will clearly increase. The extremely high loadings required to comply with the most stringent standards can only be achieved when viscosity-optimized ATH grades are used. Those grades, including Apyral® 20X, Apyral® 30X, Apyral® 22, and Apyral® 33, are characterized by a broad but defined particle size distribution. www.nabaltec.de

EQUIPMENT - AUTOMOTIVE

DIEFFENBACHER / Stand D46 - *Lightweight construction for e-mobility*

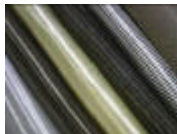


D-SMC: direct process for SMC in operation

Dieffenbacher developed the new D-SMC process in a consortium together with DSM and the Fraunhofer ICT. The direct compounding technology bypasses the costly wrapping, storing and logistical-handling steps for the SMC semi-finished part, resulting in improved quality. The precisely reproducible process and direct onward processing of the semi-finished part guarantee stable production. The D-SMC process does not just offer economic benefits; it also helps to significantly improve the technical properties of class-A quality components. The material composition can be adapted precisely and straightforwardly online to meet different requirements. www.dieffenbacher.com

RAW MATERIALS - MULTI-SECTOR

SELCOM SRL / Stand T40 - *Ultra-lightweight carbon non-crimp fabrics*



Selcom SRL Multiaxial Technology recently installed the latest version of the Liba Max5 CNC textile machine for the production of ultra-lightweight multiaxial reinforcements from larger carbon tow. In addition to its standard carbon, glass, aramid and basalt non-crimp fabric range, Selcom will now offer engineered fabric solutions to markets like aerospace, automotive, infrastructure, marine, wind energy, and sporting goods. The solutions are aimed at reducing the weight of composite structures, thus enhancing performance.

www.selcom-srl.com

PRODUCTION - MULTI-SECTOR

SANDVIK.COROMANT - *Sandvik Coromant presents composite solutions*



Precorp and Sandvik Coromant, throughout a partnership, offer an extensive range of polycrystalline-diamond (PCD) and cemented-carbide tooling for cutting and machining advanced composites and other materials commonly used in the aerospace sector. Among the brand new products to be highlighted at the show is CoroDrill® 452 for close tolerance hole-making in composites. Specifically optimized for carbon-fibre-reinforced plastic (CFRP) and metallic stack materials, this ground-breaking tool offers customers a host of benefits. CoroDrill 452 is suitable for use in fixed-bed, portable and hand-held machine applications.

www.sandvik.coromant.com

EQUIPMENT - MULTI-SECTOR

ROBUST - *Clean cut for composites*



At the JEC show in Paris, Robust Habicht & Heuser GmbH & Co. KG (Remscheid) is presenting their cross-cut, slitting and winding technology for composites, which can be precisely designed to match the specific properties of different composites. Advanced composite materials find applications in the automotive, wind-energy and aerospace industries. Moreover, the sports-equipment and sportswear industries count more and more on highly qualified composites. www.robust.de

EQUIPMENT - MULTI-SECTOR

STAUBLI / Stand P80 - *High-speed machining robot for composites*



A major partner covering all industries for nearly 30 years, Staubli Robotics has developed a high-speed machining robot, the RX170 HSM (high-speed machining). The robot's main features include a high-speed spindle integrated into the robot arm for additional rigidity and specific VAL HSM software developed to manage machining parameters and allow interfacing with CAD/CAM software. The RX170 HSM can be fitted with high-speed spindles from 8 to 17 kW with speeds up to 40,000 rpm. Automatic tool changers can also be added. The robot can handle machining and contouring operations on all types of materials, including all composites (glass, carbon, etc.).

www.staubli.com

TESTING - AERONAUTICS, MULTI-SECTOR

STEINBICHLER / Bayern Innovativ joint stand - *Innovative shearography-NDT systems*



The ISIS shearography systems can detect in-service damage to composite components very quickly and unambiguously. They allow the timely detection of material defects that contribute to weaken the component, before a major failure occurs. The necessary corrective action can thus be taken early on, increasing process efficiency and saving costs. The mobile ISIS shearography systems enable fast and easy testing of various composite components, such as sandwich structures with honeycomb or foam cores, Glare™, aluminium composites and other compound materials. www.steinbichler.de

SIMULATION - MULTI-SECTOR

ROBOTMASTER / Stand R79 - *CAD/CAM for robots*



Robotmaster® offers a powerful software solution for programming industrial robots to perform tasks. Expanding on an already powerful programming solution,

