Tuesday, October 18

Propulsion - Turbo-Machinery and Combustor (Part 1 of 2)

Session Code: ATC900

Room Argos   **Session Time:**   13:30

This session will contain papers describing progress in new engine concepts relating to both airbreathing and non-airbreathing congiurations. Of particular interest are concepts which will improve performance, safety, noise, emissions and cost.

Organizers -   John K. Anderson, Triumph Aerospace Systems; Ramesh Rajagopalan, Pratt & Whitney; John Roberts

Chairpersons -   Ramesh Rajagopalan, Pratt & Whitney

Time	Paper No.	Title
1:30 p.m.	2011-01-2562	**Design Procedure of a Reverse Flow Combustor for a Helicopter Engine with High Temperature Rise**
		Bhupendra Khandelwal, Mingchao Yan, Gajanana Hegde, Vishal Sethi, Riti Singh, Cranfield University, UK
2:30 p.m.	2011-01-2496	**Study of Hybrid Diffusers for Use in Gas Turbine Combustors**
		Bhupendra Khandelwal, Liu Bao, Karamveer Singh Kumar, Vishal Sethi, Riti Singh, Cranfield University, UK

Planned by Propulsion Committee / EMB Air and Space Group

Tuesday, October 18

Propulsion - Powerplant Systems & Functionalities

Session Code: ATC901

Room Argos   **Session Time:**   15:30

This session explores new-to-the-world or unexploited propulsion technologies that fall within the scope of the SAE Propulsion Committee, i.e., air breathing engines and space launch systems. This encompasses innovative propulsion system and engine concepts (including related aspects of air vehicle integration), and original approaches to thrust generation and augmentation, propulsion cycle functions (compression, combustion & power extraction), subsystems, fuels and test and evaluation.

Organizers -   Richard C. Millar, Nav; Pericles Pilidis, Cranfield Univ.

Chairpersons -   Richard C. Millar, Naval Postgraduate School; Pericles Pilidis, Cranfield Univ.

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**SAE E-33 In-flight Propulsion Measurement - Main Activities and Deliverables**
		Vincent Billerot, Airbus
4:00 p.m.	2011-01-2507	**Surrogate Based Optimization for Multidisciplinary Design**
		Loïc Boussouf, Altran
4:30 p.m.	2011-01-2509 ORAL ONLY	**Modelling Fuel Injection and Flash Vaporization In Rocket Engines**
		Mustapha Megahed, Wolfgang Ottow, ESI Group
5:00 p.m.	2011-01-2508	**Aerothermal Coupling with Integrated Exchange Surfaces**
		Frederic Varlet, ALTRAN; Grégory MILLOT lng, ALTRAN technologies

Planned by Propulsion Committee / EMB Air and Space Group

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Tuesday, October 18

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Manufacturing/Materials/Structures - Product Design and Manufacturing Integration (Part 1of 2)

Session Code: ATC809

Room Ariane 1   **Session Time:**   13:30

Airframe design and certification requires thorough investigation of physical system behavior, identification of all failure modes, and quantification of all safety margins.   To meet modern performance criteria, these certification requirements necessitate advanced analysis and modeling tools that efficiently and effectively leverage the knowledge. This session will focus on advanced methods and tools to analyze engineering practices and model production system practices.

Organizers -   Charles Hu, Jeffrey Morgan, Boeing; Ramesh Kolar, Naval Postgraduate School

Chairpersons -   Charles Y. Hu, Boeing; Ramesh Kolar, Naval Postgraduate School

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	**The Pylon Component: New Technology Integration in a Complex Environment** *Dave Ewens, Airbus*
2:00 p.m.	2011-01-2569	**The Correlation of As-Manufactured Products to As-Designed Specifications: Closing the Loop on Dimensional Quality Results to Engineering Predictions** *Donald Jasurda, Dimensional Control Systems Inc.*
2:30 p.m.	2011-01-2568	**Construction of a CubeSat Using Additive Manufacturing** *Stewart Davis, CRP USA*

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

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Tuesday, October 18

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Manufacturing/Materials/Structures - Product Design and Manufacturing Integration (Part 2 of 2)

Session Code: ATC809

Room Ariane 1   **Session Time:**   15:30

Airframe design and certification requires thorough investigation of physical system behavior, identification of all failure modes, and quantification of all safety margins.   To meet modern performance criteria, these certification requirements necessitate advanced analysis and modeling tools that efficiently and effectively leverage the knowledge. This session will focus on advanced methods and tools to analyze engineering practices and model production system practices.

Organizers -   Joan Hudson, SAE International; Ramesh Kolar, Naval Postgraduate School; Jeffrey Morgan, Charles Hu, Boeing

Chairpersons -   Charles Y. Hu, Boeing; Ramesh Kolar, Naval Postgraduate School

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**Finite Element Modeling of Drilling Processes with Solid Tooling in Metals** *Kerry J. Marusich, Third Wave Systems*
4:00 p.m.	ORAL ONLY	**Legacy 500 and the New Era of Digital Factories** *Gustavo Borba Guimaraes, EMBRAER*

Time	Paper No.	Title
4:30 p.m.	2011-01-2570	**Development of a Nutation Damper Reservoir Mechanism**
		Calvin L. Kee, Simmie F. Berman, Johns Hopkins Univ. Applied Physics Lab
5:00 p.m.	ORAL ONLY	**Dynamic Substructure Testing Strategies for Landing Gear Evaluation**
		Nandor Terkovics, Simon Neild, Bernd Krauskopf, University of Bristol; Sanjiv Sharma, Airbus

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Tuesday, October 18

Environment - Noise

Session Code: ATC604

Room Ariane 2   **Session Time:** 13:30

This session is dedicated to topics related to community and cabin noise, aircraft emissions affecting local air quality and climate change. In addition, papers dealing with FAA/EASA or airport noise or emissions regulations may also be presented.

Organizers -   Srini Bhat, Boeing Commercial Airplanes; Laurent Leylekian, ONERA

Chairpersons -   Srini Bhat, Boeing Commercial Airplanes

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	**Physical Modelling and Assessment Methodology of Aircraft Noise Prediction in IESTA**
		Patrice Malbequi, ONERA
2:00 p.m.	ORAL ONLY	**Feasibility of Marked-based Noise Control - The MIME Project**
		Gerald Öttl, Bastian Figlar, Technische Universität München
2:30 p.m.	ORAL ONLY	**Design to Noise: From Demonstration to New Aircraft**
		Stephan Eelman, Boeing Research & Technology Europe S.L.

Planned by Environment Committee / EMB Air and Space Group

Tuesday, October 18

Environment - Airplane Design for Environment

Session Code: ATC605

Room Ariane 2   **Session Time:** 15:30

Aircraft design requirements related to environmental impact have become increasingly important. These requirements include reducing greenhouse gas emissions, local emissions and noise constraints. This session covers novel approaches and applications related to environmentally-progressive aircraft design.

Organizers -   David Lee Daggett, Boeing; Askin Isikveren, Bauhaus Luftfahrt e.V.

Chairpersons -   William Carberry, Boeing Co.; David Daggett, Boeing; Askin Isikveren, Bauhaus Luftfahrt e.V.

Time	Paper No.	Title
4:00 p.m.	2011-01-2521	**NASA's Fundamental Aeronautics Subsonic Fixed Wing Project: Generation N+3 Technology Portfolio**
		Gregory J. Follen, Ruben Del Rosario, NASA Glenn Research Center; Richard Wahls, NASA Langley Research Center; Nateri Madavan, NASA Ames Research Center

4:30 p.m.	*2011-01-2524*	***Optimization of ETRW (Energy Liberated During a Flight/Revenue Work Done) of an Airplane for Minimizing its Environmental Impact***
		Ramesh K. Agarwal, Zheming Zhang, Washington University in St. Louis
5:00 p.m.	*2011-01-2522*	***A Fuel Cell Based Propulsion System for General Aviation Aircraft: The ENFICA-FC Experience***
		Giulio Romeo, Enrico Cestino, Gabriel Correa, Fabio Borello, Politecnico di Torino
5:30 p.m.	*ORAL ONLY*	***Realizing Flight Path 2050: An Investigation of Potential Technological Solutions***
		Askin Isikveren, Bauhaus Luftfahrt e.V.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00196, and also individually. T purchase visit collections.sae.org

Planned by Environment Committee / EMB Air and Space Group

Tuesday, October 18

Manufacturing/Materials/Structures - RFID Applications in Aerospace

Session Code: **ATC806**

Room Cassiopee   *Session Time:*   *13:30*

RFID, beyond mandates and the retail industry, has become an enabler for quality control, asset management and value stream mapping. End users, including the Department of Defense, aerospace/automotive and retail, are implementing and realizing higher savings and efficiency levels, today, through the increased visibility provided by RFID. This seession will present and discuss the RFID impact on manufacturing, supply chains and traceability along with RFID's role in the business case.

Organizers -   *George Nicholas Bullen, Smart Blades Inc.; Benny J. Leppert, Jeffrey Morgan, Boeing*

Chairpersons -   *George Nicholas Bullen, Smart Blades Inc.*

Time	*Paper No.*	*Title*
1:30 p.m.	*2011-01-2599*	***RFID on Aircraft Parts - Industry Initiatives, Testing Standards, and Best Practices for Storing Maintenance History Information Directly on Aircraft Parts***
		Kevin Donahue, RFID TagSource
2:00 p.m.	*2011-01-2598*	***Detecting Damage and Damage Location on Large Composite Parts using RFID Technology***
		George Nicholas Bullen, Smart Blades, Inc.; Tim Shinbara, Northrop Grumman Corp.
2:30 p.m.	*ORAL ONLY*	***Using RFID to Manage Time Critical Aerospace Frozen Materials***
		Tim J. Shinbara, Northrop Grumman Corp.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Tuesday, October 18

Manufacturing / Materials / Structures - An Expert Panel Discussion: Large Composite Tooling and Automated Manufacturing

Session Code: **ATC820**

Room Cassiopee   *Session Time:*   *15:30*

As composite structures get larger and are built on very large tools, hand layup fabrication processes also become impractical. This panel brings together a group of industry experts on automated processes for large parts and tooling for large parts. The tooling experts will discuss the challenges of designing and building large, heavy layup tools and the machine experts will discuss the challenges of designing and building very large machines intended to layup material on those large tools.

Organizers -   *Carroll G. Grant, Aerospace Composites Consulting; Jeffrey Morgan, Boeing*

Moderators -   *Carroll Grant, Aerospace Composites Consulting*

Panelists -   *David M. Champa, M Torres Group; David C. Dickson, Boeing; Ron Hennies, MAG IAS, LLC; Axel Schnuelle, Airbus; Peter Vogeli, Electroimpact Inc.; Paul Walsh, Coast Composites Inc.;*

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Tuesday, October 18

Safety - Systems Safety (Part 1 of 2)

Session Code: *ATC1003*

Room Diamant   **Session Time:**   *13:30*

Issued in 1996 to provide development assurance guidance in the increasingly integrated environment of complex aircraft systems; the use of ARP4754 has become widespread across the aerospace industry. Updates incorporated in the latest revision of the document - ARP4754A - are presented in this session, along with specific concerns for aircraft systems safety, such as lightning threat, atmospheric neutron single event effects (SEE) and fuel tank failures.

Organizers -   *Steven Beland, Boeing Commercial Airplanes; John C. Dalton, Boeing Co.; Eric M. Peterson, Electron International II Inc.; Andrew Paul Wallington, GE Aviation*

Chairpersons -   *Steven Beland, Boeing Commercial Airplanes; Andrew Wallington, Rigiblick*

Time	Paper No.	Title
1:30 p.m.	*ORAL ONLY*	***Impact Load Reduction by Dampened ULD Edge Rails*** *Sebastian Tivig, Airbus*
2:00 p.m.	*2011-01-2497*	***Incorporation of Atmospheric Neutron Single Event Effects Analysis into a System Safety Assessment*** *Mike Dion, Rockwell Collins, Inc.; Laura Dominik, Honeywell*
2:30 p.m.	*2011-01-2498*	***Accomplishing a Meaningful Particular Risks Assessment Document*** *John C. Dalton, Boeing Co.*

Planned by Safety Committee / EMB Air and Space Group

Tuesday, October 18

Safety - Systems Safety (Part 2 of 2)

Session Code: *ATC1003*

Room Diamant   **Session Time:**   *15:30*

Issued in 1996 to provide development assurance guidance in the increasingly integrated environment of complex aircraft systems; the use of ARP4754 has become widespread across the aerospace industry. Updates incorporated in the latest revision of the document - ARP4754A - are presented in this session, along with specific concerns for aircraft systems safety, such as lightning threat, atmospheric neutron single event effects (SEE) and fuel tank failures.

Organizers -   *Steven Beland, Boeing Commercial Airplanes; John C. Dalton, Boeing Co.; Eric M. Peterson, Electron International II Inc.; Andrew Paul Wallington, GE Aviation*

Chairpersons -   *Steven Beland, Boeing Commercial Airplanes; Andrew Wallington, Rigiblick*

Time	Paper No.	Title

3:30 p.m.	2011-01-2564	**ARP4754A/ ED-79A - Guidelines for Development of Civil Aircraft and Systems - Enhancements, Novelties and Key Topics**
		Alessandro Landi, Airbus; Mark Nicholson, York Univ.
4:00 p.m.	~~2011-01-2567~~ ORAL ONLY	**Modeling Average Flight Risk due to Lightning Threat in Safety Analysis for Airplane Systems and Structures**
		Anapathur V. Ramesh, David Twigg, Tilak Sharma, Boeing Commercial Airplanes
4:30 p.m.	2011-01-2565	**A Vision Based Audit Method and Tool that Compares a Systems Installation on a Production Aircraft to the Original Digital Mock-Up**
		Karthikeyan Vaiapury, Anil Aksay, Xinyu Lin, Ebroul Izquierdo, Queen Mary University of London; Chris Papadopoulos, Airbus
5:00 p.m.	2011-01-2566	**Semi-Automated Vision-Based Construction of Safety Models from Engineering Drawings**
		Qianni Zhang, Xinyu Lin, Queen Mary, University of London; Chris Papadopoulos, Airbus; Jean-Pierre Heckmann, EADS Apsys Defence & Security; Oleg Lisagor, University of York; Valerie Sartor, Dassault Aviation; Ebroul Izquierdo, Queen Mary, University of London

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00202, and also individually. T purchase visit collections.sae.org

Planned by Safety Committee / EMB Air and Space Group

Tuesday, October 18

Avionics - Defense and Space Avionics (Part 1 of 2)

Session Code: **ATC406**

Room Guillaumet 1   *Session Time:*   **13:30**

The harsh environment of Space and Military applications provides challenges and constraints for the deployment of avionics supporting such systems. Avionics implemented in harsh environments require extra considerations when compared to commercial applications where factors such as radiation, vibration, extreme temperatures, and extreme pressures must be accounted for. This session provides case studies, technologies, and applications of avionics system in harsh environments.

Organizers -   *Thierry Duhamel, Astrium EADS; Roscoe C. Ferguson, United Space Alliance*

Chairpersons -   *Thierry Duhamel, Astrium EADS; Roscoe C. Ferguson, United Space Alliance*

Time	Paper No.	Title
1:30 p.m.	2011-01-2575	**Evolution of the Space Shuttle Primary Avionics Software and Avionics for Shuttle Derived Launch Vehicles**
		Roscoe C. Ferguson, United Space Alliance
2:00 p.m.	2011-01-2574	**Robotic Lunar Lander Field Trial Avionics**
		Justin Thomas, Jay White, Dorian Seagrave, Robert Davis, David Edell, David Artis, Johns Hopkins Univ. Applied Physics Lab
2:30 p.m.	ORAL ONLY	**Space Communications Network based on Open Internet Protocol (IP) Standards**
		Mieke R. Sphar, Lockheed Martin

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, October 18

Avionics - Display Technology and Visualization (Part 1 of 2)

Session Code: **ATC400**   15:30

Room Guillaumet 1   *Session Time:*

This session focuses on all aspects of display technology and visualization in real-time avionics applications and flight simulation. This includes advanced screen technologies, ruggedization methods, embedded display graphics software, tools for visualization and modeling, and open display architectures.

Organizers -   *Christian Delaveau, Thales Avionics; Steven Luys, Barco*

Chairpersons -   *Steven Luys, Barco*

Time	*Paper No.*	*Title*
3:30 p.m.	*2011-01-2525*	**Design and Flight Test of a Primary Flight Display Combined Vision System**
		Patricia May Ververs, Gang He, John Suddreth, Rob Odgers, Jary Engels, Ivan Wyatt, Keith Hughes, Christopher Hamblin, Thea Feyereisen, Honeywell International, Inc.
4:00 p.m.	*2011-01-2526*	**Panoramic Displays: The Next Generation of Fighter Aircraft Cockpits**
		Johannes Kellerer, Christoph Möller, Alexander Kostka, Harald Neujahr, Peter Sandl, Cassidian
4:30 p.m.	*2011-01-2527*	**Touch Screen Technology and Applications in Avionics**
		Michaël Mertens, Barco
5:00 p.m.	*2011-01-2528*	**Safety and Operational Improvements Using Head-Up Displays in Small Aircraft and Helicopters**
		Hans Brandtberg, Johan Zanden, Saab Avitronics

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00195, and also individually. T purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, October 18

Business/Economics - Aerospace Business Models

Session Code: **ATC504**

Room Guillaumet 2   *Session Time:*   13:30

Aerospace has been a rich environment for the development of business models. Names can be applied and characteristics can be described. Pros and cons for each model can be offered. Risks and mitigation can be examined. For some of the more complex models, there are issues of capitalization, governance, and returns. Some models require changes in organization culture and behavior, which may lead to requirements for new or different training of the workforce, and possibly new attitudes.

Organizers -   *William Rickard*

Chairpersons -   *William Rickard, Super 98*

Time	*Paper No.*	*Title*
1:30 p.m.	*2011-01-2502*	**Business Model for Successful Commercialization of Aircraft Designs**
		Douglas Howarth, Lockheed Martin Advanced Development Co.
2:00 p.m.	*2011-01-2500*	**ATC504, ¿Business/Economics - Aerospace Business Models¿ ¿PIANET, Innovative Approach to Start-Up a Technology Qualified Cluster, to be More Competitive in Today's Aerospace Market¿**
		Emilio Ferrari, Angelo Maida, Torino Piemonte Aerospace
2:30 p.m.	*2011-01-2501*	**Innovation Readiness: Past and Current Drivers in Aeronautical Engineering**
		Jean-Pierre Cachelet, Airbus

Planned by Business Economics Committee / EMB Air and Space Group

Business/Economics - New Business Opportunities for Aerospace

Session Code: ATC507

Room Guillaumet 2 **Session Time:** 15:30

There are many factors that shape the aerospace industry, such as finances, travel demand, safety, regulations, fuel prices, environment, new technologies, etc. The session will focus on the search for new business opportunties that may arise in the midst of these influences on the industry.

Organizers - John K. Anderson, Triumph Aerospace Systems; Paul Bevilaqua, Lockheed Martin Aeronautics Co.; William Rickard, consultant; Ramanathan Viswanathan, GE Aviation

Chairpersons - William Rickard, Super 98

Time	Paper No.	Title
3:30 p.m.	2011-01-2601	**A Methodology to Assess the Capabilities of a Cluster of Companies: The Case of "Torino Piemonte Aerospace"** *Alberto Codrino, Maurizio Rosso, PLM Systems*
4:30 p.m.	~~2011-01-2604~~ **ORAL ONLY**	**Differentiated Global Value Chain Architecture: The 21st Century Organization** *Sandeep Muju, KPMG*

Planned by Business Economics Committee / EMB Air and Space Group

Auto Fastening / Assembly & Tooling (AeroFast) - Automated Robotic Drill and Fastening Systems (Part 1 of 2)

Session Code: ATC200

Room Saint Exupery Auditorium **Session Time:** 13:30

This session is dedicated to the advancements in automation in the fields of drilling and fastening applications. In recent years tremendous improvement has been achieved in these fields as new system concepts such as 6-axis anthropomorphic robots, crawler robots, and Parallel Kinematic Machines. This session also includes innovative end-effectors including orbital drilling, vision systems, and fastener installation and new system architecture.

Organizers - Sven Lutze, Benoit Marguet, Frank Neuhaus, Airbus; Mark Smith, Lockheed Martin Aeronautics Co

Chairpersons - Sven Lutze, Frank Neuhaus, Airbus; Mark W. Smith, Lockheed Martin Aeronautics Co.

Time	Paper No.	Title
1:30 p.m.	~~2011-01-2535~~ **ORAL ONLY**	**Solution for Automated Frame Drilling and Fastening System Using an 840D Controlled Standard Robot** *Dirk Eickhorst, BROETJE-Automation GmbH*
2:00 p.m.	2011-01-2537	**Force Controlled Robotic System for Drilling and Riveting One Way Assembly** *Pascal Ple, Jean-Francois Gabory, SPIE; Philippe Charles, ABB France SAS*
2:30 p.m.	**ORAL ONLY**	**F-35 Nacelle Automated Drilling System** *David Ginburg, Lockheed Martin; James Cunov, PaR Systems Inc*

3:00 p.m.	2011-01-2539	Robotic Drilling Solution for Hole Diamter up to 5/8" (16mm) in Multi Material Stacks
	ORAL ONLY	Christian Meiners, Torsten Mehlenhoff, Hans-Jörg Stege, BRÖTJE-Automation GmbH

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, October 18

Auto Fastening / Assembly & Tooling (AeroFast) - Automated Robotic Drill and Fastening Systems (Part 2 of 2)

Session Code: **ATC200**

Room Saint Exupery Auditorium   *Session Time:*   **15:30**

This session is dedicated to the advancements in automation in the fields of
drilling and fastening applications. In recent years tremendous improvement has been achieved in these fields as new system concepts such as 6-axis anthropomorphic robots, crawler robots, and Parallel Kinematic Machines. This session also includes innovative end-effectors including orbital drilling, vision systems, and fastener installation and new system architecture.

Organizers -   Benoit Marguet, Airbus; Mark Smith, Lockheed Martin Aeronautics Co; Sven Lutze, Airbus

Chairpersons -   Mark W. Smith, Lockheed Martin Aeronautics Co.; Sven Lutze, Airbus

Time	Paper No.	Title
3:30 p.m.	2011-01-2536	Cooperative Robots for Full Automation
		Philippe Prat, Etienne Gueydon, Alema Automation
4:30 p.m.	2011-01-2533	Orbital Drilling
		Lutz Deitert, Airbus
5:00 p.m.	2011-01-2532	Utilizing an In-Process Automatic Tool Change for Drilling and Reaming Large Diameter Holes
		Peter Ehinger, Electroimpact, Inc

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00194, and also individually. T purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, October 18

Aerospace Operations - Aerospace Guidance, Navigation and Control

Session Code: **ATC104**

Room Salle de Presse Mermoz   *Session Time:*   **15:30**

The future of the Aerospace Operations requires the development and integration of complex technologies and systems for efficient design and development of future airspace planes. This session will provide a forum for international discussion on leading-edge research and developmental efforts associated from present systems with the mission, operational requirements and design of future hypersonic planes.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus

Time	Paper No.	Title
3:30 p.m.	2011-01-2616	Innovative Algorithm for Spacecraft Attitude Determination
		Gabriella Caporaletti, EICAS Automazione

Time	Paper No.	Title
4:00 p.m.	2011-01-2617	**Dynamic Inversion Flight Control Design for Aircraft with Non-Minimum Phase Response**
		Howard P. Lee, Joshua W. Clemens, Hussein M. Youssef, Lockheed Martin Aeronautics Company
4:30 p.m.	2011-01-2618	**Optimal Control to Recover a Safe Situation from Low/High-Energy Situation in Approach**
		Mickael Lefebvre, Florian Constans, Airbus
5:00 p.m.	ORAL ONLY	**Advances in Small Re-entry Systems - From ISS Sample Return to Mars Companion Missions**
		Marcus Scott Murbach, NASA

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00193, and also individually. T purchase visit collections.sae.org

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Tuesday, October 18

Power Systems - Thermal Management for Aerospace Power Systems & Applications (Part 1 of 2)

Session Code: ATC1200

Room Spot   **Session Time:** 13:30

Advanced thermal management technology concepts and heat transfer aspects of aerospace systems including but not limited to two-phase heat transfer, electronics cooling, phase change materials, spray cooling, heat pipes/loop heat pipes and advanced material research shall be featured in this session.

Organizers - Christian Donadille, Airbus; Travis E. Michalak, US Air Force Research Laboratory; John Nairus, US Air Force

Chairpersons - Travis E. Michalak, US Air Force Research Laboratory

Time	Paper No.	Title
1:30 p.m.	2011-01-2587	**Transient Thermohydraulic Modeling of Capillary Pumped Loop**
		Nicolas Delalandre, Hispano Suiza; Vincent Ayel, P' institute; Jacques Salat, Hispano Suiza
2:00 p.m.	ORAL ONLY	**High Density, Two-Phase (HD2P) Coldplate Technology**
		Rex J. Harvey, Parker Hannifin Corp.
2:30 p.m.	2011-01-2586	**Vapor Cycle Compressor Range Expansion for Aerospace**
		Thomas Delash, Fairchild Controls Corp.

Planned by Power Systems Committee / EMB Air and Space Group

Tuesday, October 18

Power Systems - Advanced Power Systems Technologies (Part 1 of 3)

Session Code: ATC1201

Room Spot   **Session Time:** 15:30

Advanced more electric vehicle products and technologies. The session scope includes power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas.

Organizers - Christian Donadille, Airbus; John Nairus, US Air Force; Patrick W. Wheeler, Univ. of Nottingham

Chairpersons - Patrick W. Wheeler, Univ. of Nottingham

Time	Paper No.	Title
3:30 p.m.	2011-01-2622	**Advanced Control Strategy for Solid State Power Controllers (SSPC)**
		Daniel Izquierdo Gil, Cassidian; Andres Barrado, Cristina Fernandez, Marina Sanz, Antonio Lazaro, Universidad Carlos III de Madrid
4:00 p.m.	2011-01-2619	**A Motor Control Design for the More Electric Aero Engine Fuel System**
		Hitoshi Oyori, IHI AEROSPACE Co., Ltd.; Noriko Morioka, IHI Corporation; Manabu Seta, Yukio Shimomura, Hiroshi Saito, SINFONIA TECHNOLOGY CO., LTD.
4:30 p.m.	ORAL ONLY	**High Integrity Motor Topologies for Aircraft Electrical Drives**
		Chris Gerada, Univ. of Nottingham
5:00 p.m.	2011-01-2621	**Average-Value Diode Rectifier Modeling for Aerospace Applications**
		Patrick Norman, Univ. of Strathclyde; Stuart Galloway, Graeme Burt, Univ of Strathclyde; J. Timothy Alt, Rolls-Royce Corporation

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00200, and also individually. T purchase visit collections.sae.org

Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, October 19

Propulsion - Aircraft Integration

Session Code: **ATC902**

Room Argos   *Session Time:* **08:00**

This session is dedicated to topics related to the integration of the Powerplant & associated systems to the airframe. This session covers the physical & functional interfaces, the aerodynamic, thermal, loads & structural integration.

Organizers -   *Frank Haselbach, Rolls-Royce PLC; Larry F. Nightingale, Rolls-Royce Corp.; Jean-Michel Rogero, Airbus; Rhonda D. Walthall, Hamilton Sundstrand*

Chairpersons -   *Frank Haselbach, Rolls-Royce PLC; Larry F. Nightingale, Rolls-Royce Corp.; Jean-Michel Rogero, Airbus*

Time	Paper No.	Title
8:00 a.m.	2011-01-2542	**Propulsion-Airframe Integration Using Statistical Surrogates from Computer Simulations**
		John H. Doty, Univ. of Dayton; Jose camberos PhD, Kirk Yerkes, US Air Force Research Laboratory
8:30 a.m.	2011-01-2543	**Engine Control, An Aircraft Atypical Computer: How to Set the Standard?**
		Richard Ambroise, Airbus
9:00 a.m.	2011-01-2544	**Sensitivity of SAE Total Pressure Intake Distortion Descriptors to Pressure Fluctuations at the Engine-Intake Interface Plane**
		David Ernesto Funes Sebastian, Airbus
9:30 a.m.	ORAL ONLY	**Counter Rotating Open-Rotor Integration Overview**
		Damien Prat, Airbus

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00201, and also individually. T purchase visit collections.sae.org

Planned by Propulsion Committee / EMB Air and Space Group

Propulsion - Turbo-Machinery and Combustor (Part 2 of 2)

Session Code: *ATC900*

Room Argos   *Session Time:*   *10:30*

This session will contain papers describing progress in new engine concepts relating to both airbreathing and non-airbreathing congiurations. Of particular interest are concepts which will improve performance, safety, noise, emissions and cost.

Organizers -   *John K. Anderson, Triumph Aerospace Systems; Ramesh Rajagopalan, Pratt & Whitney; John Roberts*

Chairpersons -   *Ramesh Rajagopalan, Pratt & Whitney*

Time	Paper No.	Title
10:30 a.m.	*2011-01-2561*	*Low Emissions Core-Engine Technologies*
	ORAL ONLY	*Ralf von der Bank, Rolls-Royce Deutschland Ltd. & Co. KG*
11:00 a.m.	*2011-01-2563*	*Fuel Pump System Configuration for the More Electric Engine*
		Noriko Morioka, IHI Corporation; Hitoshi Oyori, IHI AEROSPACE Co., Ltd.
11:30 a.m.	*2011-01-2511*	*Multivariable Aircraft Engine Controller Design Using an Optimal Loop Shaping Approach*
		Douglas F R Silva, Joao Barbosa, Alberto Adade Filho, Instituto Tecnologico de Aeronautica

Planned by Propulsion Committee / EMB Air and Space Group

Unmanned Aerial Systems - Propulsion

Session Code: *ATC1102*

Room Argos   *Session Time:*   *15:30*

This session discusses UAV propulsion systems development and performance. All propulsion systems will be considered, from solar to fuel cell, to turbine. Propulsion alternatives for small airborne vehicles will be also discussed. Reliability, performance, and integration of existent UAV propulsions technologies will be addressed. New engine technology, new designs, or even new fundamental research and propulsion concepts are also of interest.

Organizers -   *Patrick H. Browning, West Virginia Univ.; Michael K. Kisska, Boeing Co.; Piergiovanni Marzocca, Clarkson Univ.*

Chairpersons -   *Patrick H. Browning, West Virginia Univ.; Wilfredo Toledo, ARDEC*

Time	Paper No.	Title
3:30 p.m.	*2011-01-2589*	*Ground Testing of the ETF Unmanned Airship Technology Demonstrator*
		Piero Gili, Manuela Battipede, Matteo Vazzola, Politecnico di Torino; Piero Cassino, Nautilus s.p.a.
4:00 p.m.	*2011-01-2591*	*An Overview of Scientific and Technical Literature on Coanda Effect Applied to Nozzles*
		Michele Trancossi, Universita' di Modena e Reggio Emilia
4:30 p.m.	*2011-01-2590*	*Coanda Synthetic Jet Deflection Apparatus and Control*
		Michele Trancossi, Antonio Dumas, Universita' di Modena e Reggio Emilia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00203, and also individually. T purchase visit collections.sae.org

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Metals, Fabrication and Processing

Session Code: **ATC804**

Room Ariane 1   *Session Time:*   **08:00**

Advancements in the production of metallic structure continue to be important to the aerospace and commercial aviation industries. This session features improved materials, processes, and joining methods for metallic components to meet the challenges put forth by demanding end product requirements.

Organizers -   Benny J. Leppert, Jeffrey Morgan, Jeffrey Morgan, Boeing; Jeffrey D. Morgan, Boeing Commercial Airplanes

Chairpersons -   Benny J. Leppert, Jeffrey Morgan, Boeing

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	**Reconsidering Chemical Milling versus Machining for Metal Removal** *Richard Wire, Boeing*
8:30 a.m.	2011-01-2499	**Solid-State Spot Welding (Friction Spot Welding and Friction Stir Spot Welding) as a Bonding Technique to Replace the Process of Riveting within the Aircraft Industry?** *Henry Hameister, Marvin Bock, HSU Hamburg/ LaFT*
9:00 a.m.	ORAL ONLY	**Casting Process Simulation: Mold Filing, Solidification, Casting Defects** *Serge Fargeas, SNECMA*
9:30 a.m.	ORAL ONLY	**Modelling of Electron Beam Welding of Titanium Alloys** *Richard Turner, Univ Of Birmigham; Jean-Christophe Gebelin, Univ. of Birmingham; Frederic Boitout, ESI-Group*

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Business/Economics - Market Forecasts

Session Code: **ATC503**

Room Ariane 1   *Session Time:*   **10:30**

This session focuses on forecasts and forecasting techniques, whether for a particular product, market segment, or industry. Forecasts may apply to inputs (e.g. manufacturing tools/technologies) or outputs (e.g. aircraft deliveries).

Organizers -   Les Clark, American Eurocopter; Andrew Gordon, Airbus; William Rickard

Chairpersons -   William Rickard, Super 98

Time	Paper No.	Title
10:30 a.m.	ORAL ONLY	**Airbus Market Forecast** *David Prevor, Airbus*
11:00 a.m.	ORAL ONLY	**The European R & T Vision for Aeronautics in 2050** *Gareth Williams, Airbus*

Planned by Business Economics Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Advanced Low Cost Aircraft Structures

Session Code: ATC815   15:30

Room Ariane 1   **Session Time:**

This session will address the ALCAS project and the specific goals it wishes to attain. Specifically, presentations will address reducing the operating costs of relevant European aerospace products by 15%. Topics include; cost-effective manufacturing and assembly, full application of carbon fibre composites to aircraft primary structures and challenges faced in reducing operating costs. The specific target products range from business jets to large civil airliners.

Organizers -   Jeffrey Morgan, Boeing; Mark Derren Summers, Airbus

Chairpersons -   Mark Derren Summers, Airbus

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**A Cost Efficient Fuselage Centre Section for a Simple Flying Bus** Guillaume Gallant, Airbus
4:00 p.m.	ORAL ONLY	**Textile Technologies as Enablers for Next Generation CFRP Aircraft Structure Design** Jens Telgkamp, Airbus
4:30 p.m.	2011-01-2724 ORAL ONLY	**Overcoming the Challenges of Developing Novel Wing Concepts Through the use of Multidisciplinary Teams** Jonathan Wright, Airbus

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Wednesday, October 19

Environment - Aircraft ECS and Cabin Environment (Part 1 of 2)

Session Code: ATC600

Room Ariane 2   **Session Time:**   08:00

This session deals with aspects of aircraft Environmental Control Systems and the cabin environment related to contaminant monitoring in Cabin and Bleed Air Supplies.

Organizers -   Richard B. Fox, Honeywell Aerospace; Paul McMurtry, Hamilton Sundstrand

Chairpersons -   Richard B. Fox, Honeywell Aerospace

Time	Paper No.	Title
8:00 a.m.	2011-01-2689	**Controlling Cabin and Envelope Air Flows and Pressure Differentials to Prevent Envelope Condensation, Enable Cabin Humidification, Improve Fire Safety, and Decrease Fuel Use** Douglas Stuart Walkinshaw, Keith F. Preston, Echo Air Inc.
8:30 a.m.	2011-01-2672	**Electronic Noses as Early Warning System in Monitoring Cabin Air Quality** Henny Oord, Jan Gerritsen, Albert Bos, C-it
9:00 a.m.	ORAL ONLY	**Aerotracer - A New Method for the Detection of Lubricating Oils in Bleed Air** Mario Schmidt, Airsense Analytic GmbH
9:30 a.m.	ORAL ONLY	**Aircraft Interiors Recycling - The Challenges Ahead** William Carberry, Boeing Co.

Planned by Environment Committee / EMB Air and Space Group

Wednesday, October 19

Environment - Aircraft ECS and Cabin Environment (Part 2 of 2)

Session Code: **ATC600**

Room Ariane 2   *Session Time:*   **10:30**

This session deals with aspects of aircraft Environmental Control Systems and the cabin environment related to system design considerations.

Organizers -   Richard B. Fox, Honeywell Aerospace; Paul McMurtry, Hamilton Sundstrand

Chairpersons -   Richard B. Fox, Honeywell Aerospace

Time	Paper No.	Title
10:30 a.m.	2011-01-2691	**Optimization of an Unconventional Environmental Control System Architecture**
		Michael Sielemann, Deutsches Zentrum für Luft und Raumfahrt; Tim Giese, Bettina Oehler, Airbus; Manuel Gräber, Technische Universität Braunschweig
11:00 a.m.	2011-01-2692	**Tracer Gas and Smoke Flow Visualization Assessment of the Impact of a Beverage Cart on Contaminant Dispersion in a Twin Aisle Aircraft Cabin**
		Andrew Trupka, Mohammad Hosni, Byron Wayne Jones, Kansas State University
11:30 a.m.	2011-01-2690	**Germs and Flying: Developing Ventilation System Criteria**
		Douglas Stuart Walkinshaw, ECHO Air Inc.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00196, and also individually. T purchase visit collections.sae.org

Planned by Environment Committee / EMB Air and Space Group

Wednesday, October 19

Environment - Emissions

Session Code: **ATC601**

Room Ariane 2   *Session Time:*   **15:30**

This session is dedicated to topics related to community and cabin noise, aircraft emissions affecting local air quality and climate change. In addition, papers dealing with FAA/EASA or airport noise or emissions regulations may also be presented.

Organizers -   Willard J. Dodds, GE Aviation; Domingo Sepulveda, Pratt & Whitney

Chairpersons -   Willard J. Dodds, GE Aviation; Domingo Sepulveda, Pratt & Whitney

Time	Paper No.	Title
3:30 p.m.	2011-01-2594	**Application of Genetic Algorithm for Preliminary Trajectory Optimization**
		Hugo Pervier, Devaiah Nalianda, Ramon Espi, Vishal Sethi, Pericles Pilidis, David Zammit-Mangion, Cranfield University; Jean-Michel Rogero, Ricardo Entz, Airbus
4:00 p.m.	2011-01-2595	**On-Board Trajectory Optimization of RNAV Departure and Arrival Procedures Concerning Emissions and Population Annoyance**
		Rafael Fernandes de Oliveira, EADS Deutschland GmbH; Christof Büskens, Universität Bremen
4:30 p.m.	2011-01-2596 **ORAL ONLY**	**Greener Trajectories without Persistent Contrails: Trade-off between Environmental and Economical Constraints**
		Corinne Marizy, Jerome Chaptal, Airbus

2011-01-2597	*Gaseous and Particle Emissions from a Turbo-Jet Engine Operating on Alternative Fuels at Simulated Altitudes (Written Only -- No Oral Presentation)*

Tak W. Chan, Kevin Cuddihy, ERMS, Environment Canada; Wajid Chishty, Craig Davison, National Research Council Canada; Mark McCurdy, Peter Barton, ERMS, Environment Canada

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00196, and also individually. T purchase visit collections.sae.org

Planned by Environment Committee / EMB Air and Space Group

Wednesday, October 19

Manufacturing/Materials/Structures - High Output Composite (Part 1 of 2)

Session Code: **ATC808**

Room Cassiopee   *Session Time:*   *08:00*

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in increasing production of airframe skins, structures and exterior components. This session will focus on higher output through automated manufacturing methods technology. It will also address issues regarding large structural manufacturing.

Organizers -   *Vernon M. Benson, ATK Space Systems; Carroll G. Grant, Aerospace Composites Consulting; Jeffrey Morgan, Boeing; Patrick Rousseau, Forest-Line Capdenac*

Chairpersons -   *Vernon M. Benson, ATK Space Systems; Carroll G. Grant, Aerospace Composites Consulting; Patrick Rousseau, Forest-Line Capdenac*

Time	Paper No.	Title
8:00 a.m.	*ORAL ONLY*	*Economic Considerations When Implementing Automated Composites Processes*
		Vernon M. Benson, ATK Space Systems
8:30 a.m.	*ORAL ONLY*	*A350XWB Fiber Placement Spars; From R&D Conception Phase to Serial Production*
		Christopher Jones, GKN Aerospace; Manu Motilva, Mtorres Group
9:00 a.m.	*ORAL ONLY*	*Automated Lamination of Composite Structures for Aerospace*
		Ronald Hennies, MAG IAS, LLC
9:30 a.m.	*ORAL ONLY*	*Next Generation Tools for Productivity Enhancements in AFP*
		Michael Muser, Ingersoll Machine Tools Inc.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Wednesday, October 19

Manufacturing/Materials/Structures - Future Challenges and Opportunities in Composites Simulation and Software

Session Code: **ATC816**

Room Cassiopee   *Session Time:*   *10:30*

Product Lifecycle Management (PLM) is becoming a critical success factor to cover the entire process chain in conjunction with software design tools that address the engineering needs of complex Composites structures for aerospace application. In this session, experts will address issues of simulation for composites and how to overcome the technical difficulties of sequential and trial-and-error-based composites design process.

Organizers -   *Jeffrey Morgan, Jeffrey Morgan, Boeing; Rani Richardson, Dassault Systèmes; Christian Lair, Dassault Systemes*

Chairpersons -   *Christian Lair, Dassault Systemes; Rani Richardson, DSAC*

Time	Paper No.	Title
10:30 a.m.	2011-01-2628	**Structures Technologies Current and Future Perspectives**
	ORAL ONLY	*Gilles Bazerque, Bruno Beral, Airbus*
11:00 a.m.	ORAL ONLY	**A350XWB Composite Wing Covers - Design Challenges**
		Paulo Lage, Airbus
11:30 a.m.	ORAL ONLY	**Prepared for Failure Analysis on CFRP structures - A View on Applied Methods from Materials Point of View**
		Dieter Emanowski, Airbus
12:00 p.m.	2011-01-2629	**Skills Synergy Leading to RTM Flow Simulation Success Story**
		François Trochu, Ecole Polytechnique de Montreal; Sylvain Chatel, EADS France Innovation Works; Serge Maison - Le Poëc, EADS France Innovation Works; Yannick Benoit, Patrick de Luca, ESI Group; Philippe Baisch, Dominique Roger, Patrick Guerin, Airbus

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Wednesday, October 19

Manufacturing/Materials/Structures - High Output Composite (Part 2 of 2)

Session Code: ATC808

Room Cassiopee **Session Time:** 15:30

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in increasing production of airframe skins, structures and exterior components. This session will focus on higher output through automated manufacturing methods technology. It will also address issues regarding large structural manufacturing.

Organizers - Vernon M. Benson, ATK Space Systems; Carroll G. Grant, Aerospace Composites Consulting; Jeffrey Morgan, Boeing; Patrick Rousseau, Forest-Line Capdenac

Chairpersons - Vernon M. Benson, ATK Space Systems; Carroll G. Grant, Aerospace Composites Consulting; Patrick Rousseau, Forest-Line Capdenac

Time	Paper No.	Title
3:30 p.m.	2011-01-2592	**One Piece AFP Spar Manufacture**
		Todd Rudberg, Andrew J. Purvis, Guy Faubion, John Nancarrow, Electroimpact Inc.
4:00 p.m.	ORAL ONLY	**Prepreg Slit Tape and Fiber Placement: Developing High Performance Material Delivery Systems for High-Output AFP Lines**
		Dan Ott, Web Industries, Inc.
4:30 p.m.	ORAL ONLY	**High Volume Production of Fiber Reinforced Thermoplastic Parts**
		Christina McClard, Fiberforge
5:00 p.m.	2011-01-2593	**Automating AFP Tuning Using a Laser Sensor**
		Joshua Cemenska, Electroimpact Inc
5:30 p.m.	ORAL ONLY	**Incorporating AFP Material Delivery Technology on Commercially Available Robot Machine Platforms**
		Frederic Challois, Coriolis Composites

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Wednesday, October 19

Safety - Flight Operations Safety (Part 1 of 2)

Session Code: **ATC1004**

Room Diamant   *Session Time:*   **08:00**

This session will focus on safety initiatives and activities applied to flght operations. Topics will range from planning, exploring and mapping the operational domains of flight, to linking TCAS and autopilot guidance using new functions for operational and safety improvements and discussing the parameters affecting aircraft braking.

Organizers -   *John C. Dalton, Boeing Co.; Nils Fayaud, Christopher McGregor, Airbus; Eric M. Peterson, Electron International II Inc.*

Chairpersons -   *Christopher McGregor, Airbus; Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
8:00 a.m.	*2011-01-2659*	***Automated Planning, Exploration and Mapping of Complex Operational Domains of Flight Using Multifactor Situational Trees*** *Ivan Y. Burdun, INTELONICS Ltd.*
8:30 a.m.	*ORAL ONLY*	***Linking TCAS and Auto Flight Guidance: New Functions Onboard AIRBUS Aircraft for Operational and Safety Improvements*** *Thierry Bourret, Airbus*
9:00 a.m.	*ORAL ONLY*	***Parameters Affecting Aircraft Braking Friction*** *Logan Jones, Airbus*
9:30 a.m.	*ORAL ONLY*	***Multi-crew Pilot License - The New Training Paradigm for Future Commercial Pilots*** *Christian Norden, Airbus*

Planned by Safety Committee / EMB Air and Space Group

Wednesday, October 19

Safety - Industry Safety Initiatives

Session Code: **ATC1000**

Room Diamant   *Session Time:*   **10:30**

This session will explore the active and proposed safety initiatives for the aerospace industry. Discussions on probability assessments of fuel tank structural features, safety of civil aircraft from Russian experience, textile based baggage containers for onboard blast protection and a module for accomodating emergency equipment will be highlighted.

Organizers -   *Klaus Fritz, Diehl Aerospace GmbH; Eric M. Peterson, Electron International II Inc.; John C. Dalton, Boeing Co.*

Chairpersons -   *Klaus Fritz, Diehl Aerospace GmbH; Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
10:30 a.m.	*2011-01-2518*	***Probability Assessment of the Fuel Tank Structural Feature Failures*** *Zdzislaw H. Klim, Bombardier Aerospace; Adam W. Skorek, Université du Québec à Trois-Rivières*
11:00 a.m.	*2011-01-2517*	***Textile-Based Luggage Containers for Onboard Blast Protection*** *Donato Zangani; Samuele Ambrosetti, Alessandro Bozzolo, D'Appolonia S.p.A.; Rosario Dotoli, Danilo Bardaro, Consorzio Cetma; Stephen Fay, Blastech Ltd*
11:30 a.m.	*ORAL ONLY*	***Module for the Accommodation of Emergency Equipment*** *Karsten Schmidt, Airbus*

2011-01-2519	**Qualification and Full-Scale Test of the Airbus A400M Barrier Net (Written Only -- No Oral Presentation)**
	Mark Trafford, AmSafe - Defense Cargo; Sebastian Klein, IABG mbH; Dirk Meiranke, Airbus
2011-01-2520	**An Assessment of FAA's Rule on Reduction of Fuel Tank Flammability (Written Only -- No Oral Presentation)**
	Mersie Amha Melke, ERAU WorldWide Online Student

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00202, and also individually. T purchase visit collections.sae.org

Planned by Safety Committee / EMB Air and Space Group

Wednesday, October 19

Safety - Flight Operations Safety (Part 2 of 2)

Session Code: *ATC1004*

Room Diamant   *Session Time:*   *15:30*

This session will focus on safety initiatives and activities applied to flight operations. High altitude issues are the primary focus with discussions on the implications of emergency escape in space operations, future cockpit oxygen systems implications as a result of human trail responses to rapid decompressions and positive pressure breathing and pilot performance. Also for the lower altitudes, a discussion of crash loads on cabin attendant stations will be presented.

Organizers -   *John C. Dalton, Boeing Co.; Nils Fayaud, Christopher McGregor, Airbus; Eric M. Peterson, Electron International II Inc.*

Chairpersons -   *Christopher McGregor, Airbus; Eric M. Peterson, Electron International II Inc.*

Time	*Paper No.*	*Title*
3:30 p.m.	*ORAL ONLY*	**Rearward-facing Cabin Attendant Stations under Chrash Loads**
		Martin Guenter Sperber, TÜV Rheinland Kraftfahrt GmbH
4:00 p.m.	*ORAL ONLY*	**Rapid Decompression to 45,000 ft: Results of Human Trials and Implications for Future Cockpit Oxygen Systems**
		Juergen Wenzel, Norbert Luks, Gernot Plath, DLR Inst of Aerospace Medicine; Martin Wittkowski, DLR; Henri Marotte, Aviation Medicine; Norbert Augustin, Airbus; Walter Deutscher, Aerotec Engineering GmbH; Nicolas Bloch, Zodiac Aerospace O2 Systems Division
4:30 p.m.	*ORAL ONLY*	**Positive Pressure Breathing & Pilot Performance: The Possible Role of a Modified Oxygen Mask with Positive Pressure Breathing in Simulator Training**
		Björn Appel, Ekkehart Schubert, Technische Universität Berlin; Juergen Wenzel, DLR Inst of Aerospace Medicine; Dorothee Lang, Sven Seifert, Airbus; Nicolas Bloch, Zodiac Aerospace O2 Systems Division
5:00 p.m.	*ORAL ONLY*	**Runway Overrun Protection System**
		Fabrice Villaume, Airbus
	2011-01-2673	**Evaluation of Levels of Automation for Non-Normal Event Resolution (Written Only -- No Oral Presentation)**
		Lisa C. Thomas, Boeing Research & Technology

Planned by Safety Committee / EMB Air and Space Group

Wednesday, October 19

Avionics - Display Technology and Visualization (Part 2 of 2)

Session Code: **ATC400**

Room Guillaumet 1   *Session Time:*   *08:00*

This session focuses on all aspects of display technology and visualization in real-time avionics applications and flight simulation. This includes advanced screen technologies, ruggedization methods, embedded display graphics software, tools for visualization and modeling, and open display architectures.

Organizers -   Christian Delaveau, Thales Avionics; Steven Luys, Barco

Chairpersons -   Steven Luys, Barco

Time	*Paper No.*	*Title*
8:00 a.m.	*2011-01-2550*	***Mastering the ARINC 661 Standard*** *Yannick Lefebvre, Presagis Inc*
8:30 a.m.	*ORAL ONLY*	***Developing a System based on a COTS ARINC 653 Operating System*** *Alex Wilson, Wind River*
9:00 a.m.	*ORAL ONLY*	***Use of OpenGL SC and ES with Integrated Certifiable Display Development Solutions for Avionics Displays*** *Vincent Rossignol, Esterel Technologies; Pierre Charron, ALT Software*
9:30 a.m.	*2011-01-2551*	***An Embedded Platform-Agnostic Solution to Deploy Graphical Applications*** *Yannick Lefebvre, Presagis Inc*

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, October 19

Avionics - Defense and Space Avionics (Part 2 of 2)

Session Code: **ATC406**

Room Guillaumet 1   *Session Time:*   *10:30*

The harsh environment of Space and Military applications provides challenges and constraints for the deployment of avionics supporting such systems. Avionics implemented in harsh environments require extra considerations when compared to commercial applications where factors such as radiation, vibration, extreme temperatures, and extreme pressures must be accounted for. This session provides case studies, technologies, and applications of avionics system in harsh environments.

Organizers -   Thierry Duhamel, Astrium EADS; Roscoe C. Ferguson, United Space Alliance

Chairpersons -   Thierry Duhamel, Astrium EADS; Roscoe C. Ferguson, United Space Alliance

Time	*Paper No.*	*Title*
10:30 a.m.	*ORAL ONLY*	***Design and Development of a Terabyte of Data Storage for Spaceflight*** *Chris Thames, NASA*
11:00 a.m.	*ORAL ONLY*	***Validating Time Triggered Ethernet on a Space Vehicle*** *Victor Revelle, Honeywell International Inc.*
11:30 a.m.	*ORAL ONLY*	***SAVOIR Open Avionics for Space*** *Thierry Duhamel, Astrium*

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, October 19

Avionics - Advanced System Architectures and IMA (Part 1 of 3)

Session Code: ATC402   15:30

Room Guillaumet 1   **Session Time:**

The aim of this session is to present the latest development in aircraft avionics advanced system architectures and Integrated Modular Avionics, and provide information about Avionics Platforms including associated standards and surrounding development environments, looking at corresponding trends and challenges.

Organizers -   Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes

Chairpersons -   Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes

Time	Paper No.	Title
3:30 p.m.	2011-01-2636	**A Model Generator for Simulation and Testing of RDCs**
		Kai Schories, Hamburg University of Technology; Heinrich Rotgang, Diehl Aerospace GmbH; Frank Thielecke, Hamburg University of Technology
4:00 p.m.	ORAL ONLY	**Avionics Systems EVT: Early Validation Tools**
		Marc Fumey, Thales Avionics
4:30 p.m.	2011-01-2635	**Eclipse Framework for an Integrated IMA Tool Chain**
		Björn Annighöfer, Hamburg University of Technology; Erik Stallkamp, Airbus; Frank Thielecke, Hamburg University of Technology
5:00 p.m.	ORAL ONLY	**Flexible Architectural Redundancy for Optimal Unconstrained Topologies (FAR OUT)**
		Brendan Hall, Kevin Driscoll, Honeywell Int'l Inc.

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, October 19

Integrated Vehicle Health Management - Vehicle Level Health Management

Session Code: ATC1702

Room Guillaumet 2   **Session Time:**   08:00

The optimal choice of hardware, software and communications (Cyber-Physical System) is needed for most applications. This represents the next step from embedded systems where software is ported to a given platform.

Organizers -   Richard W. Greaves, Meggitt PLC; Ian Jennions, Cranfield Univ.; Andre Lafon, Airbus; Michael J. Roemer, Impact Technologies LLC; Rhonda D. Walthall, Hamilton Sundstrand; Timothy Wilmering, Boeing Co.

Chairpersons -   Ian K. Jennions, IVHM Centre; Andre Lafon, Airbus; Rhonda D. Walthall, Hamilton Sundstrand; Timothy Wilmering, Boeing Co.

Time	Paper No.	Title
8:30 a.m.	2011-01-2664	**Model-Based Systems Engineering for the Design and Development of Complex Aerospace Systems**
		Serdar Uckun, Tolga Kurtoglu, Peter Bunus, Palo Alto Research Center; Irem Tumer, Christopher Hoyle, Oregon State University; David Musliner, Smart Information Flow Technologies
9:00 a.m.	2011-01-2665	**A Hierarchical Reasoning Structure to Support Aerospace IVHM**
		Michael Roemer, Impact Technologies LLC
9:30 a.m.	2011-01-2674	**Dynamic Alert Generation Technology for Health & Usage Monitoring Systems**
		Kenneth Pipe, Bernadette Culkin, Humaware

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00198, and also individually. T

Wednesday, October 19

Integrated Vehicle Health Management - Component Level Health Monitoring (Part 1 of 2)

Session Code: *ATC1700*

Room Guillaumet 2   *Session Time:*   *10:30*

The analytical heart of an IVHM system demands identification of the component or sub-system in which a fault has occurred (diagnosis) and/or the prediction of the remaining useful life of these elements (prognosis).

Organizers -   *Mervyn D. Floyd; Richard W. Greaves, Meggitt PLC; Ian Jennions, Cranfield Univ.; Michael J. Roemer, Impact Technologies LLC; Rhonda D. Walthall, Hamilton Sundstrand*

Chairpersons -   *Mervyn D. Floyd; Michael Roemer, Impact Technologies LLC*

Time	Paper No.	Title
12:00 a.m.	*2011-01-2703*	***Comparison on Reflectometry Methods for Wire Fault Location (Written Only -- No Oral Presentation)***
		Mahadevanna Basavaraj Shreshthi; Hanumantha Rao Desu V; Shaik Shafi Ahamed
10:30 a.m.	*2011-01-2700*	***Monitoring the Progression of Micro-Pitting in Spur Geared Transmission Systems Using Online Health Monitoring Techniques***
		Ahmed Onsy, MTC; Brian A. Shaw, Jishan Zhang, Newcastle University
11:00 a.m.	*2011-01-2702*	***A Model-Based Development Approach for a Diagnostic System for a Multifunctional Fuel Cell System***
		Christian Modest, Kai Schories, Hauke Peer Lüdders, Frank Thielecke, Hamburg University of Technology

Wednesday, October 19

Integrated Vehicle Health Management - Structural Health Monitoring and Management

Session Code: *ATC1701*

Room Guillaumet 2   *Session Time:*   *15:30*

How does one design an IVHM system? What is the resulting (optimal) architecture? What tools are used and how do these compare to those used by others?

Organizers -   *Hesham Azzam, Hahn Spring, Ltd.; Peter Foote, BAE Systems; Richard W. Greaves, Meggitt PLC; Ian Kenneth Jennions, Cranfield Univ.; Rhonda D. Walthall, Hamilton Sundstrand*

Chairpersons -   *Hesham Azzam, Hahn Spring, Ltd.; Peter Foote, BAE Systems*

Time	Paper No.	Title
3:30 p.m.	*ORAL ONLY*	***Fiber Optic Strain Sensor Standardization - International and European Activities***
		Wolfgang R. Habel, Viven G. Schukar, Werner Daum, BAM Fed Inst. Mat Research Berlin

4:00 p.m.	2011-01-2606	**KALFOS - A Validation Facility for Strain Transfer Characterization of Surface-Applied Strain Sensors**
		Wolfgang R. Habel, Nadine Kusche, Sven Munzenberger, Vivien G. Schukar, BAM Fed Inst. Mat Research Berlin
4:30 p.m.	2011-01-2607	**Discrimination Between Damaging and Non-Damaging Impact Events on Composite Structure using SHM Sensor Signal Analysis**
		Ryan John, Ian Read, Jim McFeat, BAE Systems
5:00 p.m.	2011-01-2608	**A Validation Methodology for Structural Health Monitoring**
		Hesham Azzam, Hahn Spring, Ltd.; Jim McFeat, BAE Systems

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00198, and also individually. T purchase visit collections.sae.org

Planned by Integrated Vehicle Health Management Committee / EMB Air and Space Group

Wednesday, October 19

Auto Fastening / Assembly & Tooling (AeroFast) - Assembly Methodolgies & Advanced Assembly Fixtures and Tooling (Part 1 of 2)

Session Code: ATC205

Room Saint Exupery Auditorium **Session Time:** 08:00

This session deals with new and advanced methods of assembly for structures. Topics could include determinant assembly, jigless assembly, automated positioning, moving assembly lines and right sized portable drilling and fastening equipment

Organizers - *Clayton L. Munk, Boeing; Philip Webb, Cranfield Univ*

Chairpersons - *Philip Webb, Cranfield Univ*

Time	*Paper No.*	*Title*
8:00 a.m.	2011-01-2554	**CNC Machine for Airplane Wings**
	ORAL ONLY	*Bruno Bisiach, Bisiach & Carru SPA*
8:30 a.m.	2011-01-2555	**A Flexible Fixture for Aircraft Wing Assembly Based on a Parallel Kinematic Machine (Exechon)**
		Mingdong Shang, Joseph Butterfield, Cecil Armstrong, Rachel Gibson, Queen's University Belfast, UK
9:00 a.m.	2011-01-2556	**Fixturing and Tooling for Wing Assembly with Reconfigurable Datum System Pickup**
		Otto Jan Bakker, Nirosh Jayaweera, University of Nottingham; Oliver Martin, University of Bath; Andrew Turnock, Hyde Group; Peter Helgosson, University of Nottingham, DELFOi; Tony Smith, Atanas Popov, Svetan Ratchev, University of Nottingham; David Tomlinson, Jon Wright, Mark Summers, Airbus
9:30 a.m.	2011-01-2557	**Metrology Enhanced Tooling for Aerospace (META): Strategies for Improved Accuracy of Jig Built Structures**
		Jody Emlyn Muelaner, Oliver Martin, Paul Maropoulos, The University of Bath

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00194, and also individually. T purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Auto Fastening / Assembly & Tooling (AeroFast) - Composites Assembly and Fastening (Part 1 of 2)

Session Code: *ATC204*

Room Saint Exupery Auditorium   *Session Time:*   *10:30*

This session presents the latest developments in aircraft assembly of composite components, which includes the temporary and permanent fastening of these assemblies.

Organizers -   *Benoit Marguet, Airbus; Holger Maylaender, Broetje-Automation Gmbh*

Chairpersons -   *Holger Maylaender, Broetje-Automation Gmbh*

Time	Paper No.	Title
10:30 a.m.	2011-01-2614 ORAL ONLY	**Engineering Challenges for Assembling CFRP Structure** Gareth Lewis, Airbus
11:00 a.m.	2011-01-2609	**Pulse Motion Line** Lutz Neugebauer, Broetje-Automation Gmbh
11:30 a.m.	2011-01-2611 ORAL ONLY	**Solutions for Manually Drilled Holes in Hybrid Stacks** Richard Garrick, Precorp Inc.; Mohamed Hammadi, Sandvik Tooling France Div Coromant; Aaron Howcroft, Precorp Inc

Planned by AeroFast International Committee / EMB Air and Space Group

Auto Fastening / Assembly & Tooling (AeroFast) - Composites Assembly and Fastening (Part 2 of 2)

Session Code: *ATC204*

Room Saint Exupery Auditorium   *Session Time:*   *15:30*

This session presents the latest developments in aircraft assembly of composite components, which includes the temporary and permanent fastening of these assemblies.

Organizers -   *Benoit Marguet, Airbus; Holger Maylaender, Broetje-Automation Gmbh*

Chairpersons -   *Holger Maylaender, Broetje-Automation Gmbh*

Time	Paper No.	Title
3:30 p.m.	2011-01-2612	**Assembly Concept for the Fixed Trailing Edge based on Moveable Jigs** Thorsten Wilde, Broetje-Automation GmbH
4:00 p.m.	ORAL ONLY	**Cutting Tool Development for Dry, Automated Drilling of Carbon Fiber Reinforced Plastics and Aluminum** Richard Garrick, Precorp Inc.; Tony Jensen, Aaron Howcroft, Precorp Inc
4:30 p.m.	2011-01-2613	**Next Generation Composite Wing Drilling Machine for Vertical Builds** Jesse Peck, Kurt Massey, Electroimpact Inc
5:00 p.m.	2011-01-2610	**Grommet Hole Reinforcement and Lightning Strike Protection in Composite Structural Assembly** Len Reid, Joy Ransom, Mark Wehrmeister, Fatigue Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00194, and also individually. T purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

William Littlewood Memorial Lecture Award

Session Code: ATC1801

Room Saint Exupery Auditorium   *Session Time:*

Organizers -   Joan Hudson, SAE International

Time	Paper No.	Title
	2011-01-2495	**Design Drivers of Energy-Efficient Transport Aircraft**
		Mark Drela, Massachusetts Institute of Technology

Aerospace Operations - Systems Engineering & Design (Part 1 of 2)

Session Code: ATC105

Room Salle de Presse Mermoz   *Session Time:* 08:00

The future of safety of Aerospace Systems Engineering and Design requires advanced research on safety issues of increasingly complex airspace systems. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with safety \with advanced and integrated validation and verification procedures on airspace systems.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Thierry Pardessus, Airbus; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus

Time	Paper No.	Title
8:00 a.m.	2011-01-2558	**Towards Cooperation of Formal Methods for the Analysis of Critical Control Systems**
		Adrien Champion, ONERA & Rockwell Collins France; Rémi Delmas, Pierre-loïc Garoche, Pierre Roux, ONERA - The French Aerospace Lab
8:30 a.m.	2011-01-2559	**Preliminary Systems Evaluation for a Guidable Extended Range Tube Launched-UAV**
		Jay Wilhelm, Patrick Browning, Mridul Gautam, Wade Huebsch, West Virginia University
9:00 a.m.	2011-01-2560	**An Overview of the V&V of Flight-Critical Systems Effort at NASA**
		Guillaume Brat, NASA
9:30 a.m.	2011-01-2506	**The Semantic Web and Space Operations**
		Luis Rabelo, Mario Marin, University of Central Florida; Paul Fishwick PhD, Zach Ezzell, University of Florida

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00193, and also individually. T purchase visit collections.sae.org

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Aerospace Operations - Systems Engineering & Design (Part 2 of 2)

Session Code: ATC105

Room Salle de Presse Mermoz   *Session Time:* 10:30

The future of safety of Aerospace Systems Engineering and Design requires advanced research on safety issues of increasingly complex airspace systems. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with safety \with advanced and integrated validation and verification procedures on airspace systems.

Organizers - Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Thierry Pardessus, Airbus; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons - Jorge Bardina, Jorge Bardina, NASA Ames Research Center; Thierry Pardessus, Airbus

Time	Paper No.	Title
10:30 a.m.	**ORAL ONLY**	**Tire Modelling**
		Olivier Brardo, Airbus
11:00 a.m.	**2011-01-2580**	**Platform Engineering Approach to the Electrical Systems Architecture Development Process**
		John Low, Mentor Graphics Corp.
11:30 a.m.	**2011-01-2582**	**Methodology for Solving Contact Problem during Riveting Process**
		Sergey Lupuleac, St. Petersburg Politechnic Univ.; Margarita Petukhova, Yulia Shinder, St Petersburg Politechnic Univ; Bertrand Bretagnol, Airbus
	2011-01-2583	**Semi-Active Vibration Control of Landing Gear Using Magneto-Rhelological Dampers (Written Only -- No Oral Presentation)**
		Wei Liu, Wenku Shi, Jilin University; Hao Ya, China FAW Group Corporation R&D Center

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00193, and also individually. T purchase visit collections.sae.org

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Wednesday, October 19

Aerospace Operations - Aerospace Modeling & Simulation (Part 1 of 2)

Session Code: **ATC100**

Room Salle de Presse Mermoz *Session Time:* **15:30**

The future of the Aerospace Operations requires the development of new technologies and concepts, and the capability to integrate complex systems to satisfy the needs of future aerospace operations. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with new insights of future concept elements and new technologies in aerospace operations.

Organizers - Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Thierry Pardessus, Airbus; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons - Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Thierry Pardessus, Airbus

Time	Paper No.	Title
3:30 p.m.	**ORAL ONLY**	**Bifurcation Analysis of Shimmy Oscillations in an Aircraft Nose Landing Gear with a Dual-wheel Configuration**
		Phanikrishna Thota, Etienne Coetzee, Paul Bruss, Airbus; Mark Lowenberg, Bernd Krauskopf, University of Bristol
4:00 p.m.	**2011-01-2540**	**Mathematical Model of Water Contamination in Aircraft Fuel Tanks**
		Stephen Tomlinson, Matt Barker, Darran Venn, Luke Hickson, Stirling Dynamics Limited; Joseph Kah-Wah Lam, Airbus
4:30 p.m.	**2011-01-2541**	**Simulating Response of Lightweight Reflectors to Acoustic Tests**
		Paul Blelloch, Michael Yang, ATA Engineering Inc.

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Power Systems - Advanced Power Systems Technologies (Part 2 of 3)

Session Code: ATC1201

Room Spot **Session Time:** 08:00

Advanced more electric vehicle products and technologies. The session scope includes power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas.

Organizers - Serhiy Bozhko, Univ. of Nottingham; Christian Donadille, Airbus; Joan Hudson, SAE International; John Nairus, US Air Force; Patrick W. Wheeler, Univ. of Nottingham

Chairpersons - Serhiy Bozhko, Univ. of Nottingham

Time	Paper No.	Title
8:00 a.m.	2011-01-2624	**Energy Storage: Regenerative Fuel Cell Systems for Space Exploration**
		Giorgio Luigi Ferrari, Thales Alenia Space; Stewart Pelle, Sofiter System Engineering; Massimiliano Antonini, Manuel Cabrera, Hysytech; Marco Armandi, Barbara Bonelli, Cristina Zanzottera, Politecnico di Torino
9:00 a.m.	2011-01-2623	**Advanced Techniques for Accelerated Simulation Studies of Complex Aircraft Electrical Power Systems**
		Serhiy Bozhko, Tao Yang, Greg Asher, Patrick Wheeler, Univ of Nottingham
9:30 a.m.	ORAL ONLY	**Electrical Accumulator Unit Design and Testing for an Energy Optimized Aircraft**
		Jason Wells, Marco Amrhein, PC Krause & Associates; Steven Iden, Peter Lamm, US Air Force; Eric A. Walters, PC Krause & Associates; Jeff Knowles, Northrop Grumman Corporation; Jon Zumberge, AFRL

Planned by Power Systems Committee / EMB Air and Space Group

Power Systems - Thermal Management for Aerospace Power Systems & Applications (Part 2 of 2)

Session Code: ATC1200

Room Spot **Session Time:** 10:30

Advanced thermal management technology concepts and heat transfer aspects of aerospace systems including but not limited to two-phase heat transfer, electronics cooling, phase change materials, spray cooling, heat pipes/loop heat pipes and advanced material research shall be featured in this session.

Organizers - Christian Donadille, Airbus; Travis E. Michalak, US Air Force Research Laboratory; John Nairus, US Air Force

Chairpersons - Travis E. Michalak, US Air Force Research Laboratory; Werner Rothammer, Airbus

Time	Paper No.	Title
10:30 a.m.	2011-01-2584	**Two Phase Thermal Energy Management System**
		Larry Byrd, US Air Force Research Laboratory; Andrew Cole, Brian Cranston, Stephen Emo, Jamie Ervin, UDRI; Travis E. Michalak, US Air Force Research Laboratory
11:00 a.m.	ORAL ONLY	**Integrated Energy & Thermal Management Considerations**
		Neil Garrigan, GE Aviation

11:30 a.m.	2011-01-2585	**Integrated Engine/Thermal Architecture Model Interface Development**
		Rebekah L. Puterbaugh, US Air Force Research Laboratory; Jeffrey Brown, USAF; Ryan T. Battelle, US Air Force Research Laboratory
12:00 p.m.	2011-01-2523	**Adaptation of Current Loop Heat Pipes Design into UAVs**
		Enrique Soriano, Pedro Del Valle, EADS CASA

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Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, October 19

Power Systems - Advanced Power Systems Technologies (Part 3 of 3)

Session Code: ATC1201

Room Spot   **Session Time:** 15:30

Advanced more electric vehicle products and technologies. The session scope includes power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas.

Organizers - Christian Donadille, Airbus; John Nairus, US Air Force; Patrick W. Wheeler, Univ. of Nottingham

Chairpersons - John Nairus, US Air Force

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**The Advantages of the SiC Technology in a Three-Switch Buck-Type PWM Rectifier for an Aerospace Power Supply Application**
		Andrew Trentin, University of Nottingham
4:00 p.m.	2011-01-2620	**Development of a High Temperature Power Module Technology with SiC Devices for High Density Power Electronics**
		Alioune Cissé, Gregor Massiot, Catherine Munier, EADS France - Innovation Works; Paul-Etienne Vidal, Francisco Carrillo, Ecole Nationale d'Ingénieur de Tarbes; Marcelo Iturriz, Airbus
4:30 p.m.	2011-01-2625	**Silicon Carbide Power Electronics for High-Temperature Power Conversion and Solid-State Circuit Protection in Aircraft Applications**
		David Sheridan, Jeff Casady, Semisouth Laboratories Inc; Michael Mazzola, Mississippi State Univ; Robin Schrader, Volodymyr Bondarenko, Semisouth Laboratories Inc

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, October 20

Unmanned Aerial Systems - Micro Air Vehicles

Session Code: ATC1107

Room Argos   **Session Time:** 08:00

This session discusses manufacturing aspects related to unmanned aerial vehicle systems. Full and prototype scales and their testing are considered along with development of the manufacturing tools specific of UAV. Verification of manufacturing methodologies and process capabilities are addresses. Less expensive and faster manufacturing methods using rapid prototyping technology are of interest.

Organizers - Piergiovanni Marzocca, Clarkson Univ.; Thomas G. Recchia, Wilfredo Toledo, US Army ARDEC

Chairpersons - Patrick H. Browning, West Virginia Univ.; Piergiovanni Marzocca, Clarkson University; Wilfredo Toledo, ARDEC

Time	Paper No.	Title

8:00 a.m.	ORAL ONLY	The Design and Implementation of a Micro-Scale Autonomous Experimentation Site
		Richard Garcia, Army Research Lab.
8:30 a.m.	2011-01-2626	Aerodynamic Design of a Micro Air Vehicle: Study of Propeller-Engine Performance
		Nelson Garcia-Polanco, Universidad de Zaragoza; Javier Antonio Palencia, Universidad Simon Bolivar
9:00 a.m.	2011-01-2627	Current and Next-Generation Energy Storage Devices for Micro Vehicle Applications
		Monica Rivera, Motile Robotics Inc.
9:30 a.m.	2011-01-2809	Numerical and Experimental Investigation of the Flapping Wing Micro-air-vehicles Propulsion
		Dean Vucinic, Vrije Universiteit Brussel

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Thursday, October 20

Unmanned Aerial Systems - Aero Dynamics

Session Code: ATC1108

Room Argos   **Session Time:**   10:30

Although UAS aerodynamics is for the most part similar to that of manned aircraft, some designs requirements are unique for micro to small and high altitude, long-endurance vehicles. This session discusses critical aspects of aerodynamics for fixes and rotary wing UAS along with lighter than air technologies.

Organizers -   Piergiovanni Marzocca, Clarkson Univ.; Thomas G. Recchia, Wilfredo Toledo, US Army ARDEC

Chairpersons -   Piergiovanni Marzocca, Clarkson University; Wilfredo Toledo, ARDEC

Time	Paper No.	Title
10:30 a.m.	2011-01-2647	An Experimental Investigation of the Transient Effects Associated with Wing Deployment During Ballistic Flight
		Patrick H. Browning, Richard Cain, Kirk LaBarbara, Wade Huebsch, Jay Wilhelm, West Virginia Univ.
11:00 a.m.	2011-01-2648	Experimental In-Flight Rolling MAV Wing Deployment and Aerodynamic Characterization
		Peter Coffin, Goodarz Ahmadi, Ratneshwar Jha, Piergiovanni Marzocca, Clarkson University
11:30 a.m.	2011-01-2649	A New Approach for the Estimation of the Aerodynamic Damping Characteristics of the ETF Demonstrator
		Piero Gili, Angelo Lerro, Matteo Vazzola, Politecnico di Torino; Michele Visone, Blue Engineering

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00203, and also individually. T purchase visit collections.sae.org

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Thursday, October 20

Unmanned Aerial Systems - Safety, Certification and Standards (Part 1 of 2)

Session Code: ATC1100

Room Argos **Session Time:** **13:30**

UAS integration in non-segregated airspace poses great challenges to UAS community. Since UAS needs to be integrated into an existing system with well defined standards by civil aviation authorities, the key question is how to develop/implement technology to demonstrate compliances of the regulatory mandates. This session will address the technical challenges to cover aspects of UAS type designs, airworthiness, certifications, safety analyses and risk assessments, and operational requirements.

Organizers - Xiaogong Lee, Federal Aviation Administration; Piergiovanni Marzocca, Clarkson Univ.; Lennaert Speijker, NLR

Chairpersons - Lennaert Speijker, NLR; Dean Vucinic, Vrije Universiteit Brussel

Time	Paper No.	Title
1:30 p.m.	2011-01-2688	**Framework for Unmanned Aircraft Systems Safety Risk Management**
		Lennaert Speijker, NLR; Xiaogong Lee, Federal Aviation Administration; Ron Van de Leijgraaf, CAA The Netherlands
2:00 p.m.	ORAL ONLY	**Regulatory Context of the UAS Integration in the Airspace**
		Claude Le Tallec, ONERA
2:30 p.m.	2011-01-2684	**Development of a Safety Assessment Methodology for the Risk of Collision of an Unmanned Aircraft System with the Ground**
		Deniz Ozuncer, Delft University of Technology; Lennaert Speijker, NLR; John Stoop, Richard Curran, Delft Univ of Technology

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Thursday, October 20

Unmanned Aerial Systems - Safety, Certification and Standards (Part 2 of 2)

Session Code: ATC1100

Room Argos **Session Time:** **15:30**

UAS integration in non-segregated airspace poses great challenges to UAS community. Since UAS needs to be integrated into an existing system with well defined standards by civil aviation authorities, the key question is how to develop/implement technology to demonstrate compliances of the regulatory mandates. This session will address the technical challenges to cover aspects of UAS type designs, airworthiness, certifications, safety analyses and risk assessments, and operational requirements.

Organizers - Xiaogong Lee, Federal Aviation Administration; Piergiovanni Marzocca, Clarkson Univ.; Lennaert Speijker, NLR

Chairpersons - Xiaogong Lee, Federal Aviation Administration; Lennaert Speijker, NLR

Time	Paper No.	Title
3:30 p.m.	2011-01-2686	**Determining a Safety Baseline for Unmanned Aircraft Systems (Written Only -- No Oral Presentation)**
		Ahmet Oztekin, Hi-Tec Systems Inc., FAA WJH Tech Center; Xiaogong Lee, Federal Aviation Administration
4:00 p.m.	2011-01-2687	**Validation of Unmanned Aircraft Systems' Integration into the Airspace (VUSIL I and II)**
		Andreas Udovic, Hans de Jong, Jürgen Vielhauer, DFS Deutsche Flugsicherung GmbH

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Thursday, October 20

Manufacturing/Materials/Structures - Direct Digital Manufacturing (Part 1 of 2)

Session Code: ATC805   08:00

Room Ariane 1   **Session Time:**

This session deals with the manufacture of detail parts through laser sintering, stereo lithography, fused deposition modeling, and other emerging technologies. The session will explore technologies and methods for producing net or near net parts in various resins, plastics and metals directly from a CAD model that could employ design architectures that couldn't be achieved by other manufacturing methods.

Organizers -   Brett Lyons, Jeffrey Morgan, Boeing

Chairpersons -   Brett Lyons, Boeing

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	**Electron Beam Melting of TiAl components: Role of the Melting Strategy and Effect of Geometry on the Final Microstructure**
		Sara Biamino, Politecnico Di Torino - Dismic; Silvia Sabbadini, AVIO S.p.A; Federica Pelissero, AVIO SPA
8:30 a.m.	ORAL ONLY	**Advanced Materials for Aerospace Applications with Focus on SLS**
		Sylvia Monsheimer, Evonik Degussa GmBH
9:00 a.m.	~~2011-01-2807~~ ORAL ONLY	**Basis for Decreased Mechanical Properties of Polyamide in Selective Laser Sintering**
		David K. Leigh, Harvest Technologies Inc.
9:30 a.m.	ORAL ONLY	**Our Strength: Your Application**
		Andrew Allshorn, 3DDC, Ltd.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Thursday, October 20

Manufacturing/Materials/Structures - Direct Digital Manufacturing (Part 2 of 2)

Session Code: ATC805

Room Ariane 1   **Session Time:**   10:30

This session deals with the manufacture of detail parts through laser sintering, stereo lithography, fused deposition modeling, and other emerging technologies. The session will explore technologies and methods for producing net or near net parts in various resins, plastics and metals directly from a CAD model that could employ design architectures that couldn't be achieved by other manufacturing methods.

Organizers -   Benny J. Leppert, Brett Lyons, Jeffrey Morgan, Jeffrey Morgan, Boeing

Chairpersons -   Brett Lyons, Boeing

Time	Paper No.	Title
10:30 a.m.	ORAL ONLY	**Additive Manufacturing Applications towards Direct Digital Manufacturing**
		Carl K. Dekker, Met-L-Flo
11:00 a.m.	ORAL ONLY	**Polyamide 11 for Additive Manufacturing: Properties and Assets in Laser Sintering**
		Arnaud Lemaitre, Arkema

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Thursday, October 20

Manufacturing/Materials/Structures - Advanced Robotics Applications (Part 1 of 2)

Session Code: ATC803

Room Ariane 1   **Session Time: 13:30**

This session will address robotics and automation as key factors in aerospace advancement. Hear case-studies on the latest advancement in application of robot accuracy and how to measure robot accuracy.

Organizers -   Scott Gillette, Northrop Grumman Aerospace Systems; Sven Lutze, Airbus; Jeffrey Morgan, Boeing; Claude Perron, National Research Council; Roberto Lu, TE Connectivity

Chairpersons -   Roberto Lu, TE Connectivity; Sven Lutze, Airbus

Time	Paper No.	Title
1:30 p.m.	2011-01-2654 ORAL ONLY	**System for Automatic Volumentric Zero Setting of 2 Industrial Robots** Bruno Bisiach, Bisiach & Carru SPA
2:00 p.m.	2011-01-2653	**Static Calibration and Compensation of the Tau Parallel Kinematic Robot Using a Single 6-DOF Laser Tracker** Philip Freeman, Boeing Co.; Phil Crothers, Boeing Research & Technology; Michael Leptos, Boeing Aerstructures Australia
2:30 p.m.	2011-01-2651	**CAM-Based Planning, Programming and Execution of Large-Scale Machining Operations by a Robot-Mounted Gantry System** Jason Michel Lambert, Martin De Montigny, Claude Perron, National Research Council Canada

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Thursday, October 20

Manufacturing/Materials/Structures - Advanced Robotics Applications (Part 2 of 2)

Session Code: ATC803

Room Ariane 1   **Session Time: 15:30**

This session will address robotics and automation as key factors in aerospace advancement. Hear case-studies on the latest advancement in application of robot accuracy and how to measure robot accuracy.

Organizers -   Scott Gillette, Northrop Grumman Aerospace Systems; Sven Lutze, Airbus; Jeffrey Morgan, Boeing; Claude Perron, National Research Council; Roberto Lu, TE Connectivity

Chairpersons -   Roberto Lu, TE Connectivity; Sven Lutze, Airbus

Time	Paper No.	Title
3:30 p.m.	2011-01-2534	**Modular Parallel Kinematics Intelligent Assembly Automation** Karl-Erik Neumann, Exechon AB
4:00 p.m.	2011-01-2652	**A Large-Scale Robotic System for Depainting Advanced Fighter Aircraft** Dan H. Weissling, Stephen L. Wiedmann, Daniel P. Solomon, Southwest Research Institute
4:30 p.m.	2011-01-2650	**Efficient Offline-Programming Through Process-Orientation for Advanced Robotics Applications** Nikolai D'Agostino, Cenit AG Systemhaus
5:00 p.m.	2011-01-2655	**Applying a Concept for Robot-Human Cooperation to Aerospace Equipping Processes** Matthew Walton, Philip Webb, Cranfield University; Mike Poad, Airbus

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00199, and also individually. T purchase visit collections.sae.org

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Composite Manufacturing (Part 1 of 3)

Session Code: **ATC812**

Room Cassiopee   *Session Time:*   *08:00*

The expanding usage of composite materials in the aerospace industry is driving a surge of interest fabrication and assembly of airframe skins, structures and exterior components. This session will focus on areas of composites including new advances in superstructures, large composite structure arrays, and approaches to enhance composite structures.

Organizers -   *James H. Campbell, Lockheed Martin Aeronautics Co.; Jeffrey Morgan, Boeing*

Chairpersons -   *James H. Campbell, Lockheed Martin Aeronautics Co.*

Time	*Paper No.*	*Title*
8:00 a.m.	*ORAL ONLY*	***Light Weight Electromagnetic Shielding for Composite Aircraft***
		Mohsen Jalali, Fidele Moupfouma, Bombardier Aerospace; Sven Dauterstedt, Technische Universitaet Muenchen; Rolf Wuthrich, Concordia University
8:30 a.m.	*ORAL ONLY*	***Prediction of Shape Distortion using Autoclave through Simulation***
		Laurent Dufort, ESI Group
9:00 a.m.	*2011-01-2513*	***Electromagnetic Energy Coupling Mechanism on Cables and Systems - A Comparison Composite Aircraft Versus Metal Aircraft and Impact on Testing Procedure***
		Fidele Moupfouma, Bombardier Aerospace Core Engineering
9:30 a.m.	*ORAL ONLY*	***Cost Effective Fabrication of Composite Acoustic Panels for Engine Nacelle Applications***
		Jarrod Ridge, Royal Engineered Composites Inc.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Composite Manufacturing (Part 2 of 3)

Session Code: **ATC812**

Room Cassiopee   *Session Time:*   *10:30*

The expanding usage of composite materials in the aerospace industry is driving a surge of interest fabrication and assembly of airframe skins, structures and exterior components. This session will focus on areas of composites including new advances in superstructures, large composite structure arrays, and approaches to enhance composite structures.

Organizers -   *James H. Campbell, Lockheed Martin Aeronautics Co.; Jeffrey Morgan, Boeing*

Chairpersons -   *James H. Campbell, Lockheed Martin Aeronautics Co.*

Time	*Paper No.*	*Title*
11:00 a.m.	*2011-01-2545*	***Helicopter Tail Rotor Blade from Composite Materials: An Experience***
		Bosko Rasuo, University of Belgrade
11:30 a.m.	~~*2011-01-2546*~~	***WaterJet Cutting and Milling of CFRP***
	ORAL ONLY	*Ralf Moeller, FLOW Europe*
12:00 p.m.	*2011-01-2515*	***Continuous Preforming System for Curved Composite Profiles***
		Raphael Reinhold, Torsten Mehlenhoff, BROETJE-Automation GmbH

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Composite Manufacturing (Part 3 of 3)

Session Code: ATC812

Room Cassiopee   *Session Time:*   13:30

The expanding usage of composite materials in the aerospace industry is driving a surge of interest fabrication and assembly of airframe skins, structures and exterior components. This session will focus on areas of composites including new advances in superstructures, large composite structure arrays, and approaches to enhance composite structures.

Organizers -   James H. Campbell, Lockheed Martin Aeronautics Co.; Jeffrey Morgan, Boeing; Jarrod Ridge, Royal Engineered Composites Inc.

Chairpersons -   Jarrod Ridge, Royal Engineered Composites Inc

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	**Next Generation of Thermopastic Composites**
		Pierre-Henri Cadaux, Alban Lepied, Airbus
2:00 p.m.	ORAL ONLY	**Novel Approaches to Non-Destructive CFRP Bond Quality Assessment**
		Clemens Bockenheimer, Airbus
2:30 p.m.	2011-01-2547	**Exploring the Manual Forming of Complex Geometry Composite Panels for Productivity and Quality Gains in Relation to Automated Forming Capabilities**
		Carwyn Ward, Dirk Lukaszewicz, Kevin Potter, Univ. of Bristol
3:00 p.m.	2011-01-2514	**Extended Non-Destructive Testing of Composite Bonds**
		Susanne Markus, Christian Tornow, Stefan Dieckhoff, Fraunhofer IFAM; Michel Boustie, Romain Ecault, Laurent Berthe, CNRS; Clemens Bockenheimer, Airbus

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Manufacturing/Materials/Structures - Composites Fabrications and Joining

Session Code: ATC801

Room Cassiopee   *Session Time:*   15:30

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in the fabrication and assembly of airframe skins, structures and exterior components. This session will focus on several areas of composites including new advances in fabrication and joining. It will also address issues regarding large structural manufacturing, structural health monitoring and thermal/electrical structure concepts and applications.

Organizers -   Doug Decker, Northrop Grumman Corp.; Jeffrey Morgan, Boeing; George Bullen, Smart Blades Inc

Chairpersons -   George Bullen, Smart Blades Inc

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**Using Programming and Simulation to Develop Optimized Processes for Automated Fiber Placement (AFP) CNC Machines**
		Bill Hasenjaeger, CGTech.
4:00 p.m.	ORAL ONLY	**Rapid Airframe Production**
		George Nicholas Bullen, Smart Blades Inc.
4:30 p.m.	2011-01-2693	**Vertical Picture-Frame Wing Jig Structure Design with an Eye to Foundation Loading**
		Michael Carr, Electroimpact Inc

5:00 p.m.	2011-01-2695	Drilling Stack Material (titanium/CFRP/aluminium) with Power Feed Machines
	ORAL ONLY	
		Mohamed Hammadi, Sandvik Tooling France Div. Coromant

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Thursday, October 20

Flight Sciences - Hybrid Flight Vehicles and "Flying Cars" (Part 1 of 2)

Session Code: ATC705

Room Diamant   **Session Time:** 08:00

This session will address the development of personal transportation vehicles and components, focusing on CTOL and VTOL hybrid flight vehicles, roadable airplanes and flying cars. Required technologies, alternative system configurations, designs under development, prototype hardware, and in-flight performance of remote controlled models and full size prototypes will be presented.

Organizers - Denis Darracq, Airbus; Bruce Harman, Boeing Co.; Chester Nelson, Boeing Commercial Airplanes; Branko Sarh, Boeing

Chairpersons - Branko Sarh, Boeing

Time	Paper No.	Title
8:00 a.m.	ORAL ONLY	**Volantor - A Roadable Powered Lift Aircraft Employing Hybrid Powerplants**
		Paul S. Moller, Moller International
8:30 a.m.	ORAL ONLY	**Affordable Roadable Aircraft Design**
		Joseph Caravella, Caravella Aerospace
9:00 a.m.	2011-01-2696	**Seaplane Conceptual Design**
		Alan Leonel Canamar, Ladislav Smrcek, Univ. of Glasgow
9:30 a.m.	ORAL ONLY	**PAL-V: from roadable aircraft to flying car**
		Robert Dingemanse, Pal-V

Planned by Flight Sciences Committee / EMB Air and Space Group

Thursday, October 20

Flight Sciences - Hybrid Flight Vehicles and "Flying Cars" (Part 2 of 2)

Session Code: ATC705

Room Diamant   **Session Time:** 10:30

This session will address the development of personal transportation vehicles and components, focusing on CTOL and VTOL hybrid flight vehicles, roadable airplanes and flying cars. Required technologies, alternative system configurations, designs under development, prototype hardware, and in-flight performance of remote controlled models and full size prototypes will be presented.

Organizers - Denis Darracq, Airbus; Bruce Harman, Boeing Co.; Chester Nelson, Boeing Commercial Airplanes; Branko Sarh, Boeing

Chairpersons - Branko Sarh, Boeing

Time	Paper No.	Title
10:30 a.m.	2011-01-2697	**A Personal Plane Air Transportation System - The PPlane Project**
		Claude Le Tallec, Antoine Joulia, ONERA; Moshe Harel, Intergam Communications

11:00 a.m.	ORAL ONLY	**Advanced Flying Automobile: A Dual Mode Vehicle for Personal Transportation**
		Branko Sarh, Boeing
11:30 a.m.	ORAL ONLY	**Aerocar Transport System Design and Testing**
		Stefan Klein, Universitu of Bratislava; Ladislav Smrcek, Univ. of Glasgow
12:00 p.m.	ORAL ONLY	**From Concept to Flight: The Design, Development, and Testing of the Transition, a Street-Legal Aircraft**
		Samuel Schweighart, TERRAFUGIA

Planned by Flight Sciences Committee / EMB Air and Space Group

Thursday, October 20

Flight Sciences - Aircraft Design, Flight Dynamics, MDO (Part 1 of 4)

Session Code: ATC701

Room Diamant   **Session Time:**   13:30

This session deals with aircraft design, design methods, aircraft design software. Applied aerodynamics and stability and control to aircraft design. Structural design of aircraft. Propulsion and performance. Papers on new designs of any type of aircraft.

Organizers -   *Willem Anemaat, DARcorporation; Denis Darracq, Airbus; Chester Nelson, Boeing Commercial Airplanes*

Chairpersons -   *Willem Anemaat, DARcorporation (Design Analysis & Res); Denis Darracq, Airbus; Chester Nelson, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	2011-01-2572	**In-Flight Icing of UAVs - The Influence of Reynolds Number on the Ice Accretion Process**
		Krzysztof Szilder, Stuart McIlwain, National Research Council Canada
2:00 p.m.	2011-01-2763	**Flight Test Identification Methods for Loads Models and Applications**
		Hans-Gerd Giesseler, Airbus
2:30 p.m.	2011-01-2761	**Investigation of Multi-Disciplinary Optimisation for Aircraft Preliminary Design**
		Anne Gazaix, Pascal Gendre, Eric Chaput, Airbus; Christophe Blondeau, Gérald Carrier, Peter Schmollgruber, ONERA; Joel Brezillon, Thiemo Kier, DLR

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00197, and also individually. T purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

Thursday, October 20

Safety - Safety Education

Session Code: ATC1002

Room Diamant   **Session Time:**   15:30

This session will include presentation(s) on current industry practices/techniques in supporting safety analyses. Old and new tools and technology will be discussed in easy to understand terminology. Establishing confidence in safety assessments using a goal based approach, safety modeling of three phases of ARP4754, an example application of ARP4754A Aircraft System Development and using linked data to make sense of un-integrated data sets will be highlighted.

Organizers -   *John C. Dalton, Boeing Co.; Daniel J. Fogarty, Boeing Commercial Airplanes; Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
3:30 p.m.	*2011-01-2548*	***Model-Based Safety Assessment for the Three Stages of Refinement of the System Development Process in ARP4754A***

Christel Seguin, Pierre Bieber, ONERA; Eckard Boede, OFFIS; Marco Bozzano, Foundation Bruno Kessler; Matthias Bretschneider, Airbus; Antonella Cavallo, Alenia Aeronautica SpA; Johann Deneux, Prover Technology AB; Jean-Pierre Heckmann, EADS Apsys Defence & Security; Oleg Lisagor, University of York; Marion Morel, Thales; Chris Papadopoulos, Airbus; Laurent Sagaspe, APSYS; Valerie Sartor, Dassault Aviation; Rémi Delmas, ONERA

4:00 p.m.	*ORAL ONLY*	***Application of ARP 4754a "Aircraft System Development" and Interrelationships with ARP 4761 (Aerospace Information Report 6110)***

Daniel J. Fogarty, Boeing Commercial Airplanes

4:30 p.m.	*2011-01-2549*	***On the Synthesis and Validation of Safety Assessment Models***

Linling Sun, University of York; Chris Papadopoulos, Keval Mehta, Airbus; Tim Kelly, University of York; Jean-Pierre Heckmann, EADS Apsys Defence & Security; Diana Mulloy, Adrian Larkham, Atego

Planned by Safety Committee / EMB Air and Space Group

Thursday, October 20

Avionics - Advanced System Architectures and IMA (Part 2 of 3)

Session Code: *ATC402*

Room Guillaumet 1   *Session Time:*   *08:00*

The aim of this session is to present the latest development in aircraft avionics advanced system architectures and Integrated Modular Avionics, and provide information about Avionics Platforms including associated standards and surrounding development environments, looking at corresponding trends and challenges.

Organizers -   *Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes*

Chairpersons -   *Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes*

Time	Paper No.	Title
8:00 a.m.	*2011-01-2660*	***A Distributed Approach to File Management in IMA2G***

Silvia Larghi, Marco Villa, Michele Tumminelli, Maria Nogarino, Antonio Ottolia, Massimo Traversone, Selex Galileo

9:00 a.m.	*2011-01-2662*	***Braking Systems with New IMA Generation***

Stephane Bernard, Jean-Pierre Garcia, Messier-Bugatti-Dowty

9:30 a.m.	*ORAL ONLY*	***Integrated Modular Avionics in Airbus***

Pierre Gabrilot, Airbus

Planned by Avionics Committee / EMB Air and Space Group

Thursday, October 20

Avionics - Aircraft Networks (Part 1 of 2)

Session Code: *ATC403*

Room Guillaumet 1   *Session Time:*   *10:30*

The aim of this session is to present the latest developments in aircraft networks and provide information on network standards, physical layers, avionics applications and the role of network infrastructure in system design.

Organizers -   *Michael Paulitsch, EADS; David Zika, Boeing Co.*

Chairpersons -   *Michael Paulitsch, EADS; David Zika, Boeing Co.*

Time	Paper No.	Title
10:30 a.m.	*ORAL ONLY*	***Time-Triggered Networks: Standardization and Future Outlook*** *Mirko Jakovljevic, TTTech. Computertechnik AG*
11:00 a.m.	*2011-01-2752*	***A Robust Physical Layer for Aircraft Data Networks Based on MIL-STD-1553*** *Michael Hegarty, Data Device Corporation*
11:30 a.m.	*2011-01-2751*	***Optimal Scheduling and Delay Analysis for AFDX End-Systems*** *Melhem Tawk, Ecole Polytechnique de Montreal; Xue Liu, McGill University; Li Jian, Shanghai Jiao Tong University; Guchuan Zhu, Ecole polytechnique de Montreal; Yvon Savaria, Ecole Polytechnique de Montreal; Fei Hu, Shanghai Jiao Tong University*
12:00 p.m.	*ORAL ONLY*	***Deterministic Ethernet in Critical Embedded Applications*** *Mirko Jakovljevic, TTTech. Computertechnik AG*

Planned by Avionics Committee / EMB Air and Space Group

Thursday, October 20

Avionics - Aircraft Networks (Part 2 of 2)

Session Code: **ATC403**

Room Guillaumet 1   **Session Time:**   **13:30**

The aim of this session is to present the latest developments in aircraft networks and provide information on network standards, physical layers, avionics applications and the role of network infrastructure in system design.

Organizers -   *Michael Paulitsch, EADS; David Zika, Boeing Co.*

Chairpersons -   *Michael Paulitsch, EADS; David Zika, Boeing Co.*

Time	Paper No.	Title
1:30 p.m.	*ORAL ONLY*	***Enabling New Optical Fiber Applications in Avionics Networks*** *Bruno Huttner, Luciol Instruments*
2:00 p.m.	*ORAL ONLY*	***Review of Updated Aerospace Recommended Practices ARP5061A, "Guidelines for Testing and Support of Aerospace, Fiber Optic, Inter-Connect Systems"*** *David Zika, Boeing Co.*
2:30 p.m.	*2011-01-2768* *ORAL ONLY*	***Corning Specialty Optical Fibers for Elevated Temperature Applications*** *Valery A. Kozlov, Corning Inc.*

Planned by Avionics Committee / EMB Air and Space Group

Thursday, October 20

Avionics - Advanced System Architectures and IMA (Part 3 of 3)

Session Code: **ATC402**

Room Guillaumet 1   *Session Time:*   *15:30*

The aim of this session is to present the latest development in aircraft avionics advanced system architectures and Integrated Modular Avionics, and provide information about Avionics Platforms including associated standards and surrounding development environments, looking at corresponding trends and challenges.

Organizers -   *Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes*

Chairpersons -   *Pierre Gabrilot, Airbus; Bob Yeh, Boeing Commercial Airplanes*

Time	*Paper No.*	*Title*
3:30 p.m.	*ORAL ONLY*	***Handling Next Generation Integrated Modular Avionics: A generic Platform Services Architecture***
		Laurent Bardet, Thales Avionics
4:00 p.m.	*2011-01-2698*	***Sensor Video Integration and Processing in the Modular Avionics Architecture***
		Hans Brandtberg, Saab Avionics Division
4:30 p.m.	*2011-01-2699*	***Audio/Video and Hard Real-Time Capability for Advanced IMA Architectures***
		Mirko Jakovljevic, TTTech. Computertechnik AG
5:00 p.m.	*ORAL ONLY*	***Transmissions in Aircraft on Unique Path wires: An Aeronautic European Research Project***
		Sebastien Kim, Safran Engineering Services

Planned by Avionics Committee / EMB Air and Space Group

Thursday, October 20

Integrated Vehicle Health Management - Structural Health Monitoring

Session Code: *ATC811*

Room Guillaumet 2   *Session Time:*   *08:00*

This session will describe the life-safety and/or economic justification for performing the SHM, how damage is defined for the system being investigated and, for multiple damage possibilities, which cases are of the most concern, the conditions, both operational and environmental, under which the system to be monitored functions and the limitations on acquiring data in the operational environment.

Organizers -   *George Nicholas Bullen, Smart Blades Inc.; Ramesh Kolar, Naval Postgraduate School*

Chairpersons -   *George Nicholas Bullen, Smart Blades Inc.; Ramesh Kolar, Naval Postgraduate School*

Time	*Paper No.*	*Title*
8:00 a.m.	~~*2011-01-2605*~~ *ORAL ONLY*	***Quantification of SHM Technology based on Technology Classification Levels***
		Fu-Kuo Chang, Stanford Univ.
8:30 a.m.	*ORAL ONLY*	***Smart Composite Wind Turbine Blades (SCWTB)***
		George Nicholas Bullen, Smart Blades Inc.
9:00 a.m.	*2011-01-2714*	***Smart Monitoring System for Aircraft Structures***
		Vincent Rouet, EADS France - Innovation Works; Bruno Foucher, EADS
	2011-01-2715	***A Fastener Analysis Addressing Various Types of Misfit and an Innovative Simple Design Solution - Part-II Monitoring the Joints for a Crack (Written Only -- No Oral Presentation)***
		Vailore Anandan, Goodrich Aerostructures Group

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Integrated Vehicle Health Management - Component Level Health Monitoring (Part 2 of 2)

Session Code: **ATC1700**

Room Guillaumet 2   *Session Time:*   **10:30**

The analytical heart of an IVHM system demands identification of the component or sub-system in which a fault has occurred (diagnosis) and/or the prediction of the remaining useful life of these elements (prognosis).

Organizers -   *Richard W. Greaves, Meggitt PLC; Ian Jennions, Cranfield Univ.; Michael J. Roemer, Impact Technologies LLC; Rhonda D. Walthall, Hamilton Sundstrand*

Chairpersons -   *Richard W. Greaves, Meggitt PLC; Chris Pomfret, Treble One Aerospace Consulting*

Time	Paper No.	Title
10:30 a.m.	2011-01-2701	**Challenges for Health Monitoring of Electromechanical Flight Control Actuation Systems** *Hannes Wagner, Galin Nikolov, Andreas Bierig, Holger Spangenberg, German Aerospace Center*
11:00 a.m.	2011-01-2704	**Certification of Engine Health Management Systems: Guidelines for Selecting Software Assurance Levels** *Ravi Rajamani, Meggitt PLC; Nicholas Waters, Rolls-Royce PLC*

Planned by Integrated Vehicle Health Management Committee / EMB Air and Space Group

Avionics - System Testing, Integration and Simulation

Session Code: **ATC410**

Room Guillaumet 2   *Session Time:*   **13:30**

Presentation of activities related to system integration and testing within aeronautical industrie.
Current work regarding physical but also virtual testing contributing to system or aircraft development and certification will be presented.

Organizers -   *Thomas Krueger, Jean-Jacques Toumazet, Airbus*

Chairpersons -   *Thomas Krueger, Airbus*

Time	Paper No.	Title
1:30 p.m.	2011-01-2753	**The CHARTS Project: An innovation Matrix** *Nicolas Belanger, Eurocopter Group; George Afonso, EADS France*
2:00 p.m.	ORAL ONLY	**Remote Testing, Sylvain Delrieu, Airbus Operations SAS** *Sylvain Delrieu, Airbus*
2:30 p.m.	2011-01-2754	**Virtual Testing for High Lift Systems** *Tobias Ulmer, Airbus*

Planned by Avionics Committee / EMB Air and Space Group

Avionics - Software Avionics Platforms

Session Code: **ATC412**

Room Guillaumet 2   *Session Time:*   **15:30**

The aim of this session is to look at different base software platforms and RTOS used to run avionics applications. It will explore different Operating System requirements such as ARINC 653, and look at how these requirements can be used to developing both Federated and Integrated Modular Avionics applications. The session will also cover how these platforms can support advanced processors, such as multicore devices.

Organizers -   Patrick Rigot, Airbus; Alex Wilson, Wind River

Chairpersons -   Patrick Rigot, Airbus; Alex Wilson, Wind River

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**Multicores and Critical Systems: Challenges for Temporal Analysability** *Pascal Sainrat, Université de Toulouse*
4:00 p.m.	ORAL ONLY	**Certifiable MultiCore Systems used in Safety Critical System** *Joachim Hampp, Wind River*
4:30 p.m.	ORAL ONLY	**Applying Critical-System Java to the Challenges of SMP Platforms** *Kelvin Nilsen, Atego*
5:00 p.m.	ORAL ONLY	**How to Address the Existing and Future Requirements of ASFC: The Safe and Secure Virtualization RTOS Approach** *José Almeida, Sysgo*
5:30 p.m.	ORAL ONLY	**Safety Critical Uses of Java** *Kelvin Nilsen, Atego*

Planned by Avionics Committee / EMB Air and Space Group

Thursday, October 20

Auto Fastening / Assembly & Tooling (AeroFast) - Assembly Methodolgies & Advanced Assembly Fixtures and Tooling (Part 2 of 2)

Session Code: ATC205

Room Saint Exupery Auditorium   **Session Time:**   08:00

This session deals with new and advanced methods of assembly for structures. Topics could include determinant assembly, jigless assembly, automated positioning, moving assembly lines and right sized portable drilling and fastening equipment

Organizers -   Clayton L. Munk, Boeing; Philip Webb, Cranfield Univ

Chairpersons -   Philip Webb, Cranfield Univ

Time	Paper No.	Title
8:00 a.m.	2011-01-2637	**Positioning System for the Aircraft Structural Assembly** *Taoufik Mbarek, Alexander Meissner, Nihat Biyiklioglu, Dürr Systems GmbH*
8:30 a.m.	2011-01-2638	**Development of Modular Low Cost Automation Systems for Aircraft Assembly** *Rainer Müller, Martin Esser, RWTH Aachen, WZL; Taoufik Mbarek, Nihat Biyiklioglu, Dürr Systems GmbH; Stefan Quinders, RWTH Aachen, WZL*
9:00 a.m.	2011-01-2639	**Flexible Tooling for Wing Box Rib Clamping and Drilling** *Nirosh Jayaweera, Otto Jan Bakker, Tony Smith, Atanas Popov, Svetan Ratchev, University of Nottingham; Andrew Turnock, Hyde Group Limited; Peter Helgosson, DELFOi; David Tomlinson, Jon Wright, Mark Summers, Airbus*
9:30 a.m.	2011-01-2640	**Interface Management in Wing-Box Assembly** *Benjamin Chouvion, Atanas Popov, Svetan Ratchev, Univ. of Nottingham; Carl Mason, Mark Summers, Airbus*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00194, and also individually. T purchase visit collections.sae.org

Thursday, October 20

Auto Fastening / Assembly & Tooling (AeroFast) - Advanced Portable Tools

Session Code: ATC201

Room Saint Exupery Auditorium ***Session Time:*** **10:30**

This technical session explores the advancements of robotic and other portable drilling and fastening technologies. Presentations detail the various technologies as well as the methodologies used and challenges faced during their implementation in aerospace manufacturing. Examples of usage of the robotic and other advancements in technologies for portable drilling and fastening in aerospace manufacturing will be shared along with their productivity gains and improvement of product quality

Organizers - *Sylvain Guerin, Advanced Automation Corp; Benoit Marguet, Airbus*

Chairpersons - *Sylvain Guerin, Advanced Automation Corp.*

Time	*Paper No.*	*Title*
10:30 a.m.	*2011-01-2666*	***Pneumatic Adaptive Drilling***
		Kevin W. Myhill, Apex Tool Group
11:00 a.m.	*2011-01-2668*	***Optimization Methods for Portable Automation Equipment Utilizing Motion Tracking Technology***
		Eric M. Reid, Boeing Co.; Alan Merkley, Boeing Co
11:30 a.m.	*ORAL ONLY*	***Benefits of a Hybrid Fastening System for Enhanced Manual Installations***
		Steven Keener, Boeing Co.

Planned by AeroFast International Committee / EMB Air and Space Group

Thursday, October 20

Auto Fastening / Assembly & Tooling (AeroFast) - Discussions In New Automation & Automated Fastening Technologies (Part 1 of 2)

Session Code: ATC202

Room Saint Exupery Auditorium ***Session Time:*** **13:00**

This session is dedicated to the advancements in automation in the fields of drilling and fastening applications. In recent years tremendous improvement has been achieved in these fields as new system concepts such as 6-axis anthropomorphic robots, crawler robots, and Parallel Kinematic Machines. This session also includes innovative end-effectors including orbital drilling, vision systems, and fastener installation and new system architecture.

Organizers - *Anthony Goddard, GEMCOR; Benoit Marguet, Airbus*

Chairpersons - *Anthony S. Goddard, GEMCOR*

Time	*Paper No.*	*Title*
1:00 p.m.	*ORAL ONLY*	***Programming and Simulating Automatic Drilling and Fastening Machines***
		Bill Hasenjaeger, CGTech.; Mustapha Chahid, CGTech. SARL
1:30 p.m.	~~*2011-01-2705*~~ *ORAL ONLY*	***4-Axis Longitudinal Flextrack System with Fastener Installation***
		Jason McGahey, Advanced Integration Technology

2:00 p.m.	2011-01-2706	*Numerical and Experimental Investigation of the Mechanical Properties of Riveted Joints Considering the Installation Process*
		Samuel Baha II, Stephan Marzi, Olaf Hesebeck, Oliver Klapp, Fraunhofer IFAM
2:30 p.m.	2011-01-2707	*Technical Improvements to the ASAT2 Boeing 777 Spar Assembly Cell*
		Scott Hogan, Paul Haworth, Jason Rediger, Electroimpact Inc; Richard Wilkes, Boeing

Planned by AeroFast International Committee / EMB Air and Space Group

Thursday, October 20

Auto Fastening / Assembly & Tooling (AeroFast) - Discussions In New Automation & Automated Fastening Technologies (Part 2 of 2)

Session Code: ATC202

Room Saint Exupery Auditorium   **Session Time:**   15:30

This session is dedicated to the advancements in automation in the fields of drilling and fastening applications. In recent years tremendous improvement has been achieved in these fields as new system concepts such as 6-axis anthropomorphic robots, crawler robots, and Parallel Kinematic Machines. This session also includes innovative end-effectors including orbital drilling, vision systems, and fastener installation and new system architecture.

Organizers -   *Anthony Goddard, GEMCOR; Benoit Marguet, Airbus*

Chairpersons -   *Anthony S. Goddard, GEMCOR*

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	*Multi-Function Flex Track*
		Paul Thompson, Electroimpact Inc.; John Inman, Boeing Co
4:00 p.m.	2011-01-2771	*Versatile NC Part Programs for Automated Fastening Systems in Pulsed Assembly Lines*
		Christian Hein, BRÖTJE-Automation GmbH; Henning Schneider, Airbus
4:30 p.m.	2011-01-2773	*Automatic Bolt Feeding on a Multifunction Flextrack*
		Cosmos Krejci, Electroimpact Inc.; Jeff Westley, Electroimpact Inc
5:00 p.m.	2011-01-2775	*Electromagnetic Bolt Inserter*
		Jarrod Wallace, Electroimpact Inc.
5:30 p.m.	2011-01-2772	*Software Complex for Riveting Process Simulation*
		Alexander Smirnov, St Petersburg Politechnic Univ.; Sergey Lupuleac, St. Petersburg Politechnic Univ.; Olga Rodionova, Vladislav Shubnikov, St Petersburg Politechnic Univ.; Bertrand Bretagnol, Airbus

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Planned by AeroFast International Committee / EMB Air and Space Group

Thursday, October 20

Aerospace Operations - Aerospace Modeling & Simulation (Part 2 of 2)

Session Code: ATC100

Room Salle de Presse Mermoz   **Session Time:**   08:00

The future of the Aerospace Operations requires the development of new technologies and concepts, and the capability to integrate complex systems to satisfy the needs of future aerospace operations. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with new insights of future concept elements and new technologies in aerospace operations.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida

Time	Paper No.	Title
8:00 a.m.	**2011-01-2641**	**Compensation Force CFD Analysis of Pressure Regulating Valve Applied in FMU of Engine and System Controls**
		William W. Ni, Steven Heitz, Daniel Bartholme, Michael Cass, Hamilton Sundstrand
8:30 a.m.	~~**2011-01-2642**~~	**Cockpit Vibration Response Analysis in Turbulence**
	ORAL ONLY	Nicky Aversa, Airbus
9:00 a.m.	**2011-01-2644**	**The Fuselage Trainer for Integrated Training of Military Airlift Aircraft Crews - From Design to Certification. Past Experience and Future Applications.**
		Marco Mazzucco, ALTAIR consortium; Marco Pecori, ALTAIR
9:30 a.m.	**2011-01-2643**	**Ground and Range Operations for a Heavy-Lift Vehicle: Preliminary Thoughts**
		Luis Rabelo, University of Central Florida; Jorge Bardina, NASA Ames Research Center; Yanshen Zhu, University of Central Florida; Jeppie Compton, NASA Kennedy Space Center

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00193, and also individually. T purchase visit collections.sae.org

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Thursday, October 20

Aerospace Operations - Airspace Systems Operations (Part 1of 3)

Session Code: **ATC102**

Room Salle de Presse Mermoz   **Session Time:**   **10:30**

The future of Airspace Systems Operations requires research, development and integration of new concept elements to satisfy the increase in air traffic demand, safety and efficiency of complex airspace systems. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with air traffic flow management and advanced airspace systems analysis and operations.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida

Time	Paper No.	Title
10:30 a.m.	**ORAL ONLY**	**The "GAIA Virtual Sky", A Cooperative Tool for Realistic ATM System Simulation**
		Fabrice Candia, Airbus
11:00 a.m.	**ORAL ONLY**	**Airbus Airport Surface Operation Roadmap**
		Pierre Depape, Airbus
11:30 a.m.	**2011-01-2716**	**NASA System-Level Design, Analysis and Simulation Tools Research on NextGen**
		Jorge Bardina, NASA Ames Research Center

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Aerospace Operations - Airspace Systems Operations (Part 2 of 3)

Session Code: ATC102

Room Salle de Presse Mermoz   **Session Time:**   13:30

The future of Airspace Systems Operations requires research, development and integration of new concept elements to satisfy the increase in air traffic demand, safety and efficiency of complex airspace systems. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with air traffic flow management and advanced airspace systems analysis and operations.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	**Global Interoperability Needs in ATM and Related Systems Aspects** *Gilles Grenier, Airbus*
2:00 p.m.	ORAL ONLY	**The 4D Trajectory Paradigm** *Patrick Lelievre, Airbus*
2:30 p.m.	2011-01-2680	**Modeling Weather Impact on Ground Delay Programs** *Yao Wang, Deepak Kulkarni, NASA Ames Research Center*

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Aerospace Operations - Airspace Systems Operations (Part 3 of 3)

Session Code: ATC102

Room Salle de Presse Mermoz   **Session Time:**   15:30

The future of Airspace Systems Operations requires research, development and integration of new concept elements to satisfy the increase in air traffic demand, safety and efficiency of complex airspace systems. These sessions will provide a forum for international discussion and information on leading-edge research and developments associated with air traffic flow management and advanced airspace systems analysis and operations.

Organizers -   Jorge Bardina, NASA Ames Research Center; Andre Bourdais, Airbus; Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida; Rajkumar Thirmalainambi, RIAEX Inc.

Chairpersons -   Guillaume Brat, NASA; Luis Rabelo, Univ. of Central Florida

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**Airborne Separation Assistance in the Future ATM** *Patrick Lelievre, Airbus*
4:00 p.m.	ORAL ONLY	**RNP on A350, New Functions and Systems Architecture** *Jean Damien Perrie, Airbus*
4:30 p.m.	2011-01-2708	**Spatio-Temporal Prediction of METAR Data for Continental United States** *Rajkumar Thirumalainambi, RIAEX Inc.*
5:00 p.m.	2011-01-2709	**A Cockpit Point of View on "Human Factors" for a Changing ATM Environment** *Sonja Straussberger, Florence Reuzeau, Airbus*

Planned by Man-Machine Interface Committee / EMB Air and Space Group

Thursday, October 20

Power Systems - Commercial Power Systems

Session Code: ATC1202

Room Spot   *Session Time:*   08:00

This session shall include topics related to commercial aircraft and unmanned vehicles electrical power generation, power management/power distribution, control & protection corona and arc fault detection, power conversion/conditioning, fuel cells, energy storage ¿ batteries/ultracapacitors, and other related issues. New commercial aircraft are considering the use of DC and Variable Frequency AC power distribution to accomodate future more electric power demands.

Organizers -   Joseph S. Breit, Boeing; Christian Donadille, Airbus; John Nairus, US Air Force; Farhad Nozari, Boeing Commercial Airplanes

Chairpersons -   Farhad Nozari, Boeing Commercial Airplanes

Time	*Paper No.*	*Title*
8:00 a.m.	*2011-01-2646*	*A Methodology for Rapid Evaluation and Sizing of Fuel Cell System Architectures for Commercial Aircraft*
		Hauke Peer Lüdders, Jan Grymlas, Enno Vredenborg, Frank Thielecke, Hamburg University of Technology
8:30 a.m.	*2011-01-2645*	*Modeling and Simulation Enabled UAV Electrical Power System Design*
		Steven David Angus Fletcher, Patrick Norman, Stuart Galloway, Puran Rakhra, Graeme Burt, Univ. of Strathclyde; Vince Lowe, Rolls-Royce plc
9:00 a.m.	*ORAL ONLY*	*Using Combined Heat and Power from Fuel Cells for Airplane Galley Power*
		Joseph S. Breit, Boeing

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, October 20

Power Systems - Systems Integration: Optimized Vehicle Energy Use (Part 1 of 2)

Session Code: ATC1203

Room Spot   *Session Time:*   10:30

This session aims to bring together perspectives, highlighting past and future research efforts in the integration of more electric aircraft systems.   It is intended to discuss the importance of energy optimization at the vehicle level when designing integrated aircraft systems. This vehicle level optimization is critical when defining future military and commercial more electric aircraft applications. This session intends to include both airframer and aircraft systems supplier perspectives.

Organizers -   Christian Donadille, Airbus; Caio Ferreira, Parker Hannifin Corp.; John Nairus, US Air Force

Chairpersons -   Christian Donadille, Airbus

Time	*Paper No.*	*Title*
10:30 a.m.	*2011-01-2669*	*A New Approach Based on Statistical Modeling of Electrical Consumption for Electrical Generator Demand Estimation*
		Geoffroy Roblot, Cédric Baumann, Airbus; Patrick Guerin, Ireena
11:00 a.m.	*2011-01-2671*	*System-Level Behavioral Black-Box Modeling of DC-DC Converters for the More-Electric-Aircraft Based on Time Domain Measurements*
		Virgilio Valdivia, Andres Barrado, Antonio Lazaro, Pablo Zumel, Cristina Fernandez, Carlos III University of Madrid

| 11:30 a.m. | 2011-01-2670 | **System-Level Behavioral Black-Box Modeling of Three-Phase DCAC Converters for the More-Electric-Aircraft** |
| | | *Virgilio Valdivia, Antonio Lazaro, Andres Barrado, Pablo Zumel, Cristina Fernandez, Marina Sanz, Carlos III University of Madrid* |

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00200, and also individually. T purchase visit collections.sae.org

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, October 20

Power Systems - Systems Integration: Optimized Vehicle Energy Use (Part 2 of 2)

Session Code: ATC1203

Room Spot   *Session Time:*   13:30

This session aims to bring together perspectives, highlighting past and future research efforts in the integration of more electric aircraft systems.   It is intended to discuss the importance of energy optimization at the vehicle level when designing integrated aircraft systems. This vehicle level optimization is critical when defining future military and commercial more electric aircraft applications. This session intends to include both airframer and aircraft systems supplier perspectives.

Organizers -   *Christian Donadille, Airbus; Caio Ferreira, Parker Hannifin Corp.; John Nairus, US Air Force*

Chairpersons -   *Caio Alexandre Ferreira, Parker Hannifin Corporation*

Time	Paper No.	Title
1:30 p.m.	ORAL ONLY	**Energy Optimized Aircraft Modeling, Simulation, and Analysis**
		Peter Lamm, US Air Force; Tim C. O'Connell, PC Krause and Associates, Inc.; Jon Zumberge, AFRL; Eric A. Walters, PC Krause and Associates, Inc.; Michael Corbett, Mitch Wolff, AFRL; Kevin McCarthy, PC Krause and Associates, Inc.; Steven Iden, US Air Force; Mark Bodie, Gregory Russell, PC Krause and Associates, Inc.
2:00 p.m.	2011-01-2682	**Characterisation of a UAV Electric Architecture and Power Demand Profile for the Purposes of Improving Overall System Efficiency and Performance**
		Tom Owen, EADS UK, Ltd. Innovation Works
2:30 p.m.	2011-01-2683	**Elucidation of Aircraft Energy Use Through Time-Variant Exergy Analysis**
		Frederick Berg, Martin Balchin, Patrick Keogh, University of Bath

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, October 20

Vehicle Systems Architecture and Control Law Augmentation - Vehicle System Fault Detection Isolation and Recovery (FDIR)

Session Code: ATC1404

Room Spot   *Session Time:*   15:30

Fault Detection Isolation and Recovery (FDIR) is a major component of a vehicle system design. Rarely broached in the literature, early and robust detection of small amplitude faults also impacts the sustainability of aerospace systems.
This session will present new developments in the FDIR area with a special emphasis on the future sustainable aircraft (greener, smarter, quieter and more affordable) for satisfying the newer societal imperatives towards environmentally-friendlier vehicles.

Organizers -   *Lars Fucke, Boeing; Philippe Goupil, Airbus; Kioumars Najmabadi, Boeing Co.*

Chairpersons -   *Philippe Goupil, Airbus; Lars Fucke, Boeing*

Time	Paper No.	Title
3:30 p.m.	2011-01-2804	**Advanced Diagnosis for Sustainable Flight Guidance and Control: The European ADDSAFE Project**
		Philippe Goupil, Airbus; Andres Marcos, Deimos Space
4:00 p.m.	2011-01-2803	**A Model-based Solution to Robust and Early Detection of Control Surface Runaways**
		Ali Zolghadri, Anca Gheorghe, Jérôme Cieslak, David Henry, IMS; Philippe Goupil, Rémy Dayre, Hervé Le Berre, Airbus
4:30 p.m.	2011-01-2801	**Flight Parameter Estimation for Augmented Flight Control System Autonomy**
		Florian Cazes, Airbus; Corinne Mailhes, Marie Chabert, INPT-ENSEEIHT; Philippe Goupil, Rémy Dayre, Hervé Le Berre, Airbus
5:00 p.m.	2011-01-2802	**Evaluation of Sliding Mode Observers for Fault Reconstruction on the ADDSAFE Functional Engineering Simulator**
		Halim Alwi, Christopher Edwards, University of Leicester

Planned by Aerospace Vehicle Systems Committee / EMB Air and Space Group

Friday, October 21

Unmanned Aerial Systems - Materials, Structures and Manufacturing

Session Code: ATC1104

Room Argos   *Session Time:*   08:00

This session discusses manufacturing aspects related to unmanned aerial vehicle systems. Full and prototype scales and their testing are considered along with development of the manufacturing tools specific of UAV. Verification of manufacturing methodologies and process capabilities are addresses. Less expensive and faster manufacturing methods using rapid prototyping technology are of interest.

Organizers -   Enrico Cestino; Piergiovanni Marzocca, Clarkson Univ.; Michele Trancossi, Universita' di Modena e Reggio Emilia

Chairpersons -   Enrico Cestino, Politecnico di Torino; Michele Trancossi, Universita' di Modena e Reggio Emilia

Time	Paper No.	Title
8:00 a.m.	2011-01-2721	**Design, Manufacturing, and Testing of a Research Unmanned Aerial Vehicle**
		Jordan Janas, Piergiovanni Marzocca, Daniel Valyou, Matthew Abell, Clarkson University
8:30 a.m.	2011-01-2720	**Non-Linear Dynamic Loads Due to the Landing Impact of a Joined-Wing UAV**
		Nicola Paletta, Marika Belardo, Luigi Di Palma, CIRA
9:00 a.m.	2011-01-2722	**Theoretical and Experimental Flutter Predictions in High Aspect Ratio Composite Wings**
		Enrico Cestino, Giacomo Frulla, Edoardo Perotto, Politecnico di Torino; Piergiovanni Marzocca, Clarkson Univ
9:30 a.m.	2011-01-2723	**Rotary Friction Welding Thermal Prediction Model**
		Michele Trancossi, Antonio Dumas, Universita' di Modena e Reggio Emilia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00203, and also individually. T purchase visit collections.sae.org

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Unmanned Aerial Systems - Guidance, Navigation and Control

Session Code: **ATC1105**

Room Argos   *Session Time:*   **10:30**

This session covers autopilot architectural design, stability analysis, control laws, control modes, testing, simulation, flight routes planning and validation. It also covers navigation equipment, including navigators and inertial measuring units, architecture and quality measurement. This topic also involves redundancy management covering decision trees leading to fault detection, isolation and signal voting.

Organizers -   Kahtan Awni, Consultant; Richard Garcia, Motile Robotics, Inc.; Piergiovanni Marzocca, Clarkson Univ.

Chairpersons -   Richard Garcia, Army Research Institute; Piergiovanni Marzocca, Clarkson University

Time	*Paper No.*	*Title*
10:30 a.m.	*2011-01-2735*	***Experimental Methods for the Characterization of the Static and Dynamic Stability of a Spinning Body***
		Daniel N. Valyou, Piergiovanni Marzocca, Clarkson University; Leon Manole, Wilfredo Toledo, US Army
11:00 a.m.	*2011-01-2736*	***Airship Autopilot Design***
		Viacheslav Pshikhopov, Mikhail Medvedev, Vladimir Kostjukov, Roman Fedorenko, Boris Gurenko, Victor Krukhmalev, Southern Federal University
11:30 a.m.	*2011-01-2737*	***A.C.H.E.O.N.: Aerial Coanda High Efficiency Orienting-jet Nozzle***
		Michele Trancossi, Antonio Dumas, Universita' di Modena e Reggio Emilia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00203, and also individually. T purchase visit collections.sae.org

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Unmanned Aerial Systems - Flight Sciences (Part 1 of 2)

Session Code: **ATC1101**

Room Argos   *Session Time:*   **13:30**

This session will cover all aspects of flight sciences relevant to UAV applications. Topics include, but not limited to, unmanned vehicle technologies; aerodynamics including low speed aerodynamics, computational fluid dynamics, flow control, and aerodynamic design and optimization; UAV performance; dynamics and control of UAVs including rigid body and aeroelastic modeling, analysis, control and simulation; control actuators and sensors; design through modelling, testing and measurements.

Organizers -   Wolfgang Luber, EADS; Piergiovanni Marzocca, Clarkson Univ.; Ilhan Tuzcu, California State Univ.

Chairpersons -   Piergiovanni Marzocca, Clarkson University

Time	*Paper No.*	*Title*
1:30 p.m.	*2011-01-2784*	***MAAT Cruiser/Feeder Project: Criticalities and Solution Guidelines***
		Antonio Dumas, Mauro Madonia, Universita' di Modena e Reggio Emilia; Ilaria Giuliani, Universita di Modena e Reggio Emilia; Michele Trancossi, Universita' di Modena e Reggio Emilia
2:00 p.m.	*2011-01-2782*	***A Comparison of Wing Stowing Designs Focused on Increased Continuous Payload Volume for Projectile Applications***
		Robert F. Minehart, Patrick Browning, Jay Wilhelm, Shanti Hamburg, Mridul Gautam, Wade Huebsch, West Virginia Univ.
2:30 p.m.	*2011-01-2785*	***Flutter Initiation Under Steady - State and Accelerated Free Stream Velocities***
		Harry H. Hilton

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Friday, October 21

Unmanned Aerial Systems - Flight Sciences (Part 2 of 2)

Session Code: ATC1101

Room Argos **Session Time:** 15:30

This session will cover all aspects of flight sciences relevant to UAV applications. Topics include, but not limited to, unmanned vehicle technologies; aerodynamics including low speed aerodynamics, computational fluid dynamics, flow control, and aerodynamic design and optimization; UAV performance; dynamics and control of UAVs including rigid body and aeroelastic modeling, analysis, control and simulation; control actuators and sensors; design through modelling, testing and measurements.

Organizers - *Wolfgang Luber, EADS Airbus GmbH; Piergiovanni Marzocca, Clarkson Univ.; Ilhan Tuzcu, California State Univ.*

Chairpersons - *Piergiovanni Marzocca, Clarkson University*

Time	Paper No.	Title
3:30 p.m.	*2011-01-2786*	**Multibody Advanced Airship for Transport**
		Antonio Dumas, Michele Trancossi, Mauro Madonia, Ilaria Giuliani, Universita' di Modena e Reggio Emilia
4:00 p.m.	*2011-01-2787*	**Passive Attitude Control for Discoid Aerial Vehicles**
		Antonio Dumas, Michele Trancossi, Universita' di Modena e Reggio Emilia
	2011-01-2783	**Stability Prediction of a UAV (Written Only -- No Oral Presentation)**
		Ilhan Tuzcu, California State Univ.; Kahtan Awni, Consultant; Javier Gonzalez-Rocha, California State Univ.

Planned by Unmanned Aerial Systems Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Metrology Automated Systems

Session Code: ATC807

Room Ariane 1 **Session Time:** 08:00

Metrology and automation control system developments have progressed significantly in recent years. This session will present and discuss the application and potential applications of these systems in aerospace manufacture. It features system developments in metrology for machine control, accuracy enhancement and system performance evaluation to meet the demands of new aircraft programs.

Organizers - *Phil Crothers, Boeing Research & Technology; Roger Holden, Metris UK; Jeffrey Morgan, Boeing; Todd Szallay, Northrop Grumman Corp.*

Chairpersons - *Todd Szallay, Northrop Grumman Corp.*

Time	Paper No.	Title
8:00 a.m.	*ORAL ONLY*	**Innovative Metrology Integrated Robot Cell "for Machining 4" Stainless Steel in the Manufacture of Nuclear Reaction Chambers**
		David Stoddart, Nuclear AMRC; Roger Holden, Nikon Metrology UK Ltd

Time	Paper No.	Title
8:30 a.m.	ORAL ONLY	**Robotic Drill and Trim of Composite Parts, with Integrated Metrology**
		Jesus Bahillo, Ingemat S A; JR Musselman, Wright Industries Inc.; Roger Holden, Nikon Metrology UK Ltd
9:00 a.m.	2011-01-2780	**Synthesizing Metrology Technologies to Reduce Engineering Time for Large CNC Machine Compensation**
		Robert Flynn, Electroimpact Inc.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Lean Manufacturing, Six Sigma & Supply Chain (Part 1 of 2)

Session Code: ATC802

Room Ariane 1   *Session Time:*   10:30

This session will address the use of Lean Tools and Techniques in aerospace manufacturing. Attendees will also hear case-studies on Lean Implementation and the application of the hybrid technique of Lean Six Sigma in the aerospace industry. Lastly, this session will address the issues of Supply Chain (the 4 Ws) and the Dynamics of Supply Chain that are involved when dealing in a global manufacturing environment.

Organizers -   Benny J. Leppert, Jeffrey Morgan, Boeing; Kevin G. Sweeney, Boeing Commercial Airplanes; Bernard Ribere, Aerolia

Chairpersons -   Bernard Pierre RIBERE, Aerolia; Kevin Sweeney, Boeing Commercial Airplanes

Time	Paper No.	Title
10:30 a.m.	2011-01-2656	**Augmented Reality and Other Visualization Technologies for Manufacturing in Boeing**
		Paul Davies, Lorrie Sivich, Boeing
11:00 a.m.	ORAL ONLY	**Successful Transformation of Existing Cultures and the Parallels to the Toyota Transplant Approach into North America**
		Jerell Smith, Boeing Commercial Airplanes
11:30 a.m.	ORAL ONLY	**The Power of Collaboration : "Lean Manufacturing" Latecoere's New Way of Thinking**
		Audrey Bessac, Latecoere Lean Enterprise Office

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Lean Manufacturing, Six Sigma & Supply Chain (Part 2 of 2)

Session Code: ATC802

Room Ariane 1   *Session Time:*   13:30

This session will address the use of Lean Tools and Techniques in aerospace manufacturing. Attendees will also hear case-studies on Lean Implementation and the application of the hybrid technique of Lean Six Sigma in the aerospace industry. Lastly this session will address the issues of Supply Chain (the 4 Ws) and the Dynamics of Supply Chain that are involved when dealing in a global manufacturing environment.

Organizers -   Jeffrey Morgan, Boeing; Kevin G. Sweeney, Boeing Commercial Airplanes; Bernard Ribere, Aerolia

Chairpersons -   Bernard Pierre RIBERE, Aerolia; Kevin Sweeney, Boeing Commercial Airplanes

Time	Paper No.	Title

1:30 p.m.	*2011-01-2657*	***Risk vs. Impact Analysis Applied to Aeronautical Suppliers: From Qualitative to Quantitative Approach***
		Francesco Feminella, Alenia Aeronautica; Marco Dell'Osso, Simmel Difesa Spa
2:00 p.m.	*ORAL ONLY*	***Design to Win***
		David D. Foreman, Design Profit Inc.

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

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Friday, October 21

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Environment - Energy/Alternate Fuels

Session Code: ATC602

Room Ariane 2   ***Session Time:***   08:00

Research and development efforts that enable the use of alternative fuels for aviation, with emphasis on commercial aviation fuels that can supplement or replace current crude oil-derived kerosene jet fuels. Environmental, technical, economic and logistical challenges found in the production and use of alternative jet fuels.

Organizers -   *Rudolph Dudebout, Honeywell Int'l Inc.; Paul Nash, Airbus*

Chairpersons -   *Rudolph Dudebout, Honeywell Intl Inc.; Paul Nash, Airbus*

Time	*Paper No.*	*Title*
8:00 a.m.	*ORAL ONLY*	***Alternative Fuels in Aeronautics: How to Produce Biokerosen from Renewable Resources?***
		Yohan Allouche, Airbus
9:00 a.m.	*ORAL ONLY*	***Alternative Aviation Fuel Technology Readiness and Certification***
		Rudolph Dudebout, Honeywell Int'l Inc.
9:30 a.m.	*2011-01-2791*	***Selection of the Most Promising Alternative Fuels for Aircraft Development: ALFA-BIRD Proposal***
		Ludivine Pidol, Laurie Starck, Nicolas Jeuland, IFP Energies Nouvelles; Yohan Allouche, Airbus
	2011-01-2792	***Guiding Framework for Feasibility Evaluation of Localised Production and Drop in Blending of Aviation Turbine Fuel with Bio Derivatives for Non-civilian Air Bases (Written Only -- No Oral Presentation)***
		C K Chandra Babu, Venugopal Varadarajan, Ashish gupta, Ashish kundapur, BMS College of Engineering

Planned by Environment Committee / EMB Air and Space Group

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Friday, October 21

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Environment - Environmental Materials and Processes to Environmental Materials and Sustainable Manufacturing Processes (Part 1 of 2)

Session Code: ATC603

Room Ariane 2   ***Session Time:***   10:30

Commercial aircraft are a unique manufacturing commodity in that the products have stringent performance and safety requirements, and a longevity that spans 4 to 5 decades (10 to 15 years to develop into and upwards of 30 years in service). Material selection for aerospace products must consider the product's technical requirements during its service life, and also current and potential environmental requirements which may emerge over the product¿s in-service period (including end-of-service).

Organizers -   *William Carberry, Boeing Co.; Matthew D. Carter, Elizabetth Yorke Lenger, Boeing; Phillip M. Morris, Pratt & Whitney Aircraft; Alexis Martinet, Airbus*

Chairpersons -   *Matthew D. Carter, Boeing; Alexis Martinet, Airbus*

Time	Paper No.	Title
10:30 a.m.	2011-01-2739	**Reducing Energy Use in Aircraft Component Manufacture - Applying Best Practice in Sustainable Manufacturing**
		Peter Lunt, Andrew Levers, Airbus
11:00 a.m.	ORAL ONLY	**Reducing Environmental Impact of Carbon Fibre Composites through Recycling**
		Stephen John Pickering, Kok Wong, Thomas Turner, Nicholas A. Warrior, Univ. of Nottingham
11:30 a.m.	ORAL ONLY	**Enabling Eco Design and Responding to Environmental Regulations**
		James R. J. Goddin, Jamie O'Hare, Granta Design Limited; Will Martin, Granta Design Ltd

Planned by Environment Committee / EMB Air and Space Group

Friday, October 21

Environment - Environmental Materials and Processes to Environmental Materials and Sustainable Manufacturing Processes (Part 2 of 2)

Session Code: *ATC603*

Room Ariane 2   *Session Time:*   *13:30*

Commercial aircraft are a unique manufacturing commodity in that the products have stringent performance and safety requirements, and a longevity that spans 4 to 5 decades (10 to 15 years to develop into and upwards of 30 years in service). Material selection for aerospace products must consider the product's technical requirements during its service life, and also current and potential environmental requirements which may emerge over the product¿s in-service period (including end-of-service).

Organizers -   *William Carberry, Boeing Co.; Matthew D. Carter, Elizabetth Yorke Lenger, Boeing; Phillip M. Morris, Pratt & Whitney Aircraft; Alexis Martinet, Airbus*

Chairpersons -   *William Carberry, Boeing Co.; Matthew D. Carter, Boeing; Alexis Martinet, Airbus*

Time	Paper No.	Title
1:30 p.m.	2011-01-2741	**New Approach for Chromate Free Coatings in Aircraft Applications: Modified Zinc Pigments**
		Anja Zockoll, Jörg Weise, Peter Plagemann, Fraunhofer IFAM
2:00 p.m.	2011-01-2742	**Eco-efficient Materials for Aircraft Application**
		Hubertus Lohner, Isabelle Delay-Saunders, Karsten Hesse, Alexis Martinet, Martin Beneke, Pawandeep Kalyan, Airbus; Benedikt Langer, Trenkwalder on behalf of Airbus
2:30 p.m.	ORAL ONLY	**Chromate Free Fastening Solutions**
		Audrey Benaben, Ralf Theilmann, Airbus

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Friday, October 21

Manufacturing/Materials/Structures - Hybrid Metal / Composite Drilling and Machining (Part 1 of 2)

Session Code: *ATC814*

Room Cassiopee   *Session Time: 08:00*

The need for more innovative technologies towards lowering the cost and cycle time for drilling, fastening, and assembly of hybrid metal/composite structures has created a sense of urgency in the airplane manufacturing field. This session covers methods, tools, and technologies to enable manufacturability of hybrid joints while factoring in the most economical methods. Tools and techniques to improve drilling and assembly of the hybrid metal/composite will be addressed.

Organizers -   *James Albert DeLand, Boeing Co.; Jeffrey Morgan, Tanni Sisco, Boeing*

Chairpersons -   *James DeLand, Boeing Co*

Time	Paper No.	Title
8:00 a.m.	*2011-01-2728*	***New Solutions for One Shot Hand Held and Robot Drilling of CFRP/Titan and -/Aluminium Stack Drilling in H8 Quality for Aerospace Applications***
		Peter Mueller-Hummel, Cutting Tools Inc.
8:30 a.m.	*ORAL ONLY*	***High Speed Machining of CFRP Parts***
		Donald J. Bucher, Guhring Inc.
9:00 a.m.	*ORAL ONLY*	***Study of Exit Burr Formation and Exit Burr Reduction in Automated Drilling of Titanium Stacked With Carbon Fiber Composite***
		Richard Garrick, Precorp Inc.; Hans Borchers, Tool Engrg & Mfg; Aaron Howcroft, Precorp Inc.
9:30 a.m.	*2011-01-2727*	***The Development of a New Drill Motor Concept***
		Niklas Björlingson, Anders Nelson, Joakim Edberg, Atlas Copco Tools & Assembly Systems

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Hybrid Metal / Composite Drilling and Machining (Part 2 of 2)

Session Code: **ATC814**

Room Cassiopee   *Session Time: 10:30*

The need for more innovative technologies towards lowering the cost and cycle time for drilling, fastening, and assembly of hybrid metal/composite structures has created a sense of urgency in the airplane manufacturing field. This session covers methods, tools, and technologies to enable manufacturability of hybrid joints while factoring in the most economical methods. Tools and techniques to improve drilling and assembly of the hybrid metal/composite will be addressed.

Organizers -   *James Albert DeLand, Boeing Co.; Jeffrey Morgan, Tanni Sisco, Boeing*

Chairpersons -   *Tanni Sisco, Boeing*

Time	Paper No.	Title
10:30 a.m.	*2011-01-2743*	***Process Speeds for Drilling and Reaming CFRP and CFRP/Metallic Stacks***
		John Barry, Electroimpact Inc.; Zan Uffelman, Electroimpact Inc
11:00 a.m.	*2011-01-2744*	***Impact of Number of Flutes and Helix Angle on Tool Performance and Hole Quality in Drilling Composite/Titanium Stacks***
		Krystian K. Wika, Adrian R.C. Sharman, AMRC with Boeing; David Goulbourne, Sandvik Tooling; Keith Ridgway, AMRC with Boeing
11:30 a.m.	*2011-01-2745*	***Orbital Drilling Machine for One Way Assembly in Hard Materials***
		Pascal Ple, Florian David, Jean-Francois Gabory, Spie; Damien Van Damme, Airbus

| 12:00 p.m. | 2011-01-2746 | **Approach for CFRP/Ti Large Size Hole-Making Application by Replaceable Head Type Drills** |
| | | *Takumi Tamura, Sumitomo Electric Hardmetal, Inc.* |

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00199, and also individually. T purchase visit collections.sae.org

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Aircraft Coatings Technologies (Part 1 of 2)

Session Code: ATC800

Room Cassiopee   **Session Time:**   13:30

The focus of this session is on the issues critical to successful coating application and measurement in aerospace application. Topics include but are not limited to: Robotic Coatings Applications, Non-Spray Specialty Coatings, Measurement Technologies and Performance Structure Manufacturing.

Organizers -   *Melinda Dae Miller, The Boeing Company; Jeffrey Morgan, Boeing*

Chairpersons -   *Melinda Dae Miller, Boeing Co.*

Time	*Paper No.*	*Title*
1:30 p.m.	ORAL ONLY	**High-performance and Sustained Quality in Surface Treatments & Coating for Aircraft Manufacturing and Maintenance by Integrated Solutions**
		Wolfgang Peter Lampa, Airbus
2:00 p.m.	2011-01-2790	**Unique Aspects Involved in the Robotic Painting of Commercial Aircraft Structures**
		Paul E. Jennerjohn, Boeing

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Manufacturing/Materials/Structures - Aircraft Coatings Technologies (Part 2 of 2)

Session Code: ATC800

Room Cassiopee   **Session Time:**   15:30

The focus of this session is on the issues critical to successful coating application and measurement in aerospace application. Topics include but are not limited to: Robotic Coatings Applications, Non-Spray Specialty Coatings, Measurement Technologies and Performance Structure Manufacturing.

Organizers -   *Benny J. Leppert, Boeing; Melinda Dae Miller, The Boeing Company; Jeffrey Morgan, Jeffrey Morgan, Boeing*

Chairpersons -   *Melinda Dae Miller, Boeing Co.*

Time	*Paper No.*	*Title*
3:30 p.m.	ORAL ONLY	**Tailored Conversion Coatings for Enhanced Adhesion to Metal**
		Richard Wire, Boeing
4:00 p.m.	ORAL ONLY	**Ice Phobic Coatings for Control and Covered Surfaces**
		Brian Burkitt, Nusil Technology

4:30 p.m.	*ORAL ONLY*	***Study of Materials and Coatings Used for Drilling Carbon Fiber Reinforced Plastics***
		Richard Garrick, Precorp Inc.; Aaron Howcroft, Precorp Inc

Planned by Manufacturing, Material, Structure Committee / EMB Air and Space Group

Friday, October 21

Flight Sciences - Aircraft Design, Flight Dynamics, MDO (Part 2 of 4)

Session Code: ATC701

Room Diamant   ***Session Time:***   08:00

This session deals with aircraft design, design methods, aircraft design software. Applied aerodynamics and stability and control to aircraft design. Structural design of aircraft. Propulsion and performance. Papers on new designs of any type of aircraft.

Organizers -   *Willem Anemaat, DARcorporation; Denis Darracq, Airbus; Michael Gruenewald, EADS Deutschland GmbH; Chester Nelson, Boeing Commercial Airplanes*

Chairpersons -   *Willem Anemaat, DARcorporation (Design Analysis & Res); Denis Darracq, Airbus; Michael Gruenewald, EADS Deutschland GmbH*

Time	*Paper No.*	*Title*
8:00 a.m.	*2011-01-2767*	***Considerations on an Integral Flight Physics Model with Application to Loads Analysis***
		Moriz Scharpenberg, Airbus; Thiemo Kier, DLR; Laila Taules, RWTH Aachen
8:30 a.m.	*2011-01-2765*	***Refined Preliminary Weight Estimation Tool for Airplane Wing and Tail***
		Ali Elham, Gianfranco La Rocca, Roelof Vos, Delft University of Technology
9:00 a.m.	*2011-01-2632*	***The NACRE Innovative Evaluation Platform and its Navigation & Control Strategies***
		Klaus Kittmann, Universität Stuttgart; Jan Breeman, NLR; Peter Schmollgruber, ONERA
9:30 a.m.	*ORAL ONLY*	***Uncertainty Modeling in Preliminary Aircraft Design Phase and Application to Robustness Analysis***
		Jessie Birman, Thierry Druot, Airbus

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00197, and also individually. T purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

Friday, October 21

Flight Sciences - Aircraft Design, Flight Dynamics, MDO (Part 3 of 4)

Session Code: ATC701

Room Diamant   ***Session Time:***   10:30

This session deals with aircraft design, design methods, aircraft design software. Applied aerodynamics and stability and control to aircraft design. Structural design of aircraft. Propulsion and performance. Papers on new designs of any type of aircraft.

Organizers -   *Willem Anemaat, DARcorporation; Denis Darracq, Airbus; Michael Gruenewald, EADS Deutschland GmbH; Chester Nelson, Boeing Commercial Airplanes*

Chairpersons -   *Willem Anemaat, DARcorporation (Design Analysis & Res); Denis Darracq, Airbus; Michael Gruenewald, EADS Deutschland GmbH*

Time	*Paper No.*	*Title*

Time	Paper No.	Title
10:30 a.m.	2011-01-2764	*Holistic Granular Programming: A Novel Approach for Modeling Aircraft*
		Askin T. Isikveren, Sven Ziemer, Gernot Stenz, Mirko Hornung, Bauhaus Luftfahrt e.V.
11:00 a.m.	ORAL ONLY	*Dynamics of Aircraft Main Landing Gears*
		Chris Howcroft, Bernd Krauskopf, Mark Lowenberg, University of Bristol; Etienne Coetzee, Simon Coggon, Airbus

Planned by Flight Sciences Committee / EMB Air and Space Group

<p style="text-align:center">**Friday, October 21**</p>

Flight Sciences - Aircraft Design, Flight Dynamics, MDO (Part 4 of 4)

Session Code: ATC701

Room Diamant **Session Time:** 13:30

This session deals with aircraft design, design methods, aircraft design software. Applied aerodynamics and stability and control to aircraft design. Structural design of aircraft. Propulsion and performance. Papers on new designs of any type of aircraft.

Organizers - *Willem Anemaat, DARcorporation; Denis Darracq, Airbus; Michael Gruenewald, EADS Deutschland GmbH; Chester Nelson, Boeing Commercial Airplanes*

Chairpersons - *Willem Anemaat, DARcorporation (Design Analysis & Res); Denis Darracq, Airbus SAS; Michael Gruenewald, EADS Deutschland GmbH*

Time	Paper No.	Title
1:30 p.m.	2011-01-2762	*Longitudinal Handling Qualities of Conventional and Unconventional Aircraft Configurations*
		Oscar Gonzalez, Jérôme Bazile, Airbus
2:00 p.m.	2011-01-2766	*Multidisciplinary Optimization under Uncertainty for Preliminary Aircraft Sizing*
		Laure Jaeger, Christian Gogu, Stéphane Segonds, Christian Bes, Universite Paul Sabatier
2:30 p.m.	ORAL ONLY	*Vibrations and Stability of Coaxial Cylindrical Shells with a Clearance Partially Filled with Fluid*
		Gevorg Baghdasaryan, Professor
	2011-01-2634	*Adaptive Trajectory Application for Autonomous Aerial Refueling (Written Only -- No Oral Presentation)*
		Kahtan Awni, Consultant; Ilhan Tuzcu, California State Univ.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00197, and also individually. T purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

<p style="text-align:center">**Friday, October 21**</p>

Flight Sciences - Computational Methods and CFD Applications

Session Code: ATC703

Room Diamant **Session Time:** 15:30

This session deals specifically with Computational Fluid Dynamics related topics, including modeling of flow fields, turbulence modeling, gridding, CFD-driven shape optimization, testing for the purposes of code calibration, and use of CFD in flight vehicle analysis and design problems.

Organizers - *Denis Darracq, Airbus; Chester Nelson, Boeing Commercial Airplanes*

Chairpersons - *Denis Darracq, Airbus SAS; Chester Nelson, Boeing Commercial Airplanes*

Time	Paper No.	Title

3:30 p.m.	*ORAL ONLY*	*Future Simulation Concept*
		Murray Cross, Airbus
4:00 p.m.	*ORAL ONLY*	*Benefits of Employing Validated Open Source CFD Methods for Evaluating and Optimizing ECS Components and Cabin Flow*
		Thomas Schumacher, Engys UG, Rostock, Germany
4:30 p.m.	*ORAL ONLY*	*Theoretical and Numerical Investigation of Propeller Aerodynamic Properties*
		Jurij Sodja, University of Ljubljana; Domen Stadler, Turboinstitut d.d.
5:00 p.m.	~~*2011-01-2798*~~ *ORAL ONLY*	*Numerical Study of Drag Reduction of Air and Ground Vehicles with Active Flow Control*
		Ramesh K. Agarwal, Washington Univ. St. Louis

Planned by Flight Sciences Committee / EMB Air and Space Group

Friday, October 21

Avionics - Flight Management Systems, Navigation, Guidance and Flight Control

Session Code: **ATC404**

Room Guillaumet 1   *Session Time:*   **08:00**

In NextGen and SESAR ATM, surveillance by extrapolating aircraft intent from radar changes to aircraft explicitly broadcasting intent, and traffic flow is managed by controlling the aircraft trajectory in 4 dimensions as a function of performance. These operations change the role of the FMS and guidance systems. As well, TBO enables the integration of UAS in controlled space. This session examines the evolving technologies that will enable the transformation of ATM for all airspace users.

Organizers -   *Mark Darnell, GE Aviation; Genevieve Oudart, Airbus; Bob Yeh, Boeing Commercial Airplanes*

Chairpersons -   *Mark Darnell, GE Aviation; Bob Yeh, Boeing Commercial Airplanes*

Time	Paper No.	Title

8:00 a.m.	*2011-01-2729*	*EMA Aileron COVADIS Development*
		Jean-Claude Derrien, Sagem Defense Securite; Pierre Tieys, Airbus; David Senegas, Sagem Defense Securite; Michel Todeschi, Airbus
8:30 a.m.	*2011-01-2732*	*Airbus - EMAs for Flight Controls Actuation System - An Important Step Achieved in 2011*
		Michel Todeschi, Airbus
9:00 a.m.	*2011-01-2731*	*Coriolis Vibrating Gyros for Aeronautical Applications*
		Georges REMILLIEUX, Jean-Claude GOUDON, David Roberfroid, Sagem Defense Securite
9:30 a.m.	~~*2011-01-2730*~~ *ORAL ONLY*	*Navigation / Air Data System / Laser Anemometry*
		Alain Verbeke, Thales Avionics

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00195, and also individually. T purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Aviation Cyber-Physical Security - Aeronautical Network and Applications Security

Session Code: ATC300

Room Guillaumet 1   **Session Time:** 10:30

Security and high assurance of aeronautical data networking and applications. Main topics of interest include air traffic management, airplane health management, airport surface area communications, field-loadable software distribution, cabin systems and wireless, Transmitting Personal Electronic Devices, security infrastructures, and multi-level security

Organizers -   *Pascal Andrei, Airbus; Radhakrishna G. Sampigethaya, Boeing Co.*

Chairpersons -   *Pascal Andrei, Airbus; Radhakrishna G. Sampigethaya, Boeing Co.*

Time	Paper No.	Title
10:30 a.m.	*2011-01-2717*	***IT Security Management of Aircraft in Operation: A Manufacturer's View*** *Gernot Ladstaetter, Nicolas Reichert, Thomas Obert, Airbus*
11:00 a.m.	*ORAL ONLY*	***Challenges of the Connected Aircraft*** *John Craig, The Boeing Company*
11:30 a.m.	*ORAL ONLY*	***Advancing Aircraft Cyber Security - Potential New Architectures and Technologies*** *Terry Lee Davis, iJet Onboard*
12:00 p.m.	*ORAL ONLY*	***Enhanced Offboard Communications*** *Timothy M. Mitchell, Boeing Co.*
	2011-01-2718	***Common Firewall Approach to Aviation Architecture (Written Only -- No Oral Presentation)*** *Benjamin Knoblauch, Patricia Best, Vijay Ragothaman, Ravi Pendse, Wichita State University*

Planned by Aviation Cyber Security Committee / EMB Air and Space Group

Friday, October 21

Aviation Cyber- Physical Security - Safety and Security

Session Code: ATC302

Room Guillaumet 1   **Session Time:** 13:30

Relation between information (or cyber) security and system safety. Topics of interest include expressing the relevant security considerations and accommodating security risks and mitigations in a safety analysis, approaches to integrate security analysis for assessment of safety-critical systems, certification of aircraft security, certification of aviation information systems on the ground.

Organizers -   *Pascal Andrei, Airbus; Radhakrishna G. Sampigethaya, Boeing Co.*

Chairpersons -   *Pascal Andrei, Airbus; Radhakrishna G. Sampigethaya, Boeing Co.*

Time	Paper No.	Title
1:30 p.m.	*ORAL ONLY*	***Eurocae WG-72 Activities*** *Jean-Paul Moreaux, Airbus*
2:00 p.m.	*ORAL ONLY*	***RTCA DO-326: Airworthiness Security and Aircraft Certification*** *Daniel P. Johnson, Honeywell*
2:30 p.m.	*2011-01-2777*	***From a DO-178B Certified Separation Kernel to Common Criteria Security Certification*** *Holger Blasum, Sergey Tverdyshev, SYSGO AG*
3:00 p.m.	*ORAL ONLY*	***Secure Software Distribution in Aviation Context*** *David von Oheimb, Siemens AG*

Friday, October 21

Aviation Cyber- Physical Security - Security of Distributed, Integrated, Software-Intensive Systems

Session Code: **ATC301**

Room Guillaumet 1   *Session Time:*   *15:30*

System-of-systems assurance problems, challenges and promising solutions. Topics of interest include end-to-end system assessment, PKI issues, integration frameworks, security models for collaborative development, and open source software security.

Organizers -   *Pascal Andrei, Airbus; Radhakrishna G. Sampigethaya, Boeing Co.*

Chairpersons -   *Pascal Andrei, Airbus Entity; Radhakrishna G. Sampigethaya, Boeing Co.*

Time	Paper No.	Title
3:30 p.m.	ORAL ONLY	**Public Key Infrastructure Technologies to Fulfill Aerospace Industry Security Objectives**
		Stephane Chopart, Airbus
4:00 p.m.	2011-01-2805	**Characterization of Hypervisors for Security-Enhanced Avionics Applications**
		Maxime Lastera, Eric Alata, Jean Arlat, Yves Deswarte, David Powell, LAAS-CNRS, Université de Toulouse; Bertrand Leconte, Airbus; Cristina Simache, Altran Sud Ouest
4:30 p.m.	ORAL ONLY	**Multi-Agent Systems for Threat Detection**
		Rosa Maria Rodriguez, Boeing Company
5:00 p.m.	~~2011-01-2806~~	**A Quantitative Risk Analysis for AeroMACS Network Security in SESAR**
	ORAL ONLY	*Mohamed Slim Ben Mahmoud, Nicolas Larrieu, Alain Pirovano, Ecole Nationale de l'Aviation Civile*

Planned by Aviation Cyber Security Committee / EMB Air and Space Group

Friday, October 21

Avionics - Aviation Model-Based Systems and Software Engineering - MBSE Deployment (Part 1 of 3)

Session Code: **ATC407**

Room Guillaumet 2   *Session Time:*   *08:00*

Model-based development is the key paradigm for simplified design, verification and validation of complex real-time and safety-critical systems. This session targets model-based development for avionics software and system architectures and covers different methodologies, tools, and their practical application.

Organizers -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Bruce Lewis, US Army*

Chairpersons -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Bruce Lewis, US Army*

Time	Paper No.	Title
8:00 a.m.	2011-01-2504	**Application of Model Based Functional Specification Methods to Environmental Control Systems Engineering**
		Christian Becker, Tim Giese, Airbus
8:30 a.m.	ORAL ONLY	**A Model-Based Approach for Airborne Electronic Hardware Design**
		Pierre Moreau, Airbus

9:00 a.m.	2011-01-2505	**Design and Verification Approach for a Complex State-Based Fuel Cell Control System**
		Jan Grymlas, Hauke Peer Lüdders, Enno Vredenborg, Frank Thielecke, Hamburg University of Technology
9:30 a.m.	ORAL ONLY	**System-Level Resource Partitioning: Integration of VxWorks 653 and SAE AS6802 (TTEthernet)**
		Ingomar Wenzel, TTTech Computertechnik AG

Planned by Avionics Committee / EMB Air and Space Group

Friday, October 21

Avionics - Aviation Model-Based Systems and Software Engineering - Models for V & V (Part 2 of 3)

Session Code: **ATC407**

Room Guillaumet 2   **Session Time:**   **10:30**

Model-based development is the key paradigm for simplified design, verification and validation of complex real-time and safety-critical systems. This session targets model-based development for avionics software and system architectures and covers different methodologies, tools, and their practical application.

Organizers -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Mirko Jakovljevic, TTTech. Computertechnik AG; Bruce Lewis, US Army*

Chairpersons -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Bruce Lewis, US Army*

Time	Paper No.	Title
10:30 a.m.	2011-01-2531	**Integrating Formal Model Checking with the RTEdge¿ AADL Microkernel**
		Serban Gheorghe, Edgewater Computer Systems Inc.
11:00 a.m.	2011-01-2529	**Incremental Modeling and Validation of Space Mission Using AADLv2**
		Julien Delange, European Space Agency; Jerome Hugues, ISAE
11:30 a.m.	2011-01-2530	**Verification and Validation of Complex Systems**
		Hussein Youssef, Lockheed Martin

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00195, and also individually. T purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Friday, October 21

Avionics - Aviation Model-Based Systems and Software Engineering - Tools & Cost Estimation (Part 3 of 3)

Session Code: **ATC407**

Room Guillaumet 2   **Session Time:**   **13:30**

Model-based development is the key paradigm for simplified design, verification and validation of complex real-time and safety-critical systems. This session targets model-based development for avionics software and system architectures and covers different methodologies, tools, and their practical application.

Organizers -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Bruce Lewis, US Army*

Chairpersons -   *Bernard Dion, Esterel Technologies; Patrick Farail, Airbus; Bruce Lewis, US Army*

Time	Paper No.	Title

Time	Paper No.	Title
1:30 p.m.	*2011-01-2576*	***Estimating Return on Investment for SAVI (a Model-Based Virtual Integration Process)***
		Donald T Ward, Aerospace Vehicle Systems Institute; Steven B Helton, The Boeing Company
2:00 p.m.	*2011-01-2578*	***SCADE Solutions for the Efficient Development of ARINC 661 Cockpit Display Systems and User Applications***
		Bernard Dion, Vincent Rossignol, Aubanel Monnier, Esterel Technologies
2:30 p.m.	*2011-01-2577*	***Using SCADE System for the Design and Integration of Critical Systems***
		Thierry Le Sergent, Alain Le Guennec, Esterel Technologies; Sebastien Gerard, Yann Tanguy, Francois Terrier, CEA, LIST
	2011-01-2579	***AADL Real-Tme Design-Pattern Automatic Recognition (Written Only - - No Oral Presentation)***
		Pierre Dissaux, Jerome Legrand, Ellidiss Technologies; Vincent Gaudel, Alain Plantec, Stephane Rubini, Frank Singhoff, University of Brest

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00195, and also individually. T purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Friday, October 21

Avionics - COTS and Obsolescence Management

Session Code: ***ATC405***

Room Guillaumet 2   ***Session Time:*** ***15:30***

This session covers the application of COTS electronic components and boards, design tools and test equipment in avionic systems.
We will focus on COTS adoption and selection criteria to meet performance (environmental issues, testability, maintainability, etc), lifecycle use/availability (obsolescence management and mitigations, counterfeiting prevention and avoidance, storage), reliability (failure mechanisms, technology maturity) and certification of airworthy systems.

Organizers -   *Philippe Pons, Airbus*

Chairpersons -   *Philippe Pons, Airbus*

Time	Paper No.	Title
3:30 p.m.	*ORAL ONLY*	***Complex COTS in Critical Airborne Applications***
		Jean-Claude Laperche, Jean-Marc Hardy, Airbus Operations SAS
4:00 p.m.	*ORAL ONLY*	***Airbus Electronic Components Strategy and Processes for Avionics Applications***
		Patrick Louis Heins, Airbus
4:30 p.m.	*2011-01-2800*	***A New Policy for COTS Selection: Overcome the DSM Reliability Challenge***
		Florian Moliere, EADS IW; Alain Bravaix, ISEN-Toulon; Bruno Louis Foucher, EADS IW; Philippe Perdu, CNES

Planned by Avionics Committee / EMB Air and Space Group

Friday, October 21

Auto Fastening / Assembly & Tooling (AeroFast) - Robotic Applications in Fastening or Assembly

Session Code: ATC207   08:00

Room Saint Exupery Auditorium   **Session Time:**

The continuous search for affordable automation systems for aero-structure fastening and assembly, the system manufacturer and the aerospace industry are focusing more on designing automation equipment with industrial robotics. This session will focus on robotics assembly and fastening and the topics will include industrial robotics, system integration, positional accuracy, force feedback/control, and process control challenges and solutions.

Organizers -   Mahboob Alam, Boeing Co; Benoit Marguet, Airbus; Clayton L. Munk, Boeing; Adolfo Suarez, EADS CCR; Gordon Allen, Boeing Co

Chairpersons -   Mahboob Alam, Boeing Co.; Adolfo Suarez, EADS

Time	Paper No.	Title
8:00 a.m.	2011-01-2733	**High-Accuracy Robotic Drilling/Milling of 737 Inboard Flaps**
		Russell Devlieg, Electroimpact Inc
9:00 a.m.	2011-01-2734	**Force Controlled Assembly of a Compliant Rib**
		Marie Jonsson, Linköping University; Andreas Stolt, Anders Robertsson, Lund University; Thomas Murray, Airbus; Klas Nilsson, Lund University

Planned by AeroFast International Committee / EMB Air and Space Group

Friday, October 21

Auto Fastening / Assembly & Tooling (AeroFast) - New and Enhanced Fasteners

Session Code: ATC203

Room Saint Exupery Auditorium   **Session Time:**   10:30

New fastening systems pursue the complementary goals of reducing cost, weight, assembly time, field maintenance, and environmental impact. Improved design strength, materials, ergonomics, and feeding/driving systems have enabled many of these goals to be met without sacrificing performance.

Organizers -   Alex Cuthell, Benoit Marguet, Airbus; Peter Zieve, Electroimpact Inc

Chairpersons -   Alex Cuthell, Airbus; Peter B. Zieve, Electroimpact Inc.

Time	Paper No.	Title
10:30 a.m.	2011-01-2755	**Blind Bolts Developments**
		Cesar Serrano Velaz, Sophie Gourdon, Clement Chirol, Airbus
11:00 a.m.	2011-01-2756	**Rivetless Nutplate Developments for Aerospace Applications**
		Björn Knickrehm, Airbus
11:30 a.m.	2011-01-2776	**LTD Bolt Injection System**
		Cosmos Krejci, Electroimpact Inc.
12:00 p.m.	2011-01-2774	**Automated Coaxial Squeeze Riveter**
		Reese Allen, Electroimpact Inc.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00194, and also individually. T purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Friday, October 21

Maintenance, Repair and Overhaul - MRO Planning, Options and Programs Maintenance Management

Session Code: **ATC1601**   **13:30**

Room Saint Exupery Auditorium   **Session Time:**

The MRO technical session will focus on material and maintenance management, inspection optimization, aircraft operational support, and reduced fleet support expenses.

Organizers -   *Frank Bokulich, SAE International; Bruno James, Airbus*

Chairpersons -   *Bruno James, Airbus*

Time	Paper No.	Title
2:00 p.m.	*ORAL ONLY*	***Airbus Approach Towards Material and Maintenance Customized Management: Flight Hour Services***
		Gerard Heimendinger, Airbus
	2011-01-2750	***Optimize a Thru Flight Inspection of a Fighting Falcon using Routing Algorithms (Written Only -- No Oral Presentation)***
		Athanasios Lois, Nikolaos Bertos, Athanasios Ziliaskopoylos, University of Thessaly

Friday, October 21

Systems Engineering (Part 1 of 3)

Session Code: **ATC1300**

Room Spot   **Session Time:**   **08:00**

Techniques, Methods and Tools Advancements:
Presentation and discussion of techniques, methods and tools to manage and solve critical aerospace system engineering problems. All phases of system engineering are included with emphasis on system requirement verification, interface control, concept development and models.

Organizers -   *Peter F. Klon, Boeing Co.; Thierry Pardessus, Airbus*

Chairpersons -   *Thierry Pardessus, Airbus*

Time	Paper No.	Title
8:00 a.m.	*ORAL ONLY*	***Airbus A330 Freighter Main Deck Smoke Detection System Concept - Validation - Certification***
		Rainer Westermann, Airbus
8:30 a.m.	*2011-01-2710*	***A Step Closer to Model Based System Engineering: Advanced IT Support Tools for Concurrent Preliminary Design of Space Projects***
		Stefano T. Chiadò, Vastalla; Valter Basso, Mauro Pasquinelli, Thales Alenia Space Italia; Laura Quinale, Vastalla
9:00 a.m.	*2011-01-2711*	***PEGASE - A Robust and Efficient Tool for Worst-Case Network Traversal Time Evaluation on AFDX***
		Marc Boyer, ONERA; Jorn Migge, Real Time at Work; Marc Fumey, Thales Avionics
9:30 a.m.	*2011-01-2713*	***A SysML-Based Methodology in a Concurrent Satellite Design Process***
		Felix Jakob, Institute of Spacesystems, Uni Stuttgart; Silvia Mazzini, Intecs S.p.A.; Andreas Jung, ESTEC / European Space Agency

Planned by SAE Systems Engineering Cross-Industry / EMB Air and Space Group

Friday, October 21

Systems Engineering (Part 2 of 3)

Session Code: ATC1300   10:30

Room Spot   **Session Time:**

Techniques, Methods and Tools Advancements:
Presentation and discussion of techniques, methods and tools to manage and solve critical aerospace system engineering problems. All phases of system engineering are included with emphasis on system requirement verification, interface control, concept development and models.

Organizers -   Peter F. Klon, Boeing Co.; Thierry Pardessus, Airbus

Chairpersons -   Thierry Pardessus, Airbus

Time	Paper No.	Title
10:30 a.m.	2011-01-2796	**Future Potentials on Hydraulic Power Generation Systems**
		Volker Baumbach, Robert Behr, Gerhard Hummel, Airbus
11:00 a.m.	2011-01-2760	**Lightning Effects on Hydraulic Transport Elements in Composite Aircraft (Written Only -- No Oral Presentation)**
		Neno Novakovic, Hamilton Sundstrand
11:30 a.m.	ORAL ONLY	**Passenger Supplemental Oxygen Supply: Oxygen Flow Saving Opportunities**
		Patrick Bricard, Airbus; Walter Deutscher, Aerotec Engineering; Juergen Wenzel, Martin Wittkowski, DLR Inst of Aerospace Medicine; Simon Knaak, APSYS Germany
12:00 p.m.	ORAL ONLY	**Atmosphere Reading Light**
		Detlef Heym, Airbus

Planned by SAE Systems Engineering Cross-Industry / EMB Air and Space Group

Friday, October 21

Systems Engineering (Part 3 of 3)

Session Code: ATC1300

Room Spot   **Session Time:**   13:30

Techniques, Methods and Tools Advancements:
Presentation and discussion of techniques, methods and tools to manage and solve critical aerospace system engineering problems. All phases of system engineering are included with emphasis on system requirement verification, interface control, concept development and models.

Organizers -   Peter F. Klon, Boeing Co.; Thierry Pardessus, Airbus

Chairpersons -   Thierry Pardessus, Airbus

Time	Paper No.	Title
1:30 p.m.	2011-01-2793	**OBIGGS for Fuel System Water Management - Proof of Concept**
		Oleg Merkulov, Vladimir Zherebtsov, Marina Peganova, RSC - Applied Chemistry; Eduard Kitanin, St. Petersburg State Tech. University; Joseph Kah-Wah Lam, Airbus; Andrey Sartori, EADS Innovation Works RTO
2:00 p.m.	2011-01-2794	**Behaviour of Water in Jet Fuel in a Simulated Fuel Tank**
		Liyun Lao, Colin Ramshaw, Hoi Yeung, Cranfield University, Cranfield Campus; Mark Carpenter, Janice Hetherington, Cranfield University, Shrivenham Campus; Joseph Kah-Wah Lam, Airbus; Sarah Barley, EADS Innovation Works
2:30 p.m.	2011-01-2795	**Dimensional Analysis to Parameterise Ice Accretion on Mesh Strainers**
		Solange Baena, Craig Lawson, Cranfield University; Joseph Kah-Wah Lam, Airbus

Friday, October 21

Vehicle Systems Architecture and Control Law Augmentation - Vehicle System Modeling and Estimation

Session Code: **ATC1402**

Room Spot   *Session Time:*   **15:30**

For vehicle system design and validation, modeling and estimation are of great significance. In particular, for upcoming and future aircraft programs, current research interests include more system autonomy and reliability. This can be achieved through advanced modeling and estimation. This session will exemplify concrete uses of modeling and estimation for improving vehicle system autonomy and reliability.

Organizers -   Philippe Goupil, Airbus; Ronald Patton, Univ. of Hull; Kioumars Najmabadi, Boeing Co.

Chairpersons -   Kioumars Najmabadi, Boeing Co.; Ronald Patton, University of Hull

Time	*Paper No.*	*Title*
3:30 p.m.	*2011-01-2770*	***An LPV Approach H_∞ / H_∞ Robust FDD for Aircraft Actuator Systems***
		Lejun Chen PhD, Ronald Patton, University of Hull
4:00 p.m.	*2011-01-2769*	***On-line Estimation of Longitudinal Flight Parameters***
		Georges Hardier, Cédric seren, ONERA - The French Aerospace Lab; Pierre Ezerzere, Airbus
4:30 p.m.	*ORAL ONLY*	***Mapping Unknown Territory: SUPRA Flight Dynamics Modeling***
		Lars Fucke, Boeing; Bambang Soemarwoto, National Aerospace Laboratory; Mikhail Goman, De Montfort University; Alexander Khrabrov, Central Aerohydrodynamic Institute