Fraunhofer

June 15–21, 2015, Paris Le Bourget, Hall 1, Booth G316

PARIS AIR SHOW LE BOURGET 2015

FRAUNHOFER TOPICS

Flying has become an essential part of modern society, a means of bringing people together as well as an instrument of global trade and economic growth. At the same time, the industry has shown itself to be sensitive to environmental concerns such as air pollution, noise and climate change. 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?

Six Fraunhofer establishments present their innovations at a theme pavilion (hall 1, booth G 316).

The Fraunhofer-Gesellschaft is the leading organization for applied research in Europe. Its research activities are conducted by 66 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of nearly 24,000, who work with an annual research budget totaling more than 2 billion euros. Of this sum, around 1.7 billion euros is generated through contract research. More than 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. International collaborations with excellent research partners and innovative companies around the world ensure direct access to regions of the greatest importance to present and future scientific progress and economic development.

Fraunhofer Institute for Electronic Nano Systems ENAS

Fraunhofer ENAS develops smart systems and components for various applications. The developments of high-precision silicon-based sensors, polymer-based sensors and actuator systems are counted among the core competences of the institute. The research activities also focus on security and reliability of these components and systems.

The institute shows different samples of the product and technology portfolio at the Paris Air Show 2015:

- Pulsed and synthetic jet actuators for active flow control
- Smart Vortex generators for the integration into movable control surface
- Wireless power and data transmission for flexible cabin and object furnishing
- High-temperature shock test for studying the true failure mechanisms of components and systems

Fraunhofer Institute for Building Physics IBP

The Fraunhofer Institute for Building Physics IBP focuses its work on research, development, testing, demonstration and consulting in the various fields of building physics. The implemantation of these competences on close-by subjects expands the classic circle of partners to the aviation industry. Therefore scientists develop solutions for noise reduction, indoor environment, hygiene and health protection, avionics as well as more sustainability in aviation.

- Flight Test Facility and Ground Thermal Test Bench
- eco DESIGN® Tool ENDAMI
- Aircraft-recycling (lecture)
- Air quality in aircraft cabin (lecture)
- Local climatization for more passenger comfort (lecture)

Fraunhofer Institute for Chemical Technology ICT

Product and manufacturing development in the fields of plastics, environmental and energy technology are competences of the Fraunhofer ICT. Furthermore, the recycling of aircraft materials is deeply investigated.

For the SIAE 2015 we will present you:

- Flexible PUR foam made from renewable resources
- Non-halogenated flame retardant systems for aircraft seating cushion

Fraunhofer Institute for Chemical Technology ICT, Branch ICT-IMM

Aiming at innovative concepts for energy supply in aerospace applications we develop microchannel heat-exchangers and reactors for heat management, tank inertization and catalytic combustion as well as reformers and complete fuel processors for the hydrogen production for fuel cells.

Our services include detailed engineering and manufacture of individual reactors and components as well as testing and integration of complete systems for a power range of 50 kW and upwards. We also develop our own catalysts for implementation in our reactors, with stability of up to many thousands of hours.

- Energy supply concepts for aircrafts
- Tank inertization systems for aircrafts

Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM

In order to maximize the aerodynamic performance of aircraft wings Fraunhofer IFAM has developed materials and adaptive structures for morphing at cruise flight conditions. The purpose of this class of morphing parts is to realize a smooth, gapless transition between moving and fixed parts of the wing. For the morphing parts a new material had to be designed. Core feature of this new elastomeric material is the constant elasticity between –55 °C and 120 °C.

At SIAE Le Bourget 2015 Fraunhofer IFAM presents:
– Adaptive trailing edge
– Morphing part of wingtip active trailing edge

Fraunhofer Institute for Production Technology IPT and Fraunhofer Institute for Laser Technology ILT

ADaM: Adaptive Production for Resource Efficiency in Energy Generation and Mobility

New drive concepts are essential in meeting growing demands to significantly reduce emissions and fuel consumption in the automotive, aviation, and power-generation industries.
The goal of the innovation cluster AdaM is to significantly increase the efficiency of energy conversion, measurably reduce CO_2 emissions, and conserve natural resources. The innovation cluster's activities have been planned over a period of two-and-a-half years with a total budget of 10 million euros, funded by the Fraunhofer-Gesellschaft, the state government of North Rhine-Westphalia, and in particular the 21 industrial partners.

