SAE 2015 AeroTech Congress & Exhibition

Technical Session Schedule

As of 04/04/2016 09:29 pm

Tuesday, September 22

Propulsion - Turbo-Machinery and Combustors

Session Code: ***ATC1203***

Room 303 ***Session Time:*** ***1:30 p.m.***

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 - *Gary Lidstone, Aerojet Rocketdyne; Ramesh Rajagopalan, Pratt & Whitney; James Sherman, SAE International*

Time	Paper No.	Title
1:30 p.m.	***ORAL ONLY***	***Multidimensional Combustion and Propulsion Diagnostics Using Fiber-Based Endoscopes*** *Lin Ma, Virginia Tech.*
2:00 p.m.	***ORAL ONLY***	***Aerodynamic Performance of a Centrifugal Compressor Exposed to Unsteady Non-Uniform Outlet Conditions Governed by Detonation Tubes*** *Bayindir H. Saracoglu, Von Karman Institute for Fluid Dynamics; Guillermo Paniagua, Purdue University*
2:30 p.m.	***2015-01-2426***	***Thermodynamic and Emission Analysis of Basic and Intercooled Gas Turbine Cycles*** *Anupam Kumari, Tushar Choudhary, Y Sanjay, Pilaka Murty, Mithilesh Sahu, NIT Jamshedpur*

Planned by Propulsion Committee / EMB Air and Space Group

Tuesday, September 22

Propulsion - Aircraft Integration

Session Code: ***ATC1200***

Room 303 ***Session Time:*** ***3:30 p.m.***

This session is dedicated to topics dealing with the integration between the Powerplant system & the airframe. This session covers the physical & functional interfaces between the different components, and their aerodynamic, thermal, structural, loads & Dynamic integration. This session covers: the Engine, Nacelle, Pylon & associated local sub systems (Fuel, Bleed, Oil, Fire, Etc).

Organizers - *Jovert L. Garotti, GE Aviation; Ramesh Rajagopalan, Pratt & Whitney; Jean-Michel Rogero, Airbus UK*

Time	Paper No.	Title
3:30 p.m.	***~~2015-01-2421~~*** ***ORAL ONLY***	***An Overview of Gas Turbine Engine Indications in Commercial Aircraft*** *Douglas Felipe Rodrigues Da Silva, Embraer*

4:00 p.m.	***2015-01-2422***	***Preliminary Implementation Study of ACHEON Thrust and Vector Electrical Propulsion on a STOL Light Utility Aircraft***
		Michele Trancossi, Antonio Dumas, Mauro Madonia, Maharshi Subhash, Universita di Modena e Reggio Emilia; Jose Pascoa, Shyam Das, Universidade Da Beira Interior; Francesco Grimaccia, Nimbus SRL; Chris Bingham, Tim Smith, University of Lincoln; Dean Vucinic, Anna Sunol, Vrije Universiteit Brussel
4:30 p.m.	***2015-01-2428***	***How to Improve Integration of a Change to Aircraft Engine Control Using ARP6109***
		Richard Ambroise, Airbus Operations SAS; Gabriel Godfrey, Altran Technologies

Planned by Propulsion Committee / EMB Air and Space Group

Tuesday, September 22

Unmanned Aerial System - Safety, Certification and Standards

Session Code: ***ATC1506***

Room 310 ***Session Time:*** ***1:30 p.m.***

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 - *Ruxandra Botez, Ecole de Technologie Superieure; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-2469***	***Development of a Template Safety Case for Unmanned Aircraft Operations Over Populous Areas***
		Reece Clothier, RMIT University; Brendan Williams, Boeing Australia; Achim Washington, RMIT University
2:00 p.m.	***2015-01-2470***	***A Novel Approach to Cooperative and Non-Cooperative RPAS Detect-and-Avoid***
		Subramanian Ramasamy, Roberto Sabatini, Alessandro Gardi, RMIT University
2:30 p.m.	***ORAL ONLY***	***Security Issues for Civil Unmanned Aircraft Systems***
		Reece Clothier, RMIT University

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

Tuesday, September 22

Unmanned Aerial Systems - Flight Sciences

Session Code: ***ATC1501***

Room 310 ***Session Time:*** ***3:30 p.m.***

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 - *Patrick H. Browning, West Virginia Univ.; Yin M. Chen, US Army ARDEC; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Time	***Paper No.***	***Title***

3:30 p.m.	***ORAL ONLY***	***Control of A UAV in an Unsteady Maneuver***
		Ilhan Tuzcu, California State Univ.; Kahtan Awni, Independent Consultant
4:00 p.m.	***ORAL ONLY***	***Hydrogen Probe***
		Anmol Taploo, Suvriti Dhawan, Ravi Nandu, Mohit Vishal, Karan Marwaha, SRM University; Prinan Banerjee
4:30 p.m.	***2015-01-2455***	***Unsteady Aerodynamics of a 3D Wing Hosting Synthetic Jet Actuators***
		Roshen Jay Jaswantlal, Imperial College London; Piergiovanni Marzocca, RMIT University; Rafael Palacios, Imperial College London
5:00 p.m.	***2015-01-2454***	***Design, Construction, and Operation of a Pneumatic Test Launch Apparatus for sUAS Prototypes***
		Patrick H. Browning, Wade Huebsch, West Virginia University

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

Tuesday, September 22

Aviation Cyber-Physical Security - Threats and Risk Identification, Analysis, Mitigation, and Management

Session Code: ***ATC300***

Room 602 ***Session Time:*** ***3:30 p.m.***

This session focuses on cyber and cyber-physical vulnerabilities as well as their impact on aviation systems. Topics of interest include, but are not limited to: vulnerability identification; threat models; threat likelihood and impact assessment; risk analysis, prioritization, and management; threat mitigation; security evaluation tools; and security performance enhancement/tradeoffs.

Organizers - *Radhakrishna G. Sampigethaya*

Time	***Paper No.***	***Title***
3:30 p.m.	***ORAL ONLY***	***"Cyber Shielding" for Commercial Aircraft***
		Terry Lee Davis, AtF Consulting
4:00 p.m.	***ORAL ONLY***	***Safety Engineering vs Security Engineering: Finding Common Ground***
		Chuck Royalty, The Boeing Company
4:30 p.m.	***2015-01-2520***	***Risk-adaptive Engine for Secure ADS-B Broadcasts***
		Thabet Kacem, Jeronymo Carvalho, Duminda Wijesekera, Paulo Costa, George Mason University; Márcio Monteiro, Alexandre Barreto, Instituto de Controle do Espaço Aéreo
5:00 p.m.	~~***2015-01-2521***~~ ***ORAL ONLY***	***Risk modeling for cyber-physical systems: Qualitative vs. Quantitative approaches***
		Manimaran Govindarasu, Aditya Ashok, Iowa State University

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

Tuesday, September 22

Unmanned Aerial Systems - Aerodynamics

Session Code: ***ATC1500***

Room 603 ***Session Time:*** ***1:30 p.m.***

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 fixed and rotary wing UAS along with lighter than air technologies.

Organizers - *Patrick H. Browning, West Virginia Univ.; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Chairpersons - *Patrick H. Browning, West Virginia Univ.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2453***	***Experimental Investigation on a 3D Wing Section Hosting Multiple SJAs for Stall Control Purpose*** *Danilo Andreoli, Mario Cassaro, Manuela Battipede, Politecnico di Torino; Goodarz Ahmadi, Clarkson University; Piergiovanni Marzocca, RMIT University*
2:00 p.m.	***ORAL ONLY***	***Numerical Investigation of the Possibility Using Coanda Effect for Unmanned Aerial Vehicle (UAV)*** *Bosko Rasuo, Nikola Mirkov, Univ. of Belgrade*

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

Tuesday, September 22

Unmanned Aerial Systems - Materials, Structures and Manufacturing

Session Code: ***ATC1503***

Room 603 ***Session Time:*** ***3:30 p.m.***

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, Politecnico di Torino; Giuliano Coppotelli, Universita Degli Studi di Roma; Giacomo Frulla, Politecnico di Torino; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Chairpersons - *Giuliano Coppotelli, Universita Degli Studi di Roma*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2462***	***Nonlinear Slender Beam-Wise Schemes for Structural Behavior of Flexible UAS Wings*** *Claudia Bruni, Enrico Cestino, Giacomo Frulla, Politecnico di Torino; Piergiovanni Marzocca, RMIT University*
4:00 p.m.	***2015-01-2463***	***A Possible Adaptive Wing Apparatus for New UAV Configurations*** *Giacomo Frulla, Enrico Cestino, Piero Gili, Politecnico di Torino; Michele Visone, Domenico Scozzola, Blue Engineering SRL*
4:30 p.m.	***2015-01-2460***	***Updating of an Unmanned Aerial Vehicle Finite Element Model using Experimental Data*** *Melissa Arras, Giuliano Coppotelli, University of Rome La Sapienza; Piergiovanni Marzocca, RMIT University; Antonio Simone Mezzapesa, University of Rome La Sapienza*
5:00 p.m.	***2015-01-2461***	***CFRP Crash Absorbers in Small UAV: Design and Optimization*** *Enrico Troiani, Maria Pia Falaschetti, Sara Taddia, Alessandro Ceruti, University of Bologna*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

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

Tuesday, September 22

IVHM Panel Discussion: Maintenance Credit

Session Code: ***ATC3005***

Room 604 ***Session Time:*** ***3:30 p.m.***

Maintenance Credit, in a nutshell, is to allow a component/LRU to be used within its margin of safety per its individual usage monitoring under IVHM, instead of traditional maintenance practices. This potentially brings the IVHM into a safety-critical domain. Currently there are no consistent approaches in defining the safety criticality of IVHM. This panel is to review the current practices with examples, and to discuss directions in establishing safety standards and guidelines for IVHM.

Organizers - *Ginger Shao, Honeywell Intl. Inc.*

Moderators - *Ginger Shao, Honeywell Intl. Inc.*

Panelists - *Duncan Chase, Rolls-Royce plc; R. Eugene Iverson, Boeing Commercial Airplanes; Ian K. Jennions, IVHM Centre Cranfield University; Alan Lesmerises, Standard Aero Inc.; Tim Rickmeyer, US Army; Brian Verna, Federal Aviation Administration;*

Tuesday, September 22

Manufacturing/Materials/Structures - Automated Composites Manufacturing (Part 1 of 3)

Session Code: ***ATC903***

Room 606 ***Session Time:*** ***3:30 p.m.***

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in automated lamination methods for aircraft structural components. This session will focus on the latest technology in automated composites manufacturing methods and feature presentations from aerospace companies that use automated processes and composites equipment suppliers.

Organizers - *Vernon M. Benson, ATK Aerospace; Carroll G. Grant, Aerospace Composites Consulting*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Optimizing Inspection Process to Increase Production Rates***
		Robert Harper, Fives Machining Systems
4:00 p.m.	***~~2015-01-2607~~ ORAL ONLY***	***STAXX Compact 1700 ¿ Low Scrap for High Volume Component Parts Production***
		Matthias Meyer, BA Composites GmbH
4:30 p.m.	***ORAL ONLY***	***Automated Lay Up of Dry Fabric Preforms for Aircraft Composites Applications***
		Asier Gandarias Mintegi, Danobat S Coop
5:00 p.m.	***ORAL ONLY***	***Implementing Programming and Simulation Software for Automated Layup Equipment; A Software Developer¿s Perspective***
		Bill Hasenjaeger, CGTech.

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

Tuesday, September 22

Business/Economics - Aircraft for 2030 and Beyond (Part 1 of 2)

Session Code: ***ATC500***

Room 607 ***Session Time:*** ***1:30 p.m.***

NASA has chartered teams to study commercial transports that can overcome significant performance and environmental challenges for the benefit of the general public. The work is intended to identify key technology development needs as well as breakthroughs that will enable such vehicles to enter service in 2030-2035. The vehicles represent a research and development generation known as "N+3," denoting three generations beyond the current commercial transport fleet.