Robotmaster X5 sets a new standard for programming robots with the same ease and functionality as CNC milling machines. Robotmaster X5 provides innovative new tools to effortlessly optimize robot programs, producing error-free robot paths, avoiding singularity zones and robot/tool/workpiece collisions, working around joint and reach limitations, and optimizing tool orientations for smooth transitions along the entire trajectory. www.robotmaster.com

APPLICATION - BUILDING AND CONSTRUCTION

ASHLAND / Stand D 63 - *Expanding the use of composites in building and construction*



CompositeBuild.com is a website developed and launched by Ashland. This site was created to expand the use of composites in the building and construction market. CompositeBuild.com allows designers, architects and builders to learn more about composite building materials. The user can select various building products and learn about the benefits composites offered in the application. The user is also provided with a list of regional manufacturers. www.ashland.com

TESTING - MULTI-SECTOR

COMPAIR PROJECT / Stand Y40 - *New NDT approach*



Advanced composites can potentially replace a significant portion of the traditional materials currently used in transport applications. Unfortunately, these composites suffer from defects which vary considerably from those found in traditional materials used in transport (e.g. steel, aluminium). The ComPair project aims to overcome issues related to the inhomogeneous structure of composite materials. Another aim is to create a new in-service inspection system and a conditional health monitoring system suitable for continuous non-destructive assessment of surface transport applications. The project objectives provide two approaches: an inspection technique using a lightweight robotic scanner to accommodate transient thermal NDT and a monitoring technique for real-time analysis using acoustic emission (AE) and guided waves (GW) based on low-frequency ultrasonics. www.compairproject.com

PRODUCTION - AERONAUTICS

FASER INSTITUT and BROTHE AUTOMATION / Joint Stand CFK Valley Stade - *Continuous processing of CFRP aircraft frames*



An innovative continuous process was developed for the production of curved preforms for CFRP profiles (frames and stringers). The process, similar to the pultrusion principle, can produce radii of curvature between 1,500 mm and endless (i.e. straight profiles). Curvatures can be changed and complex lay-ups with different fibre orientations (45°, 0° and 90° layers) in a single profile are possible (in profile web and flanges). The process has been validated for complex cross sections like integral frames under conditions close to serial production. www.faserinstitut.de / www.broetje-automation.de

EQUIPMENT - MULTI-SECTOR

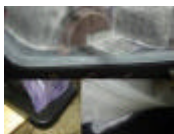
GEBE2 PRODUCTIQUE / Stand R79 - *Specialized robotic products*



Gebe2 Productique designs and manufactures turnkey production equipment for producing parts made of composite materials. The company proposes solutions not only for the different steps of the manufacturing process, including machining, trimming, finishing, assembly, adhesive bonding, ultrasonic welding, and sanding, but also for moulding polyurethane resins and foam. For the latter, we propose a range of presses and specific automation solutions. www.gebe2productique.com

PRODUCTION - MULTI-SECTOR

PIEKENBRINK / Stand W64-5 - *Self-sealing permanent vacuum bag*



This new self-sealed permanent vacuum bag can be reused (100 cycles) on any lay-up tool (composite, aluminium, galvanized) without integrated vacuum sealing device/channel. The benefits of this technology include: 90% faster vacuum lay-up/evacuation process, higher product safety due to the process reproducibility, full autoclave compatibility, usability with RTM Light, lower cost because no foil and sealing-band (Tackytape) are used, user-friendly application and removal, curing temperature of up to 200°C for nearly all resin systems, suitability in the composite industry for aircraft, automotive and sports applications and approval by Eurocopter and German Airbus Industry for the production of airworthy composites. www.piekenbrink.com

EQUIPMENT - MULTI-SECTOR

PLASTICELL HONEYCOMBS / Stand H23 - *New laser-welding apparatus for plastic sheets*



Plasticell will display a laser-welding demonstrator for thermoplastic and thin composite sheets. This R&D tool was developed with Innoptics, a start-up which specializes in the design and manufacturing of laser-diode-based components and subsystems. Instead of scanning at high speed with a laser spot using galvanometric mirrors as is generally done today, the polymer matrix is softened by moving a highly homogeneous laser line over the overlapping sheets. The laser beam exits the laser head through a light guide which also applies a pressure over the sheets and cools down the surface of the upper sheet. This unique design produces welds that are as strong as the constituent material itself and almost invisible from the exterior, at high speeds and with impressive repeatability. Densities as low as 30 kg/m³ were easily reached with a 8.7 mm hexagonal cell width. www.plasticell-honeycombs.com

EQUIPMENT - MULTI-SECTOR

POLYPROCESS - Full system for tool and mould



Polyprocess has applied its expertise in the composite sector to develop a full system of efficient products and has succeeded in boosting their performance by optimizing or developing specific features of the different complementary chemical compounds in its formulations.

