JEC Composites World 2019
Companies from Saxony

Paris Nord Villepinte,
Exhibition Center

March 12 – 14, 2019

Hall 5, C 80

FUTURE.

Economic Affairs, Labour and Transport

SAXONY!

STAATSMINISTERIUM
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SAXONY! – One of Germany's leading places for materials research

One of Saxony's strengths can be found in the variety of industries present. Saxony is the birthplace of German industrialization, and long-standing traditional industries – such as mechanical and automotive engineering – continue to flourish here. Today, the region is also renowned as "Silicon Saxony" – Europe's leading and the fifth largest microelectronics cluster in the world. Researchers and young entrepreneurs between Leipzig and Dresden are working hand in hand in the future sectors biotechnology and environmental technology.

The constant demand for innovative materials from these industry sectors in turn stimulates research and production of new materials. Saxony holds an international top position in diverse fields of materials research and development. Already in 1993, the Materials Research Network Dresden (MFD) was created in which six institutes at the Dresden University of Technology and eight non-university research facilities are active in interdisciplinary research and development today. Two of Europe's largest centers for R & D on production and processing technologies for lightweight construction materials are found at the Universities of Chemnitz (MERGE) and Dresden (ILK). Within the scope of the globally unique Cluster of Excellence "Center for Advancing Electronics Dresden (cfaed)", the researchers work on entirely new technologies for tomorrow's IT on the basis of novel materials – for example, silicon nanowires, carbon nanotubes, organic materials.

And, the German joint research project "futureTEX" – headed by the Saxon Textile Research Institute (STFI) Chemnitz – advances pioneering methods and production processes in the field of technical textiles and, thus, seeks to develop customized textile-reinforced future products with entirely new functions and for innovative fields of application.

www.business-saxony.com

Cetex Institute for Textile and Processing Machine

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Cetex is a non-profit application-oriented research institute for textile and process engineering. The focus is on developing technologies and machines for technical textiles and the field of fiber composites, especially for light-weight industrial applications. This includes, amongst other things, the development of machines to process high-performance continuous fibers (carbon/glass/basalt/aramid) and to produce unidirectional and multidirectional fiber-reinforced multilayer composites and structures. Further projects deal with bionic fiber-reinforced structures for high-performance applications, near net shape preforms and tailored organic sheets. Cetex developed equipment for Ce-Preg® thermoplastic prepregs made of carbon, glass and basalt fibers with a thermoplastic matrix and an unidirectional fiber alignment. The range of services is complemented by knitting machines for functional 3-D textiles with adapted properties and special-purpose sewing machines for reinforcing composite preforms.

The research tasks are completely realized by Cetex, from the idea and the concept to the prototype.

Chemnitz University of Technology

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TECHNISCHE UNIVERSITÄT CHEMNITZ

MERGE Cluster of Excellence

Chemnitz University of Technology is a leading European research institute in the field of lightweight construction. The fusion of conventional materials and manufacturing technologies creates an incredible range of new solutions. Components are lighter and can be produced in less time with fewer production steps. This saves energy and valuable resources.

Our scientific work focuses on the research and development of integrative plastic technologies for the production of lightweight structures and systems. The starting materials are specifically modified high-performance polymers and compounds made from renewable raw materials, novel thermoplastic prepregs and bionically adapted semi-finished textile products. Fiber-reinforced components are created by the use of carbon, glass or basalt fibers. The future lies in the additional integration of intelligent materials and components. The Cluster of Excellence MERGE for example integrates completely new actuators, sensors and measuring instruments directly into a rotor blade. The aerodynamics, energy consumption and maintenance cycles are thus considerably optimized.

TU Chemnitz cooperates with renowned research institutes and companies throughout Europe.

Fraunhofer Institute for Ceramic Technologies and Systems IKTS

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Fraunhofer IKTS conducts applications-oriented research in the field of high-performance ceramics. The institute's three sites in Dresden and Hermsdorf (Thuringia), Germany, collectively represent Europe's largest R&D institute dedicated to the study of ceramics.

The IKTS site in Dresden-Klotzsche offers methods, sensors and devices for different kinds of nondestructive testing. Furthermore, the work focuses on services and research cooperations for materials and components diagnosis, structural health monitoring, nanoanalysis, and sensorics as well as biotechnological and environmental techniques.

As a research and technology service provider, the Fraunhofer IKTS develops advanced high-performance ceramic materials, industrial manufacturing processes as well as prototype components and systems in complete production lines up to the pilot-plant scale.

At JEC World 2019 Fraunhofer IKTS presents the EddyCus® MPECS Lab system and freeform SiC/SiC components for improved high-temperature applications at the joint booth of the Saxony Economic Development Corporation.