Organizers - *Fayette S. Collier, NASA Langley Research Center; William Rickard, Mooney International - Chino; Richard Wahls, NASA Langley Research Center*

Chairpersons - *Fayette S. Collier, NASA Langley Research Center*

Time	Paper No.	Title
1:30 p.m.	***ORAL ONLY***	***Progress Toward Technology Development Enabling Aircraft Concepts for 2030 and Beyond*** *Scott G. Anders, Fayette S. Collier, NASA Langley Research Center*
2:00 p.m.	***ORAL ONLY***	***Aircraft Technologies for Mitigating Environmental Impacts of Aviation*** *Holger Pfaender, Georgia Institute of Technology*
2:30 p.m.	***ORAL ONLY***	***Recent Electric Aircraft Developments*** *David John Paisley, Boeing Commercial Airplanes*

Planned by Business Economics Committee / EMB Air and Space Group

Tuesday, September 22

Business/Economics - Aircraft for 2030 and Beyond (Part 2 of 2)

Session Code: ***ATC500***

Room 607 ***Session Time:*** ***3:30 p.m.***

NASA has chartered teams to study commercial transports that can overcome significant performance and environmental challenges for the benefit of the general public. The work is intended to identify key technology development needs as well as breakthroughs that will enable such vehicles to enter service in 2030-2035. The vehicles represent a research and development generation known as "N+3," denoting three generations beyond the current commercial transport fleet.

Organizers - *Fayette S. Collier, NASA Langley Research Center; William Rickard, Mooney International - Chino; Richard Wahls, NASA Langley Research Center*

Chairpersons - *Fayette S. Collier, NASA Langley Research Center*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Progress Toward Blended Wing Body Aircraft Configurations (Part 2)*** *Robert H. Liebeck, Boeing Co.*
4:00 p.m.	***ORAL ONLY***	***Progress Toward Blended Wing Body Aircraft Configurations (Part 2)*** *Robert H. Liebeck, Boeing Co.*
4:30 p.m.	***ORAL ONLY***	***The D8 Aircraft Concept and Its Boundary Layer Ingestion Benefit*** *Alejandra Uranga, Massachusetts Institute of Technology*

Planned by Business Economics Committee / EMB Air and Space Group

Tuesday, September 22

Business/Economics - New Global Markets (Part 1 of 2)

Session Code: ***ATC505***

Room 607 ***Session Time:*** ***5:00 p.m.***

Continued growth in aerospace requires new global markets. What are these markets and how will they be addressed? What steps will manufacturers and service providers take to address these new markets? Papers and presentations should address future growth areas/locations; strategies for managing and developing international opportunities; new product/service offerings for global markets; new technologies; and new applications for existing products/technologies.

Organizers - *William Rickard, Mooney International - Chino*

Chairpersons - *William Rickard, mooney international*

Time	Paper No.	Title
5:00 p.m.	***ORAL ONLY***	***Indian Aviation ¿ Addressable Markets & Growth Strategies*** *S. P. Shukla, Mahindra Group - Aerospace and Defence*

Planned by Business Economics Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC201***

Room 608 ***Session Time:*** ***1:30 p.m.***

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 - *Steven L. Brisben, Boeing Co.; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2492***	***Panel Assembly Line (PAL) for High Production Rates*** *Michael Assadi, Electroimpact Inc.; Samuel Dobbs, Brian Stewart, Boeing Commercial Airplanes; Sean Hollowell, Joseph Elsholz, Electroimpact Inc.*
2:00 p.m.	***2015-01-2493***	***Towards Self-Adaptive Fixturing Systems for Aircraft Wing Assembly*** *Dan Vaughan, David Branson, Otto Jan Bakker, Svetan Ratchev, University of Nottingham*
2:30 p.m.	***2015-01-2494***	***System for Recirculation of Mobile Tooling*** *Benjamen D. Hempstead, Scott Smith, Electroimpact Inc.*
	2015-01-2495	***Design and Development of a Novel Re-Configurable Fixturing System (Written Only -- No Oral Presentation)*** *N.D. Jayaweera, L.U. Subasinghe, H.G.A.R. Gajanayaka, University of Moratuwa*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC201***

Room 608 ***Session Time:*** ***3:30 p.m.***

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 - *Steven L. Brisben, Boeing Co.; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Converting a large VTP Box- Assembly into a Flow Line*** *Matthias Havekost, Airbus Operations GmbH; Thomas Schneider, Broetje-Automation GmbH*
4:00 p.m.	***2015-01-2491***	***Integrated Ball-Screw Based Upset Process for Index Head Rivets Used in Wing Panel Assembly*** *Paul Haworth, Electroimpact Inc.; Donald Peterson, The Boeing Company; Curtis Hayes, Electroimpact Inc*
4:30 p.m.	***2015-01-2496***	***Light Weight Aerospace Assembly Fixture*** *Lucy Agyepong, Manufacturing Technology Centre; Marcus Rafla, David Tomlinson, Airbus Operations Ltd.; Karl-Otto Strömberg, Flexprop; Alan Howarth, Aerotech Design Consultants*

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC202***

Room 609 ***Session Time:*** ***1:30 p.m.***

This session presents the latest developments in aircraft assembly unique to components made of composite materials, which include the temporary and permanent fastening of these assemblies.

Organizers - *Mark W. Smith, Lockheed Martin Aeronautics Co.; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2497***	***Non-Contact Measurement of Aerospace Fastener Holes, Using Ring Laser Adaptive Optics*** *George Nicholas Bullen, Smart Blades Inc.*
2:00 p.m.	***2015-01-2498***	***A New ReDesign for Assembly Method For Legacy Product Assembly Optimisation*** *AbdulRahman El-Nounu, Svetan Ratchev, Richard Crossley, University of Nottingham; Kevin Forster, Airbus*
2:30 p.m.	***2015-01-2499***	***Structural Quality Inspection Based on a RGB-D Sensor: Supporting Manual-to-Automated Assembly Operations*** *Perla Maiolino, Richard A. J. Woolley, Atanas Popov, Svetan Ratchev, University of Nottingham*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, September 22

Auto Fastening/Assembly & Tooling (AeroFast) - Advancements in Drill Bit, Temporary and Permanent Fastening Technology

Session Code: ***ATC206*** ***3:30 p.m.***

Room 609 ***Session Time:***

This session covers advancements in hole generation such as drill bit designs, materials, and coatings, as well as advancements in both temporary and permanent fastener technology developed for automation

Organizers - *Randall C. Gifford, The Boeing Company; Clayton L. Munk, Boeing; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Next Generation Blind Threaded Nut or Stud for Metals and Composites***
		James Ross, Len Reid, Fatigue Technology Inc.
4:00 p.m.	***~~2015-01-2518~~ ORAL ONLY***	***The Position Deviation Compensating Positive Fit Joint (PDC-PFJ)***
		Wolfgang Weiss, IBW-Ingenieurbuero Wolfgang Weiss
4:30 p.m.	***~~2015-01-2516~~ ORAL ONLY***	***Aerospace Industry 4.0 - Power Hand Tool Implications - Key Technological Enabler for Various Assembly Processes: Clamping, Fastening, Drilling, Quality check***
		Christophe Secheret, Desoutter Industrial Tools
5:00 p.m.	***2015-01-2515***	***Use of Synchronized Parallel Grippers in Fastener Injection Systems***
		Adlai Felser, Peter B. Zieve, Bryan Ernsdorff, Electroimpact Inc.
	2015-01-2517	***Robotic Drilling and Countersinking on Highly Curved Surfaces (Written Only -- No Oral Presentation)***
		Sean Holt, Rider Clauss, Electroimpact Inc.

Planned by AeroFast International Committee / EMB Air and Space Group

Tuesday, September 22

Power and Thermal Systems - Power Systems for Aerospace Applications (Part 1 of 4)

Session Code: ***ATC1100***

Room 611 ***Session Time:*** ***1:30 p.m.***

Advanced more electric vehicle products and technologies for aerospace systems including, but not limited to, power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas shall be featured in this session.

Organizers - *Jon Fifield, Astronics AES; Travis E. Michalak, US Air Force Research Laboratory; Patrick Norman, Univ. of Strathclyde; Christopher Severns, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2407***	***Evaluation of Paralleled Generation Architectures for Civil Aircraft Applications***
		Theodoros Kostakis, Patrick Norman, Steven Fletcher, Stuart Galloway, Graeme Burt, University of Strathclyde
2:00 p.m.	***ORAL ONLY***	***High Speed Differential Protection System for Aircraft DC Distribution Systems Incorporating Solid State Circuit Breaking Capability***
		Steven David Angus Fletcher, Kenny Fong, Stuart Galloway, Graeme Burt, Univ. of Strathclyde

2:30 p.m.	***2015-01-2404***	***Protection System Considerations for DC Distributed Electrical Propulsion Systems***
		Catherine E. Jones, Karen Davies, Patrick Norman, Stuart Galloway, Graeme Burt, University of Strathclyde; Michael Armstrong, Andrew Bollman, Rolls-Royce Corporation

Planned by Power Systems Committee / EMB Air and Space Group

Tuesday, September 22

Power and Thermal Systems - Systems Integration: Optimized Aerospace Vehicle Energy Use

Session Code: ***ATC1101***

Room 611 ***Session Time:*** ***3:30 p.m.***

This session aims to bring together perspectives, highlighting past and future research efforts in the integration of aircraft power and thermal management 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 aircraft applications. This session intends to include both airframer and aircraft systems supplier perspectives.

Organizers - *Jon Fifield, Astronics AES; James M. Haas, Air Force; Travis E. Michalak, US Air Force Research Laboratory; Mario R. Rinaldi, UTC Aerospace; Christopher Severns, Boeing Commercial Airplanes*

Time	***Paper No.***	***Title***
3:30 p.m.	***2015-01-2415***	***Development and Performance of a Reduced Order Dynamic Aircraft Model***
		Kyle Shimmin, Greg Russell, PC Krause & Associates; Robert A. Reuter, Steven Iden, US Air Force
4:00 p.m.	***2015-01-2417***	***PowerFlow: A Toolbox for Modeling and Simulation of Aircraft Systems***
		Matthew Williams, Srikanthan Sridharan, Subhabrata Banerjee, Chris Mak, Craig Pauga, Philip Krein, Andrew Alleyne, Anthony Jacobi, Steven D'Urso, University of Illinois
4:30 p.m.	***2015-01-2414***	***Architecture and Parameter Optimization for Aircraft Electro-Hydraulic Power Generation and Distribution Systems***
		Carsten Dunker, Riko Bornholdt, Frank Thielecke, Hamburg University of Technology; Robert Behr, Airbus Deutschland GmbH
5:00 p.m.	***2015-01-2416***	***Integrated Power and Thermal Management System (IPTMS) Demonstration Including Preliminary Results of Rapid Dynamic Loading and Load Shedding at High Power***
		Charles E. Oberly, UES Inc.; Michelle Bash, PC Krause & Associates; Benjamin R. Razidlo, Travis E. Michalak, Fernando Rodriguez, US Air Force Research Laboratory

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Power Systems Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC704***

Room 612 ***Session Time: 1:30 p.m.***

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 - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University; Branko Sarh, Boeing; Jake Schultz, Boeing Commercial Airplanes; Robert T. Welge, Sikorsky Aircraft Corp.*

Chairpersons - *Branko Sarh, Boeing*

Assistant Chairpersons - *Jake Schultz, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	***ORAL ONLY***	***Hyper Commuter Roadable Mission Concept with Application to Early Adopter Markets***
		Mark D. Moore, NASA Langley Research Center
2:00 p.m.	***ORAL ONLY***	***Transition Street Legal Airplane and the TF-X Flying Car***
		Carl Dietrich, Terrafugia
2:30 p.m.	***ORAL ONLY***	***The CaraVellair Roadable Aircraft Propulsion System***
		Joseph Robert Caravella, Caravella Aerospace
3:00 p.m.	***ORAL ONLY***	***The Story of the Aerocar ¿ told using the designer¿s original Kodachrome slides***
		Jake Schultz, Boeing Commercial Airplanes