The system consists of Polyfiller, a lightweight primer for wood, metal or polyester substrates that cures rapidly, is nonporous, and sands easily; Polygloss, for application with a cup spraygun – a non-tacky, paraffin-free high-gloss topcoat. It spreads perfectly, is sandable and easily polished to achieve exceptional gloss; a vinylester gelcoat formulated on a resin with high elongation, good chemical resistance and thermal strength (HDT at 145°C), and high impact strength; an urethane-modified epoxy vinylester resin of the bisphenol A type which is used with a low-tex powder mat to obtain optimal adherence with the gelcoat, improve mould thermal strength over time and enhance the surface aspect; and a Polymold non-shrink one-shot tooling resin with high wettability. www.polyprocess.fr

APPLICATION - AERONAUTICS

PRODUCTION EVRA - Competitive, cost-effective composite propellers



In partnership with the Innovaltech technological platform, the Condorcet Secondary School and the Amiens Institute of Technology, Production Evra has developed a new line of composite propellers that are more competitive and cost-effective. The blades consist of an internal structural beechwood spar and a peripheral fuselage made of glass and carbon fibres combined with epoxy resins. Strain is distributed all over the blade, thus increasing resistance to physical strain. The two- or three-blade Performance Line propeller has a curved leading edge that reduces noise footprint and is covered by a metallic or Kevlar armour plating that ensures blade integrity on rainy day flights. Thanks to these combined innovations, the Performance Line propeller gains 5 to 10 km per hour in cruising speed while sparing the plane's motor, which rotates less quickly for an increased speed. www.helices-evra.com

TESTING - MULTI-SECTOR

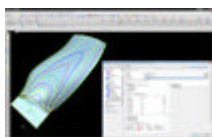
SYNTHESITES / Stand S78 - Composite manufacturing monitoring and control



Optimold is an innovative process monitoring system for composite manufacturing that uses durable and disposable sensors to monitor the resin's electrical resistivity and temperature. A suitable electronic system allows for in-situ, real-time monitoring of the full transformation of thermoset resins, providing process milestones such as resin arrival, viscosity rise, gelation and end of cure. Optimold performs better than dielectric systems in composite production. It is cheaper, with more robust sensors that can be placed in the mould cavity, in the die, in the feeding or evacuation lines, or in the resin pot/bath. Besides process optimization, Optimold can be used for quality control, mixing quality and identification of other process deviations. Optimold has been used successfully in RTM, Light RTM, vacuum infusion and pultrusion, but can be readily used in other processes such as autoclaving, out-of-autoclave processing and SMC. www.synthesites.com

SIMULATION - AUTOMOTIVE, AERONAUTICS, MULTI-SECTOR

VISTAGY / Stand T45 - Leveraging composite materials and processes



FiberSIM® 2010 delivers key capabilities to optimize designs and increase productivity throughout the composite design and manufacturing cycle. Features include: preserving composite design intent, designing for the manufacture of advanced materials and processes, improving communication between design and analysis, advanced 3D CAD integration, as-built part validation and enhanced user experience. www.vistagy.com

Pictures available from Apocope upon request

JEC Composites is the largest composites industry organisation in Europe and in the world with a network of 250.000 professionals. JEC represents, promotes and expands composites markets by providing global or local networking and information services. Through Knowledge and Networking, the JEC experts offer a comprehensive service package:: the JEC publications – including strategic studies, technical books and the JEC Composites Magazine – the JEC Composites weekly international e-letter and the French e-letter JEC Info Composites . It also organizes the JEC Composites Show in Paris, world and European leader, strongly supported by the industry and thus, five times bigger than any composites exhibition,, the JEC Composites Asia and JEC Americas, the www.jecomposites.com website, the JEC Composites Forums and Workshops, and the JEC Innovation Awards Programme.