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We thrive for bringing your high-performance composite profiles into serial production. herone supplies the expertise and technology to design and manufacture your future generation thermoplastic composite profile with the highest performance and superior quality. Imagine automated near net-shape preforming with high deposition rates and out-of-autoclave processing with short cycle times to bring your composite profile into serial production.

tailored performance - herone utilizes highest performance thermoplastics (e.g. PEEK, PEKK) and near net-shaped tape-preforms with optimized fiber architecture

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- Approved supplier Airbus Helicopter Germany
- Approved supplier Elbeflugzeugwerke
- Approved supplier BMW

IMA Materialforschung und Anwendungstechnik GmbH

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Materials testing of plastics and composites

We are the partner you can contact, when it comes to national and international testing requirements, whether you are dealing with materials, components or entire structures. Our engineers look forward to help to you run your testing programs and to standardise and certify materials. In the case of plastics and fibre-reinforced plastics, we test materials and prepare samples and laminates for you. In addition to this, IMA Dresden has extensive experience in the fields of adhesive technology, laminate design and material approval. Benefit from our comprehensive knowledge on preparing and running material tests, including not only static, cyclic and dynamic testing but also creep testing. Furthermore, we are at your service to answer any questions you may have about choosing and planning a test method and, of course, evaluating the results.

Our services cover a wide range, starting with fibre content testing and extending as far as determining physical, static and cyclical material characteristics. In principle, we are able to carry out accredited tests in line with all national and international standards, either in a standard atmosphere or at higher or lower temperatures.

Leibniz-Institut für Polymerforschung Dresden e. V.

Leibniz Institute of Polymer Research Dresden

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The IPF is one of the largest German polymer research facilities. Composite materials are one major focus. Specific competences in the fields of chemistry and interfaces and close cooperation of scientists and engineers are the basis for development of novel composite materials with different reinforcement fibers. Particular emphasis is placed on design of nanostructured and multifunctional interphases. In addition, design and optimization of variable-axial composites for extreme lightweight parts made by Tailored Fiber Placement is an important object of research as well. New methods and software tools have been developed in the recent years to exploit anisotropic properties of future composite applications.

Network "Ressource-Efficient Textile Lightweight Design"

c/o Cetex Institute for Textile and Processing Machine

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Lightweight construction is a key technology of the future and one of the most important issues for all big car manufacturers and their suppliers worldwide. Wherever masses have to be moved, the optimization of weight is a main focus in order to save raw materials and energy. With their low weight and their outstanding mechanical properties, fiber-reinforced plastics offer a high potential for lightweight construction.

Due to high material costs and high material offcuts, fiber-reinforced plastics are almost exclusively be used for components in aviation sector, luxury automobile industry and racing. The current technologies are hardly usable for car production of high-volume carmakers, e.g. Volkswagen.

Thus, it is the aim of the network, which is funded by the Federal Ministry of Economics and Energy, to develop technologies to manufacture resource-efficient textile and fiber-reinforced plastic materials and products. Furthermore, the objective is to make lightweight construction based on fiber-reinforced plastic affordable and to develop technologies suitable for mass-production.

RUCKS Maschinenbau GmbH

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Saxon Textile Research Institute

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Based on the Center of Excellence in Nonwovens, the Center for Textile Lightweight Engineering, the Innovation Center of Technical Textiles and comprehensive testing/certification services, the Saxon Textile Research Institute (STFI) dedicates its activities to specialized tasks in research and development of technical textiles.

Textile Lightweight construction in all its facets is an important research focus at Center for Textile Lightweight Engineering at STFI. In addition to semi-industrial processes of processing carbon fibre waste into nonwoven, a second focus of work is the production of test specimens and components as thermoplastic or thermosetting composites based on a wide variety of technologies. The Center for Textile Lightweight Engineering is completed by an integrated testing laboratory, which is designed for the special needs of lightweight textile structures. Here, accredited tests on high-performance fibres, semi-finished textile products and fibre-reinforced plastics can be carried out directly on site.

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TECHNISCHE UNIVERSITÄT DRESDEN
Institut für Leichtbau und Kunststofftechnik

The **spectrum of the research** activities of the ILK stretches from research into fundamental concepts to application-oriented research and innovation-driven development projects in cooperation with industrial partners.

The work carried out at the ILK is characterized by the application of the Dresden Model of **"Function–integrative lightweight engineering in multi–material–design"** and consideration of all potential material combinations and applications. The scientists take the entire development chain into account when developing new concepts, processes and products: material selection – design – simulation – assembly – prototype testing – quality assurance – cost control.

Depending on the respective structural-technological requirements, the designs draw on all classes of material from steel, aluminium, magnesium and titanium to polymers, ceramics and composites featuring short-fibre, continuous-fibre or textile reinforcement.

NOTES

SAXONY - A BUSINESS LOCATION AT ITS BEST

- Located in the heart of Europe: For centuries, Saxony has been the intersection of Europe's major thoroughfares
- DHL Hub Leipzig: Europe's most modern air cargo hub with 24 / 7 service
- Saxony's economy has grown more than 28% since the year 2000; thus, exhibiting the second highest GDP growth rate of all federal states in Germany
- 95 % of Saxony's workforce possess at least a university entrance qualification / completed vocational training (OECD average = 78 %)
- Saxony is one of the "strong innovators" within the EU
- Saxony enchants - with marvelous landscapes and cultural highlights

If you need more information,
please contact:

WIRTSCHAFTSFÖRDERUNG SACHSEN GMBH

(SAXONY ECONOMIC DEVELOPMENT CORPORATION)

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