Planned by Flight Sciences Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC704***

Room 612 ***Session Time: 3:30 p.m.***

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 - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes; Branko Sarh, Boeing; Jake Schultz, Boeing Commercial Airplanes*

Chairpersons - *Jake Schultz, Boeing Commercial Airplanes*

Assistant Chairpersons - *Jake Schultz, Boeing Commercial Airplanes*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***A Wankel type rotary engine can uniquely provide attitude control and safety in a ducted fan VTOL aircraft.***
		Paul Moller, Moller Intl.
4:00 p.m.	***ORAL ONLY***	***Aeromobile prototype development***
		Stefan Klein, AeroMobil
4:30 p.m.	***2015-01-2574***	***Aerodynamic Load Maps of Vehicle Shapes at Arbitrary Attitude***
		Nicholas R. Motahari, Franklin Turbeville, Nandeesh Hiremath, Narayanan Komerath, Georgia Institute of Technology

5:00 p.m.	***ORAL ONLY***	***NASA LEAPTech Distributed Electric Propulsion Design, Analysis, Fabrication, and Testing***
		LEAPTech (Leading Edge Asynchronous Propeller Technology) is an investigation into the feasibility of Distributed Electric
		Mark D. Moore, NASA Langley Research Center

Planned by Flight Sciences Committee / EMB Air and Space Group

Tuesday, September 22

Systems Engineering - Systems Engineering (Part 1 of 3)

Session Code: ***ATC1400***

Room 613 ***Session Time:*** ***1:30 p.m.***

The Systems Engineering sessions explore and discuss a range of systems engineering tools and concepts to include examples of application to current systems engineering concerns. Topics include investigation of requirements definition, configuration management, life cycle cost analysis, failure modes and effects analyses, and design optimization. Across these topics the discussions include application of model based system engineering, use of SysML, and other structured system descriptions.

Organizers - *Joel Boelke, United Technologies Aerospace; Richard J. Cohen, Bombardier Aerospace; Peter F. Klon, Boeing Co.; Gustave Nfonguem, Bombardier Aeronautique*

Chairpersons - *Joel Boelke, United Technologies Aerospace*

Time	***Paper No.***	***Title***
1:30 p.m.	***ORAL ONLY***	***A Platform Level View of Systems Engineering - Extending Across Physical Implementations***
		Bill Chown, Mentor Graphics Corp.
2:00 p.m.	***ORAL ONLY***	***Digital Continuity and the Impact to Life Cycle Costs of Aerospace Platforms***
		Nick Smith, Mentor Graphics Corp

Planned by Systems Engineering Committee / EMB Air and Space Group

Tuesday, September 22

Systems Engineering - Systems Engineering (Part 2 of 3)

Session Code: ***ATC1400***

Room 613 ***Session Time:*** ***3:30 p.m.***

The Systems Engineering sessions explore and discuss a range of systems engineering tools and concepts to include examples of application to current systems engineering concerns. Topics include investigation of requirements definition, configuration management, life cycle cost analysis, failure modes and effects analyses, and design optimization. Across these topics the discussions include application of model based system engineering, use of SysML, and other structured system descriptions.

Organizers - *Joel Boelke, United Technologies Aerospace; Richard J. Cohen, Bombardier Aerospace; Peter F. Klon, Boeing Co.; Gustave Nfonguem, Bombardier Aeronautique*

Chairpersons - *Joel Boelke, United Technologies Aerospace*

Time	***Paper No.***	***Title***
3:30 p.m.	***2015-01-2445***	***Using Model-Based Security Engineering in the Development of Complex Aircraft Cabin Systems***
		Hartmut Hintze, Ralf God, Hamburg University of Technology

4:30 p.m.	***2015-01-2447***	***Systems Engineering Approach to Electrical Wire Interconnection System (EWIS) Development***
		John Low, Mentor Graphics Corp.
	2015-01-2444	***Creation of Failure Modes and Effects Analyses from SysML (Written Only -- No Oral Presentation)***
		Myron Hecht, Elisabeth Nguyen, Aaron Chuidian, Julia Pinchak, Emily Dimpfl, The Aerospace Corporation
	2015-01-2446	***Pugh Analysis for Configuration Selection of a Hybrid Buoyant Aircraft (Written Only -- No Oral Presentation)***
		Anwar ul Haque, Waqar Asrar, Erwin Sulaeman, International Islamic University; Ashraf Omar, University of Tripoli; Jaffar Syed Mohamed Ali, International Islamic University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Systems Engineering Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC901***

Room 614 ***Session Time:*** ***1:30 p.m.***

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 - *Carroll G. Grant, Aerospace Composites Consulting; Paul Lightowler, Nikon Metrology; Claude Perron, Centre Technologique en aerospatiale; Mark Derren Summers, Airbus UK*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-2600***	***Systems and Methods for Manufacturing Aircraft Furniture Parts Using an Integrated Automated Cell***
		Gustavo Franco Barbosa, Elton Candia Cordeiro, Fábio Rodrigues Costa, EMBRAER S/A
2:00 p.m.	***2015-01-2598***	***New Tracking Technology Enables Robots to Carry Out New Tasks on Composite Parts and its Molds***
		Gustavo Lasierra Ferrer, EINA
2:30 p.m.	***2015-01-2601***	***Human Hybrid Robot, Next-generation Support Technology for Manual Tasks: Challenges, Perspectives and Economic Implications***
		Zhejun Yao, Helmut Schmidt University; Wiltrud Weidner, Leibniz University Hannover; Robert Weidner, Jens Wulfsberg, Helmut Schmidt University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00524, and also individually. To purchase visit collections.sae.org

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

Tuesday, September 22

Manufacturing/Materials/Structures - Aircraft Coatings, Polymers and Sealant Technologies

Session Code: ***ATC902***

Room 614 ***Session Time:*** ***3:30 p.m.***

The focus is on current issues and new developments critical to the successful development, application, and measurement in aerospace applications. Topics include but are not limited to: Surface Preparation, Conversion Coatings, Primers, Topcoats, Specialty Coatings, Polymer Composite, Materials Development, Application and Processing Techniques, Adhesion Characteristics, Measurement Technologies, Environmental, Health and Safety, Manufacturability, and Engineering Performance.

Organizers - *Carroll G. Grant, Aerospace Composites Consulting; Richard Wire, Boeing*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***777 Wing Automated Spray Method*** *Craig Ungerecht, The Boeing Company*
4:00 p.m.	***~~2015-01-2603~~ ORAL ONLY***	***Simulation and modeling of primer adhesion on anodized Al surface*** *Xuecheng Dong, Simtech, Agency for Science, Technology*
4:30 p.m.	***~~2015-01-2604~~ ORAL ONLY***	***Radar Absorbing Materials (RAM) Based On ITO Thin Films*** *Rafael De La Vega de Mendonça, Universidade Federal de Santa Catarina*
5:00 p.m.	***2015-01-2605***	***Electrochemical Noise Behavior of YSZ Coatings Applied by Magnetron Sputtering on Aircraft Alloys*** *Jamnie Yazmín Achem Calahorra, Universidad Autónoma de Nuevo León; Hilda E. Esparza Ponce, Centro de Investigación en Materiales Av; Patricia Zambrano Robledo, Facundo Almeraya Calderón, Citlalli Gaona Tiburcio, Universidad Autónoma de Nuevo León*

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

Tuesday, September 22

Manufacturing/Materials/Structures - Metals, Fabrication and Processing (Part 1 of 2)

Session Code: ***ATC907***

Room 615 ***Session Time:*** ***1:30 p.m.***

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 - *Jeffrey Morgan, Boeing; Paul Jeffrey Tauzer, Boeing Commercial Airplanes; Carroll G. Grant, Aerospace Composites Consulting*

Assistant Chairpersons - *Paul Jeffrey Tauzer, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2613***	***Comparison of 15-5PH Stainless Steel Type 1 versus Type 2 Fatigue Data for Aircraft Primary Structural Elements*** *Douglas Leicht, Kirk Olsen, Lord Corporation*
2:00 p.m.	***ORAL ONLY***	***Introduction of Friction Stir Welding on Front Fuselage Primary Structures of Aircrafts*** *David CHARTIER, Stelia Aerospace*

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

Tuesday, September 22

Manufacturing/Materials/Structures - Product Design and Manufacturing Integration

Session Code: ***ATC909*** ***3:30 p.m.***

Room 615 ***Session Time:***

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 - *Carroll G. Grant, Aerospace Composites Consulting; Charles Y. Hu, Carlos Walker, Boeing*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Numeric Modeling of Composite Airframe Seals using Finite Element Analysis***
		Jonathan Hurst, Pedro Bastias, Trelleborg Sealing Solutions
4:00 p.m.	***ORAL ONLY***	***Topology Optimization of Nose and Forward Fuselage***
		Nicolas KAWSKI, Stelia Aerospace
4:30 p.m.	***2015-01-2620***	***An Exploration of Power Spectral Density (PSD) Estimation, with an Introduction to iDOF¿ Instant Degrees of Freedom***
		Philip Van Baren, Vibration Research
5:00 p.m.	***2015-01-2621***	***Finite Element Analysis Simulation of a Fireproof Test for an Aircraft Propulsion Engine Mount Structure Made of Titanium***
		Douglas Leicht, Lord Corporation

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

Tuesday, September 22

Avionics - Model-based Avionics System, Software & Electronic Engineering (Part 1 of 2)

Session Code: ***ATC403***

Room 616 ***Session Time:*** ***3:30 p.m.***

Model-based engineering is the key paradigm for reducing the development costs and cycle of complex real-time and safety-critical systems. This session focuses on model-based engineering for avionics, software, system architecture and specification, and covers different methodologies, tools, and their practical application in different phases of the system lifecycle.

Organizers - *Jace Allen, dSPACE Inc.; David P. Zika, Boeing Research & Technology*

Chairpersons - *Jace Allen, dSPACE Inc.*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Managing Complexity in Software Models***
		Julien Delange, Research; Peter Feiler, Robert Stoddard, Software Engineering Institute
4:00 p.m.	***2015-01-2531***	***Model-based Method to Automate the Design of IMA Avionics System Based on Cosimulation***
		Lin Bao, Guy Bois, École Polytechnique de Montréal; Jean-François Boland, École de Technologie Superieure; Julien Savard, Mannarino Systems & Software Inc.
4:30 p.m.	***ORAL ONLY***	***Modeling and Analyzing IMA Architectures with AADL, From Modeling to Safety Evaluation and Code Generation: A Case-Study***
		Jerome Hugues, ISAE
5:00 p.m.	***ORAL ONLY***	***Rapid avionics product development with agile and iterative hardware/system design***
		Chris Hall, ASTC Design

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, September 22

Avionics - Defense and Space Avionics

Session Code: ***ATC404***

Room 617 ***Session Time:*** ***1:30 p.m.***

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 - *Roscoe C. Ferguson, Ferguson Control Systems LLC; David P. Zika, Boeing Research & Technology*

Chairpersons - *Roscoe Ferguson, Ferguson Control Systems LLC*

Time	Paper No.	Title
1:30 p.m.	***ORAL ONLY***	***Reducing No Fault Found and Improving Operational Availability through Intermittent Fault Detection***
		Ken Anderson, Universal Synaptics Corp.
2:00 p.m.	***ORAL ONLY***	***Orion Avionics Endures the Van Allen Belts during EFT-1***
		Roscoe C. Ferguson, Ferguson Control Systems LLC
2:30 p.m.	***ORAL ONLY***	***Terrestrial Return Vehicle***
		Roscoe C. Ferguson, Ferguson Control Systems LLC

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, September 22

Avionics - Flight Management Systems, Navigation & Guidance

Session Code: ***ATC407***

Room 617 ***Session Time:*** ***3:30 p.m.***

Avionics sensors and electronics systems for flight/propulsion guidance, navigation, and control for aircraft, missiles and spacecraft. Evaluations, modeling, and testing of system level architectural requirements, design, for avionics sensors, flight control and propulsion control systems. Methods to create plans and procedures for tests of Guidance Navigation Control (GNC), and integrated vehicle systems and to perform test data analysis to validate system design requirements and objective.

Organizers - *Bob Yeh, Boeing Commercial Airplanes; David P. Zika, Boeing Research & Technology*

Chairpersons - *David Zika, Boeing Research & Technology*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2541***	***Aircraft Vertical Route Optimization Deterministic Algorithm for a Flight Management System***
		Alejandro Murrieta-Mendoza, Ruxandra Botez, University of Quebec
4:00 p.m.	***2015-01-2542***	***Flight Altitude Optimization Using Genetic Algorithms Considering Climb and Descent Costs in Cruise with Flight Plan Information***
		Alejandro Murrieta-Mendoza, Ruxandra Mihaela Botez, Roberto S Félix Patrón, University of Quebec

4:30 p.m.	***~~2015-01-2543~~ ORAL ONLY***	***Enhanced Bank Angle Warning: A Tool to Prevent Loss of Control -- In-flight*** *Curtis Ewbank, Boeing Commercial Airplanes*
5:00 p.m.	***2015-01-2544***	***Communication, Navigation and Surveillance Performance Criteria for Safety-Critical Avionic Systems*** *Subramanian Ramasamy, Roberto Sabatini, RMIT University*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00523, and also individually. To purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, September 22

Avionics - DO-178C and Highly Complex SoC (Part 1 of 2)

Session Code: ***ATC413***

Room 618 ***Session Time:*** ***1:30 p.m.***

The avionics industry has been working to the DO-178 standard for software development and certification approval. There are many areas of this standard which are in flux due to the complexities of the technology as well as the changes in the certification policies in commercial and military programs. This session will discuss several areas of current dialog and concern within the certification community as it relates to this standard.

Organizers - *Mirko Jakovljevic, TTTech. Computertechnik AG; Sriprakash Sarathy, Northrop Grumman Aerospace Systems; David P. Zika, Boeing Research & Technology*

Chairpersons - *Mirko Jakovljevic, TTTech Computertechnik AG*

Time	***Paper No.***	***Title***
1:30 p.m.	***~~2015-01-2557~~ ORAL ONLY***	***Safety MCUs and Highly-Complex SoC: Market Trends and Their Impact on Software Design Assurance*** *Mirko Jakovljevic, TTTech. Computertechnik AG*
2:00 p.m.	***ORAL ONLY***	***Issues in software certification for highly complex SoC*** *George Romanski, Verocel Inc.*
2:30 p.m.	***ORAL ONLY***	***Worst-Case Execution Time for DO-178C: Challenges and solutions for new technologies*** *Andrew Coombes, Rapita Systems, Ltd.; Daniel Harris, Rapita Systems Ltd*

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, September 22

Avionics - DO-178C and Highly Complex SoC (Part 2 of 2)

Session Code: ***ATC413***

Room 618 ***Session Time:*** ***3:30 p.m.***

The avionics industry has been working to the DO-178 standard for software development and certification approval. There are many areas of this standard which are in flux due to the complexities of the technology as well as the changes in the certification policies in commercial and military programs. This session will discuss several areas of current dialog and concern within the certification community as it relates to this standard.

Organizers - *Mirko Jakovljevic, TTTech. Computertechnik AG; Sriprakash Sarathy, Northrop Grumman Aerospace Systems; Alex Wilson, Wind River; David P. Zika, Boeing Research & Technology*

Chairpersons - *Mirko Jakovljevic, TTTech Computertechnik AG*

Time	***Paper No.***	***Title***

3:30 p.m.	***2015-01-2558***	***Tool-Supported Structural Coverage Analysis for DO-178C Compliant Software***
		Jörg Brauer, Markus Dahlweid, Verified Systems International GmbH; Jan Peleska, University of Bremen
4:00 p.m.	***ORAL ONLY***	***Meeting Software Safety Requirements for Unmanned Control Systems- Update***
		Sriprakash Sarathy, Northrop Grumman Aerospace Systems

Planned by Avionics Committee / EMB Air and Space Group

Tuesday, September 22

Aerospace Operations - Airspace Systems Operations (Part 1 of 2)

Session Code: ***ATC102***

Room 619 ***Session Time:*** ***1:30 p.m.***

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; Luis Rabelo, University Of Central Florida*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-2401***	***Novel Aircraft Ground Operation Concepts Based on Clustering of Interfaces***
		Michael Schmidt, Munich Aerospace e.V.; Philipp Nguyen, Bauhaus Luftfahrt e.V.; Mirko Hornung, Technische Universität München
2:00 p.m.	***2015-01-2400***	***Trajectory Optimization of Airliners to Minimize Environmental Impact***
		Craig Lawson, Irfan Madani, Ravinka Seresinhe, Devaiah K. Nalianda, Cranfield University
2:30 p.m.	***2015-01-2392***	***Minimizing the Cost of Weather Cells and Persistent Contrail Formation Region Avoidance Using Multi-Objective Trajectory Optimization in Air Traffic Management***
		Matthew Marino, Alessandro Gardi, Roberto Sabatini, RMIT University; Trevor Kistan, Thales Australia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Aerospace Operations Committee / EMB Air and Space Group

Tuesday, September 22

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

Session Code: ***ATC102***

Room 619 ***Session Time:*** ***3:30 p.m.***

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; Luis Rabelo, University Of Central Florida*

Time	***Paper No.***	***Title***

3:30 p.m.	***2015-01-2538***	***Modelling and Evaluation of Aircraft Contrails for 4-Dimensional Trajectory Optimisation***
		Yixiang Lim, Alessandro Gardi, Roberto Sabatini, RMIT University
4:00 p.m.	***2015-01-2539***	***Automated ATM System Enabling 4DT-Based Operations***
		Alessandro Gardi, Roberto Sabatini, Subramanian Ramasamy, Matthew Marino, RMIT University; Trevor Kistan, Thales Australia
4:30 p.m.	***ORAL ONLY***	***Improving Complex System Design Reliability and Robustness***
		Michael Jensen, Mentor Graphics Corp.

Planned by Aerospace Operations Committee / EMB Air and Space Group

Tuesday, September 22

Safety - Systems Safety (Part 1 of 3)

Session Code: ***ATC1303***

Room 620 ***Session Time:*** ***1:30 p.m.***

This session will focus on the development and implementation aspects associated with assuring system safety. The use in industry practices, guidance documentation and systems safety lessons learned are postulated topics.

Organizers - *Andrew Paul Wallington, Gulfstream Aerospace Corp.; Steven Beland, Boeing Commercial Airplanes; Eric M. Peterson, Electron International II Inc.*

Chairpersons - *Andrew Wallington, Gulfstream Aerospace Corp*

Time	***Paper No.***	***Title***
1:30 p.m.	***2015-01-2431***	***Planning for the Application of ARP4754A for New and Modified Aircraft Projects with New, Simple, and Reused Systems***
		Robert E. Voros, Textron Aviation
2:00 p.m.	***2015-01-2434***	***ARP4754 Practice in Chinese Context***
		Tian Lirong, Mu Ming, ACTRI
2:30 p.m.	***2015-01-2438***	***A Scalable, Future Concept for System Safety Processes***
		Robert E. Voros, Textron Aviation
	2015-01-2435	***Resonant Frequency Avoidance (Written Only -- No Oral Presentation)***
		Ramakrishnan Murthy

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Safety Committee / EMB Air and Space Group

Tuesday, September 22

Safety - Systems Safety (Part 2 of 3)

Session Code: ***ATC1303***

Room 620 ***Session Time:*** ***3:30 p.m.***

This session will focus on the development and implementation aspects associated with assuring system safety. The use in industry practices, guidance documentation and systems safety lessons learned are postulated topics.

Organizers - *Andrew Paul Wallington, Gulfstream Aerospace Corp.; Steven Beland, Boeing Commercial Airplanes; Eric M. Peterson, Electron International II Inc.*

Chairpersons - *Andrew Wallington, Gulfstream Aerospace Corp*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2436***	***Average Probability Calculation Methods for System Safety Analysis*** *Anapathur V. Ramesh, Boeing Commercial Airplanes*
4:00 p.m.	***ORAL ONLY***	***Reducing Waste in Aerospace System Safety Processes Using MBSA Technologies*** *Grant Blythe, Mentor Graphics Corp.*

Planned by Safety Committee / EMB Air and Space Group

Tuesday, September 22

Global Partners: Shaping the Future of Aerospace

Session Code: ***ATCPLENARY***

Room 6E ***Session Time:*** ***10:45 a.m.***

Time	Paper No.	Title
8:30 a.m.	***ORAL ONLY***	***Learn More About the Panelists*** *Randy J. Tinseth, Boeing Commercial Airplanes; Paul McGraw, Airlines for America*

Tuesday, September 22

Executive Management Panel Discussion: Cyber-Physical Security

Session Code: ***ATC3008***

Room 6E ***Session Time:*** ***1:30 p.m.***

Recent cyber attack demonstrations, via a vehicle's infotainment systems and aftermarket devices, have shown an impact to safety critical systems. This panel discusses how these cyber attacks apply to the commercial vehicle sector. Potential risks and available protection methodologies will be addressed. Panelists will also talk on how to better define and, evaluate the threat / risk of CyberSecurity as well as the value of standards currently under development will have in their organization.

Moderators - *Gloria D'Anna, General Telecom Systems, Inc.*

Panelists - *John Craig, Boeing; Thomas Farmer, Association of American Railroads; Bruce Mahone, SAE International; Daniel Prince, GE Aviation; Timothy J. Wallach, Federal Bureau of Investigation; Andre Weimerskirch, University of Michigan;*

Time	Paper No.	Title
	ORAL ONLY	***Learn More About the Panelists*** *Timothy J. Wallach, Federal Bureau of Investigation; Daniel Prince, GE Aviation; Gloria D'Anna, General Telecom Systems, Inc.; Thomas Farmer, Association of American Railroads; Andre Weimerskirch, University of Michigan; John Craig, Boeing; Bruce Mahone, SAE International*

Wednesday, September 23

Propulsion - Powerplant Systems & Functionalities (Part 1 of 2)

Session Code: ***ATC1201***

Room 303 ***Session Time: 10:30 a.m.***

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, Naval Postgraduate School; Ramesh Rajagopalan, Pratt & Whitney*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2484***	***Energy Self Sufficient Aircrafts Can Become Reality through New Propulsion Design Approaches***
		Michele Trancossi, Antonio Dumas, Universita di Modena e Reggio Emilia; Guido Niccolai, IR2B srl; Jose Pascoa, Universidade Da Beira Interior
11:30 a.m.	***ORAL ONLY***	***Operational Variables of Absorptive Silencer in Reduction of Low-frequency Noise***
		HosseinAli Yousefi, Isfahan University of Medical Sciences
	2015-01-2423	***Study on Fluidic Thrust Vectoring Techniques for Application in V/STOL Aircrafts (Written Only -- No Oral Presentation)***
		Samarth Jain, Soumya Roy, Dhruv Gupta, Vasu Kumar, Naveen Kumar, Delhi Technological University

Planned by Propulsion Committee / EMB Air and Space Group

Wednesday, September 23

Propulsion - Powerplant Systems & Functionalities (Part 2 of 2)

Session Code: ATC1201

Room 303 ***Session Time: 3:30 p.m.***

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, Naval Postgraduate School; Ramesh Rajagopalan, Pratt & Whitney*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Numerical and Experimental Investigation of a Novel Cross Flow Fan System for Aircraft Propulsion***
		Bayindir H. Saracoglu, Von Karman Institute for Fluid Dynamics; Laura Villafane, Stanford University; Guillermo Paniagua, Purdue University
4:00 p.m.	***ORAL ONLY***	***Hydrogen Propulsion System for Future Space Exploration***
		Shahbaaz Shaik, SRM University
4:30 p.m.	***2015-01-2425***	***Design of ACHEON Thrust and Vector Propulsion System***
		Michele Trancossi, Universita di Modena e Reggio Emilia
5:00 p.m.	***ORAL ONLY***	***Super Energy and Cost Economy Propulsion of Vehicle based on Air***
		Vladimir Abramov, Transunimission Inc.

	2015-01-2424	***Two Stroke Direct Injection Jet Ignition Engines for Unmanned Aerial Vehicles (Written Only -- No Oral Presentation)***
		Alberto Boretti, West Virginia University; Shuheng Jiang

Planned by Propulsion Committee / EMB Air and Space Group

Wednesday, September 23

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

Session Code: ***ATC1800***

Room 310 ***Session Time:*** ***8:00 a.m.***

This track focuses on keeping or returning aerospace vehicles to service, such as:
- Regulatory approvals & oversight (existing & proposed)
- Production planning
- Training & competence of mechanics, inspectors, certifying staff
- New technologies, processes, procedures, or repairs
- Continuing airworthiness
- Reducing environmental impact of hazardous materials, recycling & disposal of waste products
- Contracts, interface & oversight between MRO service providers, aircraft owners, & operators

Organizers - *Alan Lesmerises, Standard Aero Inc.*

Chairpersons - *Alan Lesmerises, Standard Aero Inc.*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-2485***	***Aerospace Standard 6228 Developed to Support Improved Productivity and Reduce Occupational Disease Among Powered Hand Tool Operators***
		Mark Benjamin Geiger, Naval Safety Center Naval Base; John Michael Ster, JMS Aerospace
8:30 a.m.	***ORAL ONLY***	***Cracking the Predictive Maintenance Code Through Data Management***
		Manuel Terranova, Peaxy
9:00 a.m.	***2015-01-2486***	***Item Unique Identification Cost Benefit Study for Legacy Gas Turbine Engine Fleet Maintenance***
		Greg Kilchenstein, OSD; F. Matthew Juarez, StandardAero
9:30 a.m.	***~~2015-01-2622~~***	***Utility of passive RFIDs to augment aircraft security***
	ORAL ONLY	*Pranesha Shashwath Kumar K J, Aerospace & Defence Industry*

Planned by Maintenance, Repair and Overhaul Committee / EMB Air and Space Group

Wednesday, September 23

Environment - Aircraft Cabin Environment

Session Code: ***ATC600***

Room 310 ***Session Time:*** ***3:30 p.m.***

This section is dedicated to topics related to design issues of environmental control systems. Design topics include mechanical and electrical components, management of airflow, pressure control, transfer of heat loads, gaseous and particulate contaminant removal or control, and environment control for occupant safety, health, and comfort, while reducing energy consumption and weight of materials to manage these variables.

Organizers - *Lubos Forejt, Honeywell International SRO; Paul McMurtry, UTC Aerospace Systems; Rainer Von Wrede, Airbus*

Chairpersons - *Paul McMurtry, UTC Aerospace Systems*

Lubos Forejt, Honeywell International SRO

Assistant Chairpersons -

Time	*Paper No.*	*Title*
3:30 p.m.	***2015-01-2561***	***CFD Thermal Comfort in Aircraft Cabin: a Comparative Study***
		Fernando Stancato, Sandro Conceicao, Ramon Papa, Luis Santos, EMBRAER
4:00 p.m.	***ORAL ONLY***	***A review of Indoor Air Quality Research and Development at United Technologies From Aircraft to Building Applications***
		Catherine Thibaud, United Technologies Research Center
4:30 p.m.	~~***2015-01-2559***~~ ***ORAL ONLY***	***Aircraft Cockpit Termal Design based on CFD Simulation***
		Sandro Tavares Conceeção, Embraer
5:00 p.m.	~~***2015-01-2560***~~ ***ORAL ONLY***	***High Efficiency Solar Panels for Inflight Pressurization and Refrigeration***
		Ashwin Kumar Kuchibotla, Vidya Jyothi Institute Of Technology

Planned by Environment Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - LTA /Hybrid Airships (Part 1 of 3)

Session Code: ***ATC707***

Room 602 ***Session Time:*** ***8:00 a.m.***

This session covers design, flight characteristics, testing and concept of operations of Lighter Than Air (LTA) craft (balloons, airships), and Hybrid concepts for which aerostatic buoyancy provides a significant portion of required lift for a heavier-than-air aircraft. Presentations of project overviews, case histories with lessons learned, and status reports on on-going development efforts are encouraged.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes*

Chairpersons - *Chester P. Nelson, Boeing Commercial Airplanes*

Time	*Paper No.*	*Title*
8:00 a.m.	***ORAL ONLY***	***Renewable Efficient Low-impact Airship for Transport Energetically Self-sufficient***
		Michele Trancossi, Universita di Modena e Reggio Emilia
8:30 a.m.	***ORAL ONLY***	***MAAT airship dimensioning method***
		Michele Trancossi, Antonio Dumas, Mauro Madonia, Diego Angeli, Andrea Cimarelli, Universita di Modena e Reggio Emilia; Jose Pascoa, Galina ilieva, Universidade Da Beira Interior; Rebecca Margets, University of Lincoln; Dean Vucinic, Vrije Universiteit Brussel
9:00 a.m.	***ORAL ONLY***	***MAAT cruiser/feeder airship design: intrinsic stability and energetic flight model***
		Michele Trancossi, Antonio Dumas, Andrea Cimarelli, Mauro Madonia, Universita di Modena e Reggio Emilia
9:30 a.m.	***ORAL ONLY***	***MAAT an All Electric Airship concept ¿ Energy Production, Storage and Transport Systems***
		Tim Smith, University of Lincoln

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - LTA /Hybrid Airships (Part 2 of 3)

Session Code: ***ATC707***

Room 602 ***Session Time:*** ***10:30 a.m.***

This session covers design, flight characteristics, testing and concept of operations of Lighter Than Air (LTA) craft (balloons, airships), and Hybrid concepts for which aerostatic buoyancy provides a significant portion of required lift for a heavier-than-air aircraft. Presentations of project overviews, case histories with lessons learned, and status reports on on-going development efforts are encouraged.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes*

Chairpersons - *Chester P. Nelson, Boeing Commercial Airplanes*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2579***	***Spy Blimps Revisited: A Performance Comparison between Two Competing Approaches***
		Brandon Todd Buerge, Wichita State University
11:00 a.m.	***2015-01-2578***	***Airship and Hot Air Balloon Real Time Envelope Shape Prediction through a Cloth Simulation Technique***
		Alessandro Ceruti, University of Bologna; Piergiovanni Marzocca, RMIT University
	2015-01-2577	***New Unconventional Airship Concept by Morphing the Lenticular Shape (Written Only -- No Oral Presentation)***
		Alessandro Ceruti, University of Bologna; Piergiovanni Marzocca, RMIT University; Vitaly Voloshin, Cranfield University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - Aircraft Design

Session Code: ***ATC700***

Room 602 ***Session Time:*** ***1:30 p.m.***

This session will cover flight vehicle performance and sizing, conceptual/preliminary design, MDO, aero-propulsion integration, design education.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Paul Dees, Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University*

Chairpersons - *Paul Dees, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2566***	***Tailplane with Positive Camber for Reduced Elevator Hinge Moment***
		Reuben Chandrasekharan, Nick Iarocci, Sherry Vafa, Iyad Akel, Bombardier Aerospace

2:00 p.m.	***2015-01-2564***	***Development of a Multi-Disciplinary Optimization Framework for Nonconventional Aircraft Configurations in PACELAB APD***
		Benjamin Riggins, Davide Locatelli, Joseph Schetz, Rakesh Kapania, Virginia Tech; Thomas Poquet, Safran SNECMA
2:30 p.m.	***2015-01-2565***	***Development of Variable Camber Continuous Trailing Edge Flap for Performance Adaptive Aeroelastic Wing***
		Nhan Nguyen, NASA Ames Research Center; Sonia Lebofsky, Eric Ting, Stinger Ghaffarian Technologies, Inc.; Upender Kaul, NASA Ames Research Center; Daniel Chaparro, Stinger Ghaffarian Technologies, Inc.; James Urnes, Boeing Aircraft Co.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - LTA /Hybrid Airships (Part 3 of 3)

Session Code: ***ATC707***

Room 602 ***Session Time:*** ***3:30 p.m.***

This session covers design, flight characteristics, testing and concept of operations of Lighter Than Air (LTA) craft (balloons, airships), and Hybrid concepts for which aerostatic buoyancy provides a significant portion of required lift for a heavier-than-air aircraft. Presentations of project overviews, case histories with lessons learned, and status reports on on-going development efforts are encouraged.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes*

Chairpersons - *Chester P. Nelson, Boeing Commercial Airplanes*

Time	***Paper No.***	***Title***
3:30 p.m.	***ORAL ONLY***	***Optimisation Strategies for the MAAT Airship Energy Production and Utilisation***
		Tim Smith, University of Lincoln
4:00 p.m.	***ORAL ONLY***	***Novel Thrust Vectoring System for Airships***
		Tim Smith, University of Lincoln
4:30 p.m.	***ORAL ONLY***	***Control method for minimising airship energy consumption whilst maintaining passenger comfort and controlling GoG***
		Tim Smith, University of Lincoln; Rebecca Margetts
5:00 p.m.	***ORAL ONLY***	***Lift Technology and Propulsion Systems for a Porous Media Hydrogen Filled Airship***
		Jose C. Pascoa, Fernando Santos PhD, Frederico Rodrigues, Universidade da Beira Interior; Michele Trancossi, Antonio Dumas, Universita di Modena e Reggio Emilia

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Unmanned Aerial Systems - Propulsion (Part 1 of 2)

Session Code: ***ATC1505*** ***8:00 a.m.***

Room 603 ***Session Time:***

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 - *Richard Garcia, Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University; Michele Trancossi, Universita di Modena e Reggio Emilia*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2465***	***Multifunctional Unmanned Reconnaissance Aircraft for Low-Speed and STOL Operations***
		Michele Trancossi, Universita di Modena e Reggio Emilia; Chris Bingham, University of Lincoln; Alfredo Capuani, Nimbus SRL; Shyam Das, Universidade Da Beira Interior; Antonio Dumas, Universita di Modena e Reggio Emilia; Francesco Grimaccia, Nimbus SRL; Mauro Madonia, Universita di Modena e Reggio Emilia; Jose Pascoa, Universidade Da Beira Interior; Tim Smith, University of Lincoln; Paul Stewart, University of Hull; Maharshi Subhash, Universita di Modena e Reggio Emilia; Anna Sunol, Dean Vucinic, Vrije Universiteit Brussel
8:30 a.m.	***ORAL ONLY***	***Design, Development, Bench and Flight Tests of Fuel Cell Powered Unmanned Air Vehicles***
		Nieves Lapena, Boeing Research & Technology Europe; Sergio Pereira, Self-employed; Jose Lemus, Jose Blanco, Enrique Serrot, Eduardo Ferreyra, Boeing Research and Technology Europe
	2015-01-2466	***CAD/CFD/CAE Modelling of Wankel Engines for UAV (Written Only -- No Oral Presentation)***
		Alberto Boretti, West Virginia University

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

Wednesday, September 23

Unmanned Aerial Systems - Propulsion (Part 2 of 2)

Session Code: ***ATC1505***

Room 603 ***Session Time:*** ***10:30 a.m.***

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 - *Richard Garcia, Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University; Michele Trancossi, Universita di Modena e Reggio Emilia*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2467***	***Modelling of Distributed-Propulsion Low-Speed HALE UAVs Burning Liquid Hydrogen***
		Luca Gallo, Bernard Tashie-Lewis, Panos Laskaridis, Cranfield University; Paul Miller, Mark Husband, Rolls-Royce plc

11:00 a.m.	***2015-01-2464***	***Experimental Identification of the Detachment Point on the ACHEON Thrust-Vectoring Nozzle***
		Anna Suñol Jiménez, Tao Yang, Dean Vucinic, Vrije Universiteit Brussel
11:30 a.m.	***2015-01-2468***	***NDI-Based Controller for Acheon-Based Thrust Vectoring of Aircraft***
		Rebecca Margetts, Chris Bingham, Tim Smith, University of Lincoln

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

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

Wednesday, September 23

Unmanned Aerial System - Guidance, Navigation and Control

Session Code: ***ATC1502***

Room 603 ***Session Time:*** ***3:30 p.m.***

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, California State Univ-Sacramento; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University; Ilhan Tuzcu, California State Univ-Sacramento; Jeff Warra, dSPACE Inc.; Jay Wilhelm, West Virginia Univ.*

Chairpersons - *Kahtan Awni, California State Univ-Sacramento*

Time	***Paper No.***	***Title***
3:30 p.m.	***ORAL ONLY***	***Reducing SWaP-C in UAVs with a Consolidated PNT Modular Sensor***
		Lisa Perdue, Spectracom; Jeff Warra, dSPACE Inc.
4:00 p.m.	***2015-01-2459***	***Low-Cost RPAS Navigation and Guidance System using Square Root Unscented Kalman Filter***
		Francesco Cappello, Subramanian Ramasamy, Roberto Sabatini, RMIT University
4:30 p.m.	***2015-01-2458***	***FMS and AFCS Interface for 4D Trajectory Operations***
		Giuseppe Sirigu, Manuela Battipede, Piero Gili, Mario Cassaro, Politecnico di Torino
5:00 p.m.	***2015-01-2456***	***Investigation of GNSS Integrity Augmentation Synergies with Unmanned Aircraft Sense-and-Avoid Systems***
		Roberto Sabatini, RMIT University; Terry Moore, Chris Hill, The University of Nottingham; Subramanian Ramasamy, RMIT University
	2015-01-2457	***Adaptive Multi-Agent Unmanned Aerial Vehicle Systems with a Potential Field based Leader-Follower Formation Control Method (Written Only -- No Oral Presentation)***
		Jae Chung, US Army ARDEC; Yushing Cheung, National Cheng Kung University

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

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

Wednesday, September 23

Integrated Vehicle Health Management - Health Monitoring - Structures

Session Code: ***ATC803***

Room 604 ***Session Time:*** ***8:00 a.m.***

Technologies related to monitoring of aircraft structural components for health and usage. They include sensors, miniaturized data acquisition systems, wireless sensors, energy harvesting, diagnostics and prognostics algorithms, modeling and simulations, methods to assess remaining useful life of structural components, and condition based maintenance.

Organizers - *Peter Foote, Cranfield Univ.; Robab Safa-Bakhsh, Boeing Research & Technology; Rhonda D. Walthall, UTC Aerospace Systems*

Chairpersons - *J-B Ihn, Boeing Co.; Robab Safa-Bakhsh, Boeing Research & Technology*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2585***	***Multi-Body Model of a Fixed-Wing Large Passenger Aircraft for Nonlinear State Estimation*** *Tuur Benoit, Yves Lemmens, Siemens PLM Software; Wim Desmet PhD, KU Leuven*
8:30 a.m.	***2015-01-2586***	***Vibration Response and Damage Detection of Carbon/ Epoxy Beams at Elevated Temperatures using the Hilbert-Huang Transform*** *Bradley Michael, Rani Warsi Sullivan, Dulip Samaratunga, Ratneshwar Jha, Mississippi State University*

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

Wednesday, September 23

Integrated Vehicle Health Management - Health Management - Subsystems

Session Code: ***ATC801***

Room 604 ***Session Time:*** ***10:30 a.m.***

With new methods being developed a structured approach to their validation and verification is needed. This can even be taken as the scientific evidence for airworthiness authorities to allow a new technology to be operational. Concurrent with this, what are the metrics that are trying to be achieved with such approaches?

Organizers - *Ravi Rajamani, Meggitt PLC; Danbing Seto, Pratt & Whitney UTC; Rhonda D. Walthall, UTC Aerospace Systems*

Chairpersons - *Ravi Rajamani, Meggitt Aircraft Braking Systems; Danbing Seto, Pratt & Whitney UTC*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2583***	***System-Level Fault Diagnosis with Application to the Environmental Control System of an Aircraft*** *James Hare, Shalabh Gupta, Nayeff Najjar, University of Connecticut; Paul D'Orlando, UTAS Air Management Systems; Rhonda Walthall, UTC Aerospace Systems*
11:00 a.m.	***ORAL ONLY***	***Tire Pressure Monitoring System (TPMS) for Business and Commercial Aircraft*** *Randy Martin, Meggitt Sensing Systems*
11:30 a.m.	***2015-01-2582***	***Wavelet-based Fouling Diagnosis of the Heat Exchanger in the Aircraft Environmental Control System*** *Andre Silva, Nayeff Najjar, Shalabh Gupta, University of Connecticut; Paul D'Orlando, Rhonda Walthall, UTC Aerospace Systems*

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

Wednesday, September 23

Integrated Vehicle Health Management - Prognostics and Diagnostics

Session Code: ***ATC809***

Room 604 ***Session Time:*** ***1:30 p.m.***

This session provides a forum to discuss the current and developing prognostic and diagnostic technology for aerospace systems including but not limited to engines, APUs, gearboxes, batteries, electric power generation, air conditioning systems, and health prognostic/diagnostic devices.

Organizers - *David Followell, Kevin Swearingen, Boeing Co.; Rhonda D. Walthall, UTC Aerospace Systems*

Chairpersons - *David Followell, Kevin Swearingen, Boeing Co.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2592***	***Failure Root Cause Determination Through the Aircraft Fault Messages Using Tree Augmented Naive Bayes and k-Nearest Neighbors*** *Joao Pedro Malere, Wlamir Olivares Loesch Vianna, Embraer SA*
2:30 p.m.	***2015-01-2593***	***Using Time Domain Reflectometry to Measure Fluid Properties for IVHM Applications*** *Jonathan L. Geisheimer, Michael Wabs, Meggitt Sensing Systems; Carlos Carvalho, Carvalho Consulting, LLC*

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

Wednesday, September 23

Integrated Vehicle Health Management - Vehicle Level Health Management

Session Code: ***ATC804***

Room 604 ***Session Time:*** ***3:30 p.m.***

With component and sub-system health management addressed in other sessions, this session considers the vehicle or system-wide level health management. Can information gleaned from two sub-systems be sufficient to detect a developing fault and determine the root cause? Or should the information from all sub-systems be used to strengthen and confirm the safety case? Papers are welcome on these, or any other related vehicle health topics, for this session.

Organizers - *Ian K. Jennions, IVHM Centre Cranfield University; Robert W. Mah, NASA Ames Research Center; Rhonda D. Walthall, UTC Aerospace Systems*

Chairpersons - *Ian K. Jennions, IVHM Centre Cranfield University; Robert W. Mah, NASA Ames Research Center*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2590***	***A Survey on Operational Safety Assessment in the Aviation Industry and its Link to IVHM*** *Yufei Lin, Zakwan Skaf, Ian Jennions, Cranfield University*
4:00 p.m.	***2015-01-2589***	***How Tools and Process Improved Diagnostic and Prognostic Reaction Time*** *Julien Feau, Philippe Chantal, Jayant Sen Gupta, Airbus*
4:30 p.m.	***2015-01-2587***	***Design and Implementation of Aircraft System Health Management (ASHM) Utilizing Existing Data Feeds*** *Matthew Smith, Peter F. Sulcs, Sikorsky Aircraft Corporation UTC; Rhonda Walthall, UTC Aerospace Systems; Mark Mosher, Gregory Kacprzynski, Sikorsky Aircraft Corporation UTC*

5:00 p.m.	***~~2015-01-2588~~***	***Power Usage Hours: A Novel Usage-Based Metric for Rotorcraft Powertrain Transmissions***
	ORAL ONLY	*Alex Cao, Abdel Bayoumi, University of South Carolina; Harrison Chin, ACR Inc; David Green, Starmark Corporation*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00522, and also individually. To purchase visit collections.sae.org

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

Wednesday, September 23

Manufacturing/Materials/Structures - Composites Fabrications and Joining (Part 1 of 2)

Session Code: ***ATC904***

Room 606 ***Session Time:*** ***10:30 a.m.***

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 - *George Nicholas Bullen, Smart Blades Inc.; James H. Campbell, Lockheed Martin Aeronautics Co.; Carroll G. Grant, Aerospace Composites Consulting*

Time	***Paper No.***	***Title***
10:30 a.m.	***ORAL ONLY***	***Adhesive Bonding of Composite Structures: Practices and Principles***
		Louis C. Dorworth, Abaris Training Resources Inc.
11:00 a.m.	***2015-01-2611***	***Cracking Stopping in the Bondline of Adhesively Bonded Composite Adherents by Means of a Mechanical Fastener: Numerical and Experimental Investigation***
		Samuel Baha II, Fraunhofer IFAM
11:30 a.m.	***ORAL ONLY***	***Manufacturing Processes for Composite Engine Nacelle Acoustic Panels***
		Jarrod Ridge, Royal Engineered Composites Inc.

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

Wednesday, September 23

Manufacturing/Materials/Structures - Automated Composites Manufacturing (Part 2 of 3)

Session Code: ***ATC903***

Room 606 ***Session Time:*** ***1:30 p.m.***

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in automated lamination methods for aircraft structural components. This session will focus on the latest technology in automated composites manufacturing methods and feature presentations from aerospace companies that use automated processes and composites equipment suppliers.

Organizers - *Vernon M. Benson, ATK Aerospace; Carroll G. Grant, Aerospace Composites Consulting*

Time	***Paper No.***	***Title***
1:30 p.m.	***ORAL ONLY***	***Integrating the diversity of automated lamination processes in software and machine***
		Samoil Samak, Mikrosam

2:00 p.m.	***ORAL ONLY***	***Leveraging lessons learned from AFP Manufacturing with New Slit Tape Formats and Multi-functional UD Prepreg Constructions***
		Daniel Ott, Web Industries Inc.
2:30 p.m.	***ORAL ONLY***	***Automation in Composites: Where is the Business Case?***
		Michael Muser, Ingersoll Machine Tools Inc.

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

Wednesday, September 23

Manufacturing/Materials/Structures - Automated Composites Manufacturing (Part 3 of 3)

Session Code: ***ATC903***

Room 606 ***Session Time:*** ***3:30 p.m.***

The expanding usage of composite materials in the aerospace industry is driving a surge of interest in automated lamination methods for aircraft structural components. This session will focus on the latest technology in automated composites manufacturing methods and feature presentations from aerospace companies that use automated processes and composites equipment suppliers.

Organizers - *Vernon M. Benson, ATK Aerospace; Carroll G. Grant, Aerospace Composites Consulting*

Time	***Paper No.***	***Title***
3:30 p.m.	***2015-01-2608***	***Automated In-Process Inspection System for AFP Machines***
		Joshua Cemenska, Todd Rudberg, Michael Henscheid, Electroimpact Inc.
4:00 p.m.	***2015-01-2606***	***Low-cost Automation for Prepreg Handling - Two Cases from the Aerospace Industry***
		Andreas Bjornsson, Linköping University; Jan-Erik Lindback, Saab Aerostructures; Daniel Eklund, Marie Jonsson, Swerea Sicomp
4:30 p.m.	***ORAL ONLY***	***Design Optimization of Composite Airframe Structures For Manufacturing Via AFP***
		Alexandre Hamlyn, Coriolis Composites
5:00 p.m.	***ORAL ONLY***	***Best of Both Worlds: Using both Tape and Fiber for Automated Lamination of Composite Structures***
		Jay Steven Hissett, Fives Machining Systems

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

Wednesday, September 23

Business/Economics - Market Forecasts

Session Code: ***ATC504***

Room 607 ***Session Time:*** ***8:00 a.m.***

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, Airbus Helicopters Inc.; William Rickard, Mooney International - Chino; Alvin Wang, Pratt & Whitney*

Chairpersons - *Les Clark, Airbus Helicopters Inc.*

Time	***Paper No.***	***Title***

8:00 a.m.	***ORAL ONLY***	***Airline Industry and Forecast Update***
		Alvin Wang, Pratt & Whitney
8:30 a.m.	***ORAL ONLY***	***Market Trends and Forecast***
		Hideyuki Kamiya, Mitsubishi Aircraft Corporation
9:00 a.m.	***ORAL ONLY***	***Global Marketing Forecast***
		Lida Rahmani, Airbus
9:30 a.m.	***ORAL ONLY***	***Overview and Status of NASA's New Strategic Direction***
		Bob Pearce, National Aero & Space Administration

Planned by Business Economics Committee / EMB Air and Space Group

Wednesday, September 23

Business/Economics - Future Propulsion Technology (Part 1 of 2)

Session Code: ***ATC502***

Room 607 ***Session Time:*** ***10:30 a.m.***

Future Propulsion Systems will need to be more efficient, more affordable, and easier to support. Papers are sought on topics including advanced propulsion system concepts and technologies; new fuels and power sources; Platform Based Engineering using existing components and subsystems; Model Based Engineering and virtual prototyping; tools for simulating fabrication and assembly; tools for trading off system cost, schedule, and performance during design; tools for physics-based prognostics.

Organizers - *Lee Noble, NASA Langley Research Center; William Rickard, Mooney International - Chino*

Chairpersons - *Lee Noble, NASA Langley Research Center*

Time	***Paper No.***	***Title***
10:30 a.m.	***ORAL ONLY***	***Considerations for Next Generation Propulsion & Integrated Systems***
		Neil R. Garrigan, GE Aviation
11:00 a.m.	***ORAL ONLY***	***Propulsion Technology Shaped by Global Forces***
		Mary Colby, Pratt & Whitney
11:30 a.m.	***ORAL ONLY***	***Consideration of LENR for Aircraft Propulsion***
		David L. Daggett, Phonon energy, Inc.; Katy Goloborodov, Phonon Energy, Inc.

Planned by Business Economics Committee / EMB Air and Space Group

Wednesday, September 23

Business/Economics - Future Propulsion Technology (Part 2 of 2)

Session Code: ***ATC502***

Room 607 ***Session Time:*** ***1:30 p.m.***

Future Propulsion Systems will need to be more efficient, more affordable, and easier to support. Papers are sought on topics including advanced propulsion system concepts and technologies; new fuels and power sources; Platform Based Engineering using existing components and subsystems; Model Based Engineering and virtual prototyping; tools for simulating fabrication and assembly; tools for trading off system cost, schedule, and performance during design; tools for physics-based prognostics.

Organizers - *Lee Noble, NASA Langley Research Center; William Rickard, Mooney International - Chino*

Chairpersons - *Lee Noble, NASA Langley Research Center*

Time	***Paper No.***	***Title***

1:30 p.m.	***ORAL ONLY***	***NASA's Vision on Potential Energy Reductions for Future Generations of Propulsion Technology***
		William J. Haller, NASA John Glenn Research Center
2:00 p.m.	***ORAL ONLY***	***Distributed Propulsion Technologies and their Potential Contribution Toward Sustainable and Competitive Aviation***
		Panos Laskaridis, Cranfield University
2:30 p.m.	***ORAL ONLY***	***Panel Discussion: Post Presentation Question and Answer***
		Lee Noble, NASA Headquarters

Planned by Business Economics Committee / EMB Air and Space Group

Wednesday, September 23

Auto Fastening / Assembly & Tooling (AeroFast) - Composite/Heavy Metal Drilling and Assembly (Part 1 of 2)

Session Code: ***ATC203***

Room 608 ***Session Time:*** ***10:30 a.m.***

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 - *Paul Thompson, Electroimpact Inc.; Philip Webb, Cranfield Univ.*

Time	***Paper No.***	***Title***
10:30 a.m.	***ORAL ONLY***	***Drilling In One Operation with a CNC Automated Machine (part 1) and an Automatic Drilling Unit (part 2) In Metallic Stacks On Aircraft Pylon***
		Christophe Petit, Precorp Inc.
11:00 a.m.	***2015-01-2502***	***Self-Adjusting Cutting Parameter Technique for Drilling Multi-Stacked Material***
		Jeremy Jallageas, NOOV Technologies; Matthieu Ayfre, Aquitaine Science Transfert; Mehdi Cherif, Jean-Yves K'nevez, Olivier Cahuc, University of Bordeaux
11:30 a.m.	***2015-01-2500***	***One Shot Dry Drilling Hole Quality Analysis on Titanium Stacks with ADE Machine***
		Brigitte Vasques, Apex Tool Group

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Auto Fastening / Assembly & Tooling (AeroFast) - Composite/Heavy Metal Drilling and Assembly (Part 2 of 2)

Session Code: ***ATC203***

Room 608 ***Session Time:*** ***1:30 p.m.***

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 - *Paul Thompson, Electroimpact Inc.; Philip Webb, Cranfield Univ.*

Time	***Paper No.***	***Title***

1:30 p.m.	***ORAL ONLY***	***Very High Speed Drilling of Aluminum Aircraft Structures***
		Hans-Juergen Borchers, Precorp; Mustafa Burak Atak, Tusas Aerospace Industries Inc
2:00 p.m.	***2015-01-2501***	***A Global Improvement in Drilling and Countersinking of Multi-Material Stacks with Vibration Assisted Drilling***
		Cosme de Castelbajac, Sylvain Laporte, Julian Lonfier, MITIS SAS; Emmanuel Puviland, KENNAMETAL

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Auto Fastening / Assembly & Tooling (AeroFast) - Advanced Portable Semi-automated Drilling and Fastening Systems and Portable Crawler/Flex Track Systems

Session Code: ***ATC200***

Room 608 ***Session Time:*** ***3:30 p.m.***

This technical session explores the advancements of portable drilling and fastening technologies and systems. Presentations detail the various technologies as well as the methodologies used and challenges faced during their implementation in aerospace manufacturing. Examples include the use of portable crawler type units as well as flex track guide systems in aerospace manufacturing along with their productivity gains and improvement of product quality.

Organizers - *Alan R. Merkley, Boeing Co.; Paul Thompson, Electroimpact Inc.*

Time	***Paper No.***	***Title***
3:30 p.m.	***ORAL ONLY***	***Advantages and Developments of Advanced Electric Drilling Equipment - Focusing on Composite and Mixed Material Stacks with Illustrations and Business Cases from Desoutter Industrial Tools***
		Dave Garner, Brian Singleton, John Paul Libby, Desoutter Industrial Tools
4:00 p.m.	***2015-01-2490***	***A breakthrough in handheld Smart Drilling Units : Material detection with advanced electrical drilling***
		Sylvain Guerin, Sylvain da Costa, AET
4:30 p.m.	***2015-01-2489***	***Numerical Template***
		Philippe Le Vacon, Thomas Buisson, Airbus Group; Fabien Albert, Airbus UK
5:00 p.m.	***2015-01-2488***	***Automated Back Spot Facing: Robofacer***
		Derek L. Mickelson, Boeing Research & Technology

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Auto Fastening / Assembly & Tooling (AeroFast) - Large Component Assembly, Sub-Assembly, Major Section Join and Final Assembly

Session Code: ***ATC204***

Room 609 ***Session Time:*** ***10:30 a.m.***

This session will focus on the latest techniques and technologies for the alignment and joining of large structural components such as major aircraft section or large component sub-assembly. Included will be new techniques for the drilling and fastening of these sections once aligned and ready for joining as well as advancements in shim and shim-less assembly.

Organizers - *Anthony S. Goddard, GEMCOR; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2504***	***Innovative Approach to Circumferential Splicing for Large Aircraft Assembly*** *Christian Meiners, Compose 2 Compete GmbH; Weidong Zhu, Yinglin Ke, Zhejiang University*
11:00 a.m.	***2015-01-2503***	***Innovative Approach for Modular and Flexible Positioning Systems for Large Aircraft Assembly*** *Thomas Dr. Schneider, Broetje-Automation GmbH*
11:30 a.m.	~~***2015-01-2505***~~ ***ORAL ONLY***	***Improving Quality of Aircraft Structural Joins Via Adaptive Tooling*** *Robert Flynn, Schuyler Horky, Electroimpact Inc.*
12:00 p.m.	***2015-01-2507***	***Potentials of Human-Robot-Cooperation in Aircraft Assembly Systems / New possible applications of a human-robot-cooperation in aircraft production by the example of shell structure assembly*** *Rainer Mueller, Aaron Geenen, Matthias Vette, ZeMA*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Power and Thermal System - Thermal Management for Aerospace Applications (Part 1 of 3)

Session Code: ***ATC1102***

Room 611 ***Session Time:*** ***8:00 a.m.***

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 - *Jon Fifield, Astronics AES; Vankatesan Manivannan, NAVAIR; Travis E. Michalak, US Air Force Research Laboratory; Christopher Severns, Boeing Commercial Airplanes*

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

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Heat Convection through Flat Plate*** *Anmol Taploo, Prinan Banerjee, Ravi Nandu, Karan Marwaha, Mohit Vishal, SRM University*
8:30 a.m.	***ORAL ONLY***	***CFD Analysis Of The Effect of Turbulator Geometry on Conjugate Heat Transfer in a Low Pressure Stage Turbine Blade*** *Arvind Prabhakar*
9:00 a.m.	***ORAL ONLY***	***High Efficiency Solar Power for Cabin and Fuselage Refrigeration*** *Ashwin kumar Kuchibhotla, Vidya Jyothi Institute Of Technology*

Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, September 23

Power and Thermal Systems - Power Systems for Aerospace Applications (Part 2 of 4)

Session Code: ***ATC1100***

Room 611 ***Session Time:*** ***10:30 a.m.***

Advanced more electric vehicle products and technologies for aerospace systems including, but not limited to, power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas shall be featured in this session.

Organizers - *Jon Fifield, Astronics AES; Travis E. Michalak, US Air Force Research Laboratory; Patrick Norman, Univ. of Strathclyde; Christopher Severns, Boeing Commercial Airplanes*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2409***	***Impact of Electric Loads on Engine Shaft Dynamics within More Electric Aircraft*** *Constanza Ahumada S., Seamus Garvey, Tao Yang, Patrick Wheeler, Herve Morvan, University of Nottingham*
11:00 a.m.	***2015-01-2408***	***Conceptual Study of Low-Pressure Spool-Generating Architecture for More Electric Aircraft*** *Hitoshi Oyori, IHI Aerospace Co. Ltd.; Noriko Morioka, Tsuyoshi Fukuda, IHI Corporation*
11:30 a.m.	***2015-01-2406***	***Towards Operationally Robust Fuel Cell Systems for Aeronautical Applications*** *Hendrik Strummel, Frank Thielecke, Hamburg University of Technology*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, September 23

Power and Thermal Systems - Power Systems for Aerospace Applications (Part 3 of 4)

Session Code: ***ATC1100***

Room 611 ***Session Time:*** ***1:30 p.m.***

Advanced more electric vehicle products and technologies for aerospace systems including, but not limited to, power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas shall be featured in this session.

Organizers - *Jon Fifield, Astronics AES; Travis E. Michalak, US Air Force Research Laboratory; Patrick Norman, Univ. of Strathclyde; Christopher Severns, Boeing Commercial Airplanes*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2412***	***Functional Modeling of 18-Pulse Autotransformer Rectifier Units for Aircraft Applications*** *Tao Yang, Serhiy Bozhko, Greg Asher, University of Nottingham*
2:00 p.m.	***2015-01-2411***	***AC/DC Converter with DC Fault Suppression for Aircraft +/¿ 270 VDC Distribution Systems*** *Michal Sztykiel, Steven Fletcher, Patrick Norman, Stuart Galloway, Graeme Burt, University of Strathclyde*

2:30 p.m.	***2015-01-2410***	***Comparative Study of Power Sharing Strategies for the DC Electrical Power System in the MEA***	
		Fei Gao, Serhiy Bozhko, Greg Asher, Patrick Wheeler, University of Nottingham	

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, September 23

Power and Thermal Systems - Power Systems for Aerospace Applications (Part 4 of 4)

Session Code: ***ATC1100***

Room 611 ***Session Time:*** ***3:30 p.m.***

Advanced more electric vehicle products and technologies for aerospace systems including, but not limited to, power electronics, generators, motors, power conversion, power distribution, power management and related power utilization areas shall be featured in this session.

Organizers - *Jon Fifield, Astronics AES; Travis E. Michalak, US Air Force Research Laboratory; Patrick Norman, Univ. of Strathclyde; Christopher Severns, Boeing Commercial Airplanes*

Time	***Paper No.***	***Title***	
3:30 p.m.	***ORAL ONLY***	***How to Safely and Accurately Measure the Performance and Efficiency of an Aircraft¿s Electrical Grid, Electric Motors, Convertors and Generators Beyond the Typical Power Analyzer***	
		Mike Hoyer, HBM Test and Measurement	
4:00 p.m.	***2015-01-2413***	***The Instantaneous Efficiency of Cantilever Geared Rotary Actuators in Flight Control Systems***	
		Anngwo Wang, Jonathan Davies, Seth Gitnes, Lotfi El-Bayoumy, MOOG Inc. Aircraft Group	
	2015-01-2403	***Failure Analysis of a Turboelectric Distributed Propulsion Aircraft Electrical Network: A Case Study (Written Only -- No Oral Presentation)***	
		Jennifer C. Shaw, Steven Fletcher, Patrick Norman, Stuart Galloway, Graeme Burt, University of Strathclyde	

Planned by Power Systems Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - Aircraft Design History

Session Code: ***ATC708***

Room 612 ***Session Time:*** ***8:00 a.m.***

Aircraft design has a fascinating history of technological breakthroughs, many being discussed in this session. WW1 was fought 100 years ago and expected topics include a paper on WW1 aeronautical technology breakthroughs as well as Boeing aircraft history.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Paul Dees, Boeing Commercial Airplanes; Jeremy Goddard, IDIADA Automotive Technology SA; Chester P. Nelson, Boeing Commercial Airplanes*

Chairpersons - *Paul Dees, Boeing Commercial Airplanes; Jeremy Goddard, IDIADA Automotive Technology SA*

Time	***Paper No.***	***Title***

8:00 a.m.	***2015-01-2581***	***Technology Innovations in World War I Airplane Design***
		Scott Eberhardt, Independent Consultant
8:30 a.m.	***ORAL ONLY***	***Jerome C. Hunsaker and the First Boeing Wind Tunnel Test***
		Sarah M. Musi, The Boeing Company Historical Archives
9:00 a.m.	***ORAL ONLY***	***How the Early Gliding Pioneers Helped Invent the Airplane***
		Paul Dees, Boeing Commercial Airplanes
9:30 a.m.	***2015-01-2580***	***Novel World War II Aircraft Design Features***
		David Lednicer, Aeromechanical Solutions LLC

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - Flight Dynamics (Part 1 of 2)

Session Code: ***ATC702***

Room 612 ***Session Time:*** ***10:30 a.m.***

This session will cover aero Stability & Control, loads, aeroelastics & flutter, flight control laws/flying qualities.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Michael Theodor Gruenewald, EADS Deutschland GmbH; Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University*

Chairpersons - *Reuben M. Chandrasekharan, Bombardier Learjet; Michael Theodor Gruenewald, Airbus Defence and Space GmbH*

Time	***Paper No.***	***Title***
10:30 a.m.	***2015-01-2568***	***Reduced Order Model Approach for Efficient Aircraft Loads Prediction***
		Michele Castellani, Siemens PLM Software-University of Bristol; Yves Lemmens, Siemens PLM Software; Jonathan Cooper, University of Bristol
11:00 a.m.	***ORAL ONLY***	***Derived Gust Velocities Extracted from Various Aircraft Operations***
		Kamran Rokhsaz, Linda Kliment, Wichita State University
	2015-01-2567	***Validation and Update of Aerodynamic Database at Extreme Flight Regimes (Written Only -- No Oral Presentation)***
		Dushyant Kaliyari, Khadeeja Nusrath TK, Jatinder Singh, CSIR-NAL

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - Flight Dynamics (Part 2 of 2)

Session Code: ***ATC702***

Room 612 ***Session Time:*** ***1:30 p.m.***

This session will cover aero Stability & Control, loads, aeroelastics & flutter, flight control laws/flying qualities.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Michael Theodor Gruenewald, EADS Deutschland GmbH; Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University*

Chairpersons - *Michael Theodor Gruenewald, Airbus Defence and Space GmbH*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2570***	***Slung Load Divergence Speed Predictions for Vehicle Shapes***
		Brandon Liberi, Praditukrit Kijjakarn, Narayanan Komerath, Georgia Institute of Technology
2:00 p.m.	***ORAL ONLY***	***Examination of Methods to Separate Gust and Maneuver Load Factors***
		Linda Kliment, Kamran Rokhsaz, Wichita State University
2:30 p.m.	***2015-01-2569***	***Development of a High-Fidelity Simulation Model for a Research Environment***
		Georges Ghazi, Ruxandra Botez, Ecole de Technologie Superieure

Planned by AeroFast International Committee / EMB Air and Space Group

Wednesday, September 23

Flight Sciences - General Aerodynamics

Session Code: ***ATC703***

Room 612 ***Session Time:*** ***3:30 p.m.***

General Aerodynamics topics for flight vehicles of all types, including flow physics, applied aerodynamics of wings, tails, rotors, control surfaces, aero loads and wind tunnel testing.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Michael Theodor Gruenewald, EADS Deutschland GmbH; Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University*

Chairpersons - *Michael Theodor Gruenewald, Airbus Defence and Space GmbH*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2571***	***CFD Analysis of a Wing-In-Ground-Effect (WIGE) Vehicle***
		Cornelis Bil, Man Chiu Fung, Sherman C.P. Cheung, Piergiovanni Marzocca, RMIT University
4:00 p.m.	***2015-01-2572***	***Narrow-Band Excitation of Vortex Flows***
		Nikolaus Thorell, Georgia Institute of Technology; Nicholas R. Motahari, Georgia institute of Technology; Narayanan Komerath, Georgia Institute of Technology
4:30 p.m.	***2015-01-2573***	***Numerical Investigation of Streamwise Vortex Interaction***
		Kyle J. Forster, Tracie Barber, UNSW Australia; Sammy Diasinos, Macquarie University; Graham Doig, California Polytechnic State University, UNSW Australia

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Flight Sciences Committee / EMB Air and Space Group

Wednesday, September 23

Systems Engineering - Systems Engineering (Part 3 of 3)

Session Code: ***ATC1400***

Room 613 ***Session Time: 8:00 a.m.***

The Systems Engineering sessions explore and discuss a range of systems engineering tools and concepts to include examples of application to current systems engineering concerns. Topics include investigation of requirements definition, configuration management, life cycle cost analysis, failure modes and effects analyses, and design optimization. Across these topics the discussions include application of model based system engineering, use of SysML, and other structured system descriptions.

Organizers - *Joel Boelke, United Technologies Aerospace; Richard J. Cohen, Bombardier Aerospace; Peter F. Klon, Boeing Co.; Gustave Nfonguem, Bombardier Aeronautique*

Chairpersons - *Joel Boelke, United Technologies Aerospace*

Time	Paper No.	Title
8:30 a.m.	***2015-01-2449***	***Effects of Ice Accretion in an Aircraft Protective Mesh Strainer of a Fuel Pump*** *Solange Baena, Airbus Group Innovations; Joseph K-W Lam, Airbus Operations, Ltd.; Craig Lawson, Cranfield University*
9:00 a.m.	***2015-01-2452***	***Finding and Using the Soul of Systems Engineering*** *Vicki S. Johnson, Textron Aviation*
9:30 a.m.	***2015-01-2448***	***The Opportunity - Improving Aerospace Configuration Management*** *Steve Trythall, Mentor Graphics Corp.*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Systems Engineering Committee / EMB Air and Space Group

Wednesday, September 23

Vehicle Systems - Flight Controls System Architecture

Session Code: ***ATC1601***

Room 613 ***Session Time: 1:30 p.m.***

Organizers - *Jonathan Liscouet, Susan Liscouet-Hanke, Bombardier Aerospace; Kioumars Najmabadi, Boeing Co.*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2482***	***Function-Driven Design and Evaluation of Innovative Flight Controls and Power System Architectures*** *Riko Bornholdt, Tobias Kreitz, Frank Thielecke, Hamburg University of Technology*

Planned by Vehicle Systems Committee / EMB Air and Space Group

Wednesday, September 23

Vehicle Systems - Flight Controls System Technology

Session Code: ***ATC1600***

Room 613 ***Session Time: 3:30 p.m.***

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.

Organizers - *Jonathan Liscouet, Susan Liscouet-Hanke, Bombardier Aerospace; Kioumars Najmabadi, Boeing Co.*

Time	Paper No.	Title
3:30 p.m.	2015-01-2481	**Synthesis of Time Quasi-Optimal Asymptotically Stable Control Laws** *Rudolf Neydorf, Don State Technical University*
4:00 p.m.	2015-01-2479	**Evaluation of Control Strategies for Single Flap Drive Systems in Multifunctional High Lift Systems** *Stefan Benischke, Frank Thielecke, Hamburg University of Technology*
4:30 p.m.	2015-01-2478	**Simulation-Driven Methodology for the Requirements Verification and Safety Assessment of Innovative Flight Control Systems** *Tobias Kreitz, Riko Bornholdt, Matthias Krings, Karsten Henning, Frank Thielecke, Hamburg University of Technology*
	2015-01-2480	**The MAAT Project Experience and the Multibody Aircraft Technology Possibilities (Written Only -- No Oral Presentation)** *Giorgio Gaviraghi, eDL/Unispace EC*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Vehicle Systems Committee / EMB Air and Space Group

Wednesday, September 23

Panel Discussion: Current and Future State of Advanced Visualization Technologies with Emphasis on Augmented and Virtual Reality

Session Code: ***ATC3004***

Room 614 ***Session Time:*** ***10:30 a.m.***

The discussion will be centered on use cases & integration of visualization technologies as they relate to training, maintenance, manufacturing, safety/ergonomics and assembly automation. Focused on the challenges and gaps in augmented and virtual reality that must be bridged before full implementation can be achieved. We will discuss end delivery devices in different scenarios in manufacturing and address barriers that currently exist and consider how these might be overcome.

Organizers - *Paul Robert Davies, Boeing Co.; Lorrie J. Sivich, Boeing Research & Technology*

Moderators - *Paul Robert Davies, Boeing R&T; Lorrie J. Sivich, Boeing*

Panelists - *Richard Boggs, Lockheed Martin Corp.; Chris Freeman, AMRC with Boeing; Alex Hill, CN2 Technology; Andy Lowery, DAQRI; Barry Po, NGRAIN; Paul Ryznar, OPS Solutions LLC; Ryan Wheeler, Rockwell Collins;*

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

Wednesday, September 23

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

Session Code: ***ATC901***

Room 614 ***Session Time:*** ***1:30 p.m.***

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 - *Carroll G. Grant, Aerospace Composites Consulting; Paul Lightowler, Nikon Metrology; Claude Perron, Centre Technologique en aerