



## Structural Health Monitoring for Aircraft Components

*On the Paris Air Show taking place from June 17-23, 2013, the Fraunhofer Institute for Structural Durability and System Reliability LBF will present two carbon-fiber-reinforced plastic panels with integrated fiber optics (hall 1, stand G 316). The Darmsta*

(ddp direct) Aviation is becoming more environmentally friendly: Innovative technologies are used to reduce fuel consumption, pollutant emissions and noise. For this purpose, Fraunhofer researchers are developing novel fuselage structures with structure-integrated functions, within the framework of the EU project "Clean Sky". The panels on display contain several sensors for the monitoring of structures; among others, acoustic sensors are applied and optical strain sensors are integrated in the panel.

Developing, manufacturing and testing prototypes made of composite fiber materials, also involving special technologies such as sensor function integration, is one of the domains of Fraunhofer LBF. In the case of the exhibits, the development chain included the design of the structure with the help of the finite-elements method (FEM), detailed construction and creation of drawings by means of CAD, the construction of forming tools and clamping devices as well as prototype manufacturing of the panels with structure-integrated fiber-optical strain sensors and sensors for impact damage detection.

Fraunhofer LBF develops new connector solution

For the first time, an innovative connector system for fiber-optical sensors integrated in composite fiber materials, developed at Fraunhofer LBF, was implemented in a production process that came very close to series production. The panels were tested by non-destructive methods including lock-in thermography, ultrasonic and x-ray technology, as well as by destructive impact, fatigue and residual strength testing.

At the trade fair stand, Fraunhofer's engineers will show a tested and an undamaged panel. The fully functional exhibit allows visitors to try and see for themselves how the fiber-optical strain sensors react to the load to which the panel is subjected and how this is represented graphically on the screen.

Shortlink zu dieser Pressemitteilung:  
<http://shortpr.com/puookr>

Permanentslink zu dieser Pressemitteilung:  
<http://www.themenportal.de/transport/structural-health-monitoring-for-aircraft-components-81341>

=== CFRP panel in a test stand at Fraunhofer LBF. (Bild) ===

CFRP-Panel with integrated sensors, manufactured at Fraunhofer LBF.

Shortlink:  
<http://shortpr.com/mxhqev>

Permanentslink:  
<http://www.themenportal.de/bilder/cfrp-panel-in-a-test-stand-at-fraunhofer-lbf>

## Pressekontakt

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Das Fraunhofer LBF unter Leitung von Professor Holger Hanselka entwickelt, bewertet und realisiert im Kundenauftrag maßgeschneiderte Lösungen für maschinenbauliche Komponenten und Systeme, vor allem für sicherheitsrelevante Bauteile und Systeme. Der Leichtbau steht dabei im Zentrum der Überlegungen. Neben der Bewertung und optimierten Auslegung passiver mechanischer Strukturen werden aktive, mechatronisch-adaptronische Funktionseinheiten entwickelt und proto-typisch umgesetzt. Parallel werden entsprechende numerische sowie experimentelle Methoden und Prüftechniken vorausschauend weiterentwickelt. Die Auftraggeber kommen aus dem Automobil- und Nutzfahrzeugbau, der Schienenverkehrstechnik, dem Schiffbau, der Luftfahrt, dem Maschinen- und Anlagenbau, der Energietechnik, der Elektrotechnik, dem Bauwesen, der Medizintechnik, der chemischen Industrie und weiteren Branchen. Sie profitieren von ausgewiesener Expertise der rund 500 Mitarbeiter und modernste Technologie auf mehr als 11 560 Quadratmeter Labor- und Versuchsfläche an den Standorten Bartningstraße und Schlossgartenstraße.

Anlage: Bild