CAx Technologies

Data consistency across the entire manufacturing and repair process chain by means of flexible software design and open interfaces

Laser

Work on methods to adapt processing strategies and process parameters for selective laser melting and laser material deposition according to material and geometry

Machining

Development of individual machining, clamping, and process monitoring technologies, including their integration into adaptive process chains

Design

Methodical comparisons of different design and manufacturing variants by evaluating measurable variables from both a product and manufacturing perspective

SHORT LECTURES

To learn more about Fraunhofer Technologies we would like to invite you joining our short lectures concerning new technologies for airframe, engines, systems, eco DESIGN and air quality.

SHORT LECTURES

JUNE 16, 2015

09:00 - 09:20 *Airframe*
CLEAN SKY 2
Giuseppe Pagnano
Joint Technology Initiative Clean Sky

09:20 - 09:40 *Airframe*
FRAUNHOFER DROOPE NOSE: A TECHNOLOGY PLATFORM FOR CLEAN SKY
Dr. Valerio Carli
Fraunhofer Aviation TMO

09:40 - 10:00 *Airframe*
POLYMER BASED MORPHING SKIN FOR ADAPTIVE WINGS
Andreas Lühring
Fraunhofer IFAM

10:00 - 10:20 *Airframe*
ACTIVE FLOW CONTROL – PULSED AND SYNTHETIC JET ACTUATORS
Mathias Lipowski
Fraunhofer ENAS

10:20 - 10:40 *Engines*
ADVANCED TECHNOLOGIES FOR AERO-ENGINES WITHIN FRAUNHOFER
Torsten Moll
Fraunhofer IPT/ILT

10:40 - 11:00 *Engines*
ADDITIVE MANUFACTURING TECHNOLOGIES FOR AERO-ENGINE COMPONENTS
Dr. Johannes Witzel
Fraunhofer ILT

11:00 - 11:20 *Engines*
ADVANCED SLOTTING AND FINISHING TECHNOLOGIES FOR AERO-ENGINE COMPONENTS
Daniel Schraknepper
Fraunhofer IPT

11:20 - 11:40 *Engines*
ADAPTIVE PROCESS CHAINS FOR AERO-ENGINE COMPONENTS
Daniel Schraknepper, Anders Such
Fraunhofer IPT/ILT

11:40 - 12:00 *Engines*
INTERNATIONAL CENTER FOR TURBOMACHINERY MANUFACTURING ICTM, AACHEN – STRUCTURE AND CAPABILITIES
Torsten Moll
Fraunhofer IPT/ILT

SHORT LECTURES

JUNE 17, 2015

09:00 - 09:20 *Systems*
LOCAL CLIMATIZATION FOR MORE PASSENGER COMFORT
Thomas Kirmayr
Fraunhofer IBP

09:20 - 09:40 *eco DESIGN*
AIRCRAFT-RECYCLING – CHALLENGES AND SOLUTIONS
Dr. Florian Mayer
Fraunhofer IBP

09:40 - 10:00 *eco DESIGN*
CLEAN SKY – ECO DESIGN® TECHNOLOGIES AND EVALUATION
Thomas Reichert, Ana Salles
Fraunhofer ICT

10:00 - 10:20 *eco DESIGN*
ENDAMI – ECO DESIGN® TOOL FOR THE AVIATION INDUSTRY
Robert Ilg/Laura Brethauer
Fraunhofer ICT

10:20 - 10:40 *eco DESIGN*
>>BIRD<< – ATOOL TO IMPLEMENT RECYCLING INFORMATION IN A/C DESIGN
Ann-Kathrin Wimmer
Fraunhofer ICT

10:40 - 11:00 *eco DESIGN*
GROUND THERMAL BENCH TEST
Markus Siede
Fraunhofer IBP

11:00 - 11:20 *eco DESIGN*
THE THERMAL MODEL
Markus Siede/Dr. Victor Norrefeldt
Fraunhofer IBP

