

You can find us at the joint Fraunhofer stand T18 in hall 1.3

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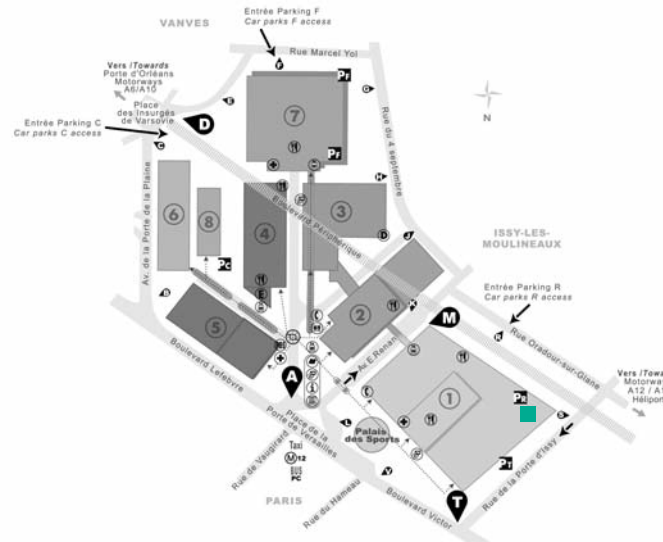
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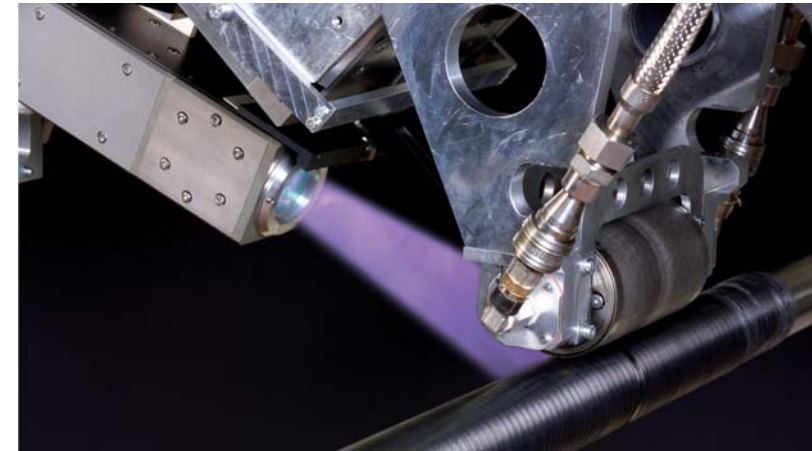
■ Joint Fraunhofer stand T18

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The Fraunhofer-Gesellschaft is one of the leading applied research organizations in Europe, at present maintaining some 80 research units, including 56 Fraunhofer Institutes, at over 40 different locations in Germany. The majority of the roughly 12,500 staff are qualified scientists and engineers, who work with an annual research budget of 1.2 billion. Of this sum, more than 900 million is generated through contract research. Affiliated research centers and representative offices in Europe, the USA and Asia provide contact with the regions of greatest importance to present and future scientific progress and economic development.

Fraunhofer-competencies for lightweight applications



JEC Composites Show, Paris Hall 1.3 Stand T18

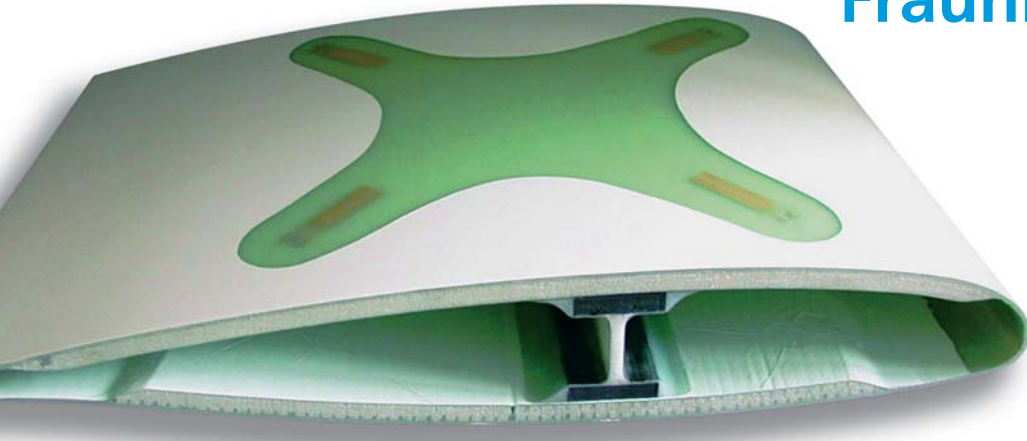
March 24–26, 2009



Fraunhofer Gesellschaft

We look forward to your visit!

Fraunhofer-competencies for lightweight applications



»KITE hyLITE – Innovation network Technologies for hybrid lightweight construction«

The Karlsruhe-based innovation network »KITE hyLITE – Technologies for hybrid lightweight construction« was established by the Fraunhofer-Gesellschaft in 2008 with a view to strengthening and pooling the expertise of its institutes. The members of »KITE hyLITE« aim to exploit synergy effects between complementary areas of science in a holistic approach to research into fiber-composite materials and to use the research results obtained for hybrid lightweight construction.



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At the exhibition stand, we will present demonstrators of long-fiber-reinforced thermoplastics with local metal or UD reinforcement, high-performance fiber composite components with thermoplastic matrices produced by resin transfer molding, a lightweight wheel made of advanced SMC with local continuous fiber reinforcement, and various other applications.

»JTI Clean Sky – Fraunhofer-Gesellschaft is R&D partner of European aeronautics industry«

The Clean Sky Joint Technology Initiative (JTI) is one of the largest European research project ever. It will radically improve the impact of air transport on the environment while strengthening and securing the European aeronautics industry's competitiveness. Clean Sky will assess, design, build and test many technological validation vehicles that will give the industry greener, more innovative aviation products.

The Fraunhofer-Gesellschaft is one of the platform leaders and a member of the »Clean Sky« JTI Governing Board. These activities are currently coordinated by the Fraunhofer LBF, Darmstadt, Germany. The participating Fraunhofer Institutes are the IBP, ICT, IFAM, IGD, IZM, and LBF.

We will present lightweight components made of fiber-reinforced plastics (FRP), structure integrated monitoring systems, and several testing technologies.

Methods

Testing

- Multiaxial mechanical specimen and component testing
- Experimental service load simulation and service-life assessment
- Test system development

Characterization

- Application limits, failure mechanisms, fatigue and durability, damage analysis
- Fracture and damage mechanics of laminated composites
- Deformation and failure behaviour of LFT structures
- Extrusion, injection molding and pultrusion: reciprocity, process control, material and component behaviour

Analysis

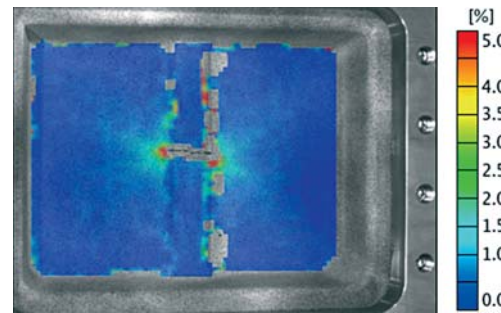
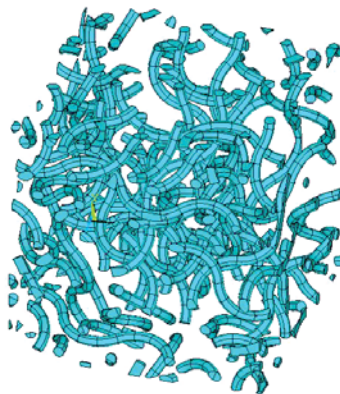
- X-ray, ultrasonic and thermographic testing techniques for composites
- Radioscopy, computed tomography, tomosynthesis
- Image processing/analysis
- Automated 2D and 3D image analysis e. g. of open and closed foams or fibrous composites

Design

- Model-based material design
- Development of design concepts for safety components made of sheet molding compounds (SMCs)
- Simulation of fluid dynamics and solid elasticity
- Random generation of material microstructure
- Multidisciplinary optimization (MDO) and robust design
- Damage-tolerant design

Monitoring

- Reliable systems for SHM



Materials

- Particle-, short-, long- and continuous-fiber reinforced polymers
- Sandwich structures
- Wood and nano filler materials
- Customized property combinations in new polymer formulations
- Structural property relationships, structure and mechanism based description of material behaviour

Production

- Development of automated composite manufacturing processes
- Tape laying and fiber placement systems with associated process technology

- Custom solutions for pultrusion and pulwinding
- Tool and mold construction
- Fiber composites chipping
- Application of e.g. infrared radiation, diode lasers, CO lasers, Nd:YAG lasers and microwave radiation to composites processing
- Tailored LFT structures with local continuous fiber reinforcement (UD, fabric or wound-roving)
- Loop construction featuring wound-roving continuous fiber reinforcement
- Formulation and technology development for composites manufacture