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Fraunhofer-Gesellschaft
At present, the Fraunhofer-Gesellschaft maintains more than 80 research units in Germany, including 60 Fraunhofer Institutes. The majority of the more than 20,000 staff are qualified scientists and engineers, who work with an annual research budget of €1.8 billion. Of this sum, more than €1.5 billion is generated through contract research.

Fachforum Turbomaschinen | September 12, 2012, Berlin ExpoCenter | Registration: www.innovationscluster-mro.de

September 11 – 16, Berlin, Hall 3, Booth 3221

ILA BERLIN AIR SHOW 2012
GREEN TECHNOLOGY FOR AVIATION
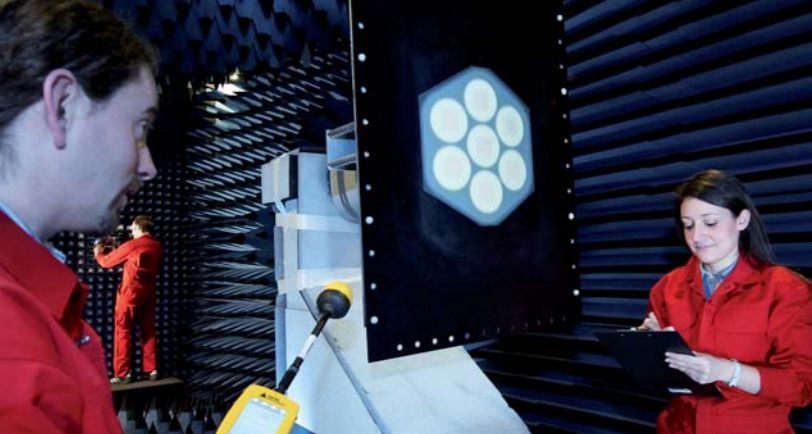
A QUESTION OF "ECOLONOMY"

Flying has become an essential business element over the last decades. Aviation does not only bring together people but enables global trade and economic growth. In Europe alone, civil aviation accounts for approximately 600 million passengers and a turnover of 600 billion euros per year. The market steadily keeps on growing and constantly asks for new developments. Thus, the Fraunhofer Gesellschaft and its research institutes' contribution is also growing. One of the central questions in this context is the question of "ecolonomy": How can air traffic become more and more ecological but at the same time remain economic?

A total of ten Fraunhofer establishments present their innovations at a theme pavilion (hall 3, booth 3221). Current material developments of fiber composites (Fraunhofer IFAM, Fraunhofer LBF) and functional surfaces (Fraunhofer IFAM) are to pave new paths for making flying more economic. Applying Life Cycle Assessment methods on processes, procedures, and systems relevant for aviation (Fraunhofer IBP, Fraunhofer IGD) as well as new procedures for recycling aircraft components (Fraunhofer IBP) focus on the ecology issue. At the same time neither safety nor comfort aspects are neglected: An automatic safety system for monitoring the runway (Fraunhofer FHR), data transfer by light (Fraunhofer HHI), or a software concept for sensor-based position tracking in space (Fraunhofer FOKUS) represent this category.

**Fraunhofer Institute for
Applied Optics and Precision Engineering IOF**
Development, simulation, manufacturing, and mounting of optical components (mirrors, gratings, fiber modules) • Integration technologies for harsh environments (vacuum, high temperature, radiation) • System engineering for aerospace applications, e.g. lidar scanners, telescopes, and spectrometers

Fraunhofer Institute for Building Physics IBP
Indoor environment • Comfort • Energy management architecture • Life cylce assessment • Recycling • Composite materials • Eco design

Fraunhofer Institute for Computer Graphics Research IGD
Life cycle assessment • Intuitive user interfaces • Interactive simulation • CFD • GPU-Computing

Fraunhofer Institute for Electronic Nano Systems ENAS
Smart systems integration • Sensors and actuators • Active flow control • Micro materials engineering and reliability • RF MEMS • Wireless energy and data transmission • Advanced system engineering • Microfluidics • Printed functionalities • Micro and nano electronics

**Fraunhofer Institute for
High Frequency Physics and Radar Techniques FHR**
Support for safe landing in bad weather • Automatic security system for runway surveillance • Structure integrated antennas

**Fraunhofer Institute for
Maunfacturing Technology and Advanced Materials IFAM**
Adhesive bonding technology • Surface pre-treatment • Functional coatings – anti-icing/-fouling/-erosion, self-healing surfaces, dirt repellent systems, drag reduction • Corrosion protection • Modification of FRP resins • Release agent free FRP components • Functionalization of components, systems, materials • Structural health monitoring

**Fraunhofer Institute for
Structural Durability and System Reliability LBF**
FRP-Design, prototyping & testing • Optimization of lightweight structures • Functional integration • Aviation: Adaptive wing design, Innovative de-icing methods, Structural health monitoring, Damage detection

**Fraunhofer Institute for
Telecommunications, Heinrich-Hertz-Institut HHI**
Data travelling by light • Simultaneous data transmission and lighting • Standard LED lights transmit broadband data streams • Data rates up to 1 Gbit/s • No electromagnetic interference (EMI) with radio systems, no e-smog • Suitable e.g. for in-cabin entertainment, hospitals or public transport systems

**Fraunhofer Institute for
Open Communication Systems FOKUS**
Hardware and software concepts for safety-critical applications • Complex algorithms for positioning detection • Redundant hardware architectures • Parallelization • Efficient fault tolerance mechanisms

**Fraunhofer Innovation Cluster Maintenance,
Repair and Overhaul (MRO)**
Energy-efficient and Resource-saving MRO Processes and Technologies • Condition monitoring and diagnosis • MRO planning and digital assistance • cleaning • Repair and overhaul technologies • Fraunhofer IPK and Fraunhofer IZM