11:20 - 11:40 *eco DESIGN*
THE FUTURE OF ECO DESIGN®
John Simpson
Fraunhofer

SHORT LECTURES

JUNE 18, 2015

09:00 - 09:20 *eco DESIGN*
ENERGY SUPPLY CONCEPTS FOR AIRCRAFTS – REFORMING OF POLYALCOHOLS/PROPYLENE-GLYCOL
Prof. Dr. Gunther Kolb
Fraunhofer ICT-IMM

09:20 - 09:40 *eco DESIGN*
HIGH TEMPERATURE THERMAL CYCLING TEST FACILITY AND ACTIVE POWER CYCLING BENCH
Eberhard Kaulfersch
Fraunhofer ENAS

09:40 - 10:00 *Systems*
WIRELESS DATA AND ENERGY TRANSMISSION
Christian Hedayat
Fraunhofer ENAS

10:00 - 10:20 *Systems*
TANK INERTIZATION SYSTEMS FOR AIRCRAFT
Prof. Dr. Gunther Kolb
Fraunhofer ICT-IMM

10:20 - 10:40 *eco DESIGN*
COMFORT FOR BODY AND CONSCIENCE: SUSTAINABLE RAW MATERIALS FOR AIRCRAFT SEATING CUSHIONS
Bert Käbisch
Fraunhofer ICT

10:40 - 11:00 *Air quality*
MOX SENSOR FOR AIR QUALITY MONITORING IN AIRCRAFT CABIN
Dr. Florian Mayer
Fraunhofer IBP

FRAUNHOFER EXHIBITORS

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Fraunhofer Institute for Electronic Nano Systems ENAS
www.enas.fraunhofer.de
Dr. Eberhard Kaulfersch
Phone +49 371 45001-422
eberhard.kaulfersch@enas.fraunhofer.de

Fraunhofer Institute for Building Physics IBP
www.ibp.fraunhofer.de
Assja Terseglav
Phone +49 8024 643-642
assja.terseglav@ibp.fraunhofer.de

Fraunhofer Institute for Chemical Technology ICT
www.ict.fraunhofer.de
Dr. Thomas Reichert
Phone + 49 721 4640-462
thomas.reichert@ict.fraunhofer.de

Fraunhofer Institute for Chemical Technology ICT, Branch ICT-IMM
www.imm.fraunhofer.de
Dr. Gunther Kolb
Phone +49 6131 990 341
gunther.kolb@imm.fraunhofer.de

Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM
www.ifam.fraunhofer.de
Andreas Lühring
Phone +49 421 2246-494
andreas.luehring@ifam.fraunhofer.de

Dr. Michael Wolf
Phone +49 421 2246-640
michael.wolf@ifam.fraunhofer.de

Fraunhofer Institute for Laser Technology ILT
www.ilt.fraunhofer.de
Dr. Andres Gasser
Phone +49 241 8906-209
andres.gasser@ilt.fraunhofer.de

Fraunhofer Institute for Production Technology IPT
www.ipt.fraunhofer.de
Daniel Schraknepper
Phone +49 241 8904-297
daniel.schraknepper@ipt.fraunhofer.de

FRAUNHOFER ACTIVITIES
WITH CLEAN SKY

FROM CLEAN SKY TO CLEAN SKY 2

Mid-2014 saw the launch of Clean Sky 2, the second part of a major European research initiative in which Fraunhofer will play a continued key role. The European Commission and the private sector will together be providing a further budget of some 4 billion euros. The project is designed to complement the objectives of Flightpath 2050, which sets out a vision for air travel and aviation in the year 2050. Clean Sky 2 also takes into account the new agenda for strategic research and innovation drawn up by the Advisory Council for Aeronautics Research in Europe (ACARE). Clean Sky 2 is a private public partnership established under the Council Regulation until the end of 2024. Further information can be found under the link:
www.cleansky.eu/content/homepage/about-clean-sky-2

Clean Sky 2

WWW.FRAUNHOFER.DE

Communication
Fraunhofer-Gesellschaft
Director: Klaudia Kunze
Hansastrasse 27c
80686 München, Germany

Project management
Susanne Pichotta
Phone +49 89 1205-1377
susanne.pichotta@
zv.fraunhofer.de

Technical coordination
Dipl.-Journ. Janis Eitner
Phone +49 8024 643-203
janis.eitner@ibp.fraunhofer.de

Press spokeswoman
Marion Horn
Phone +49 89 1205-1305
marion.horn@zv.fraunhofer.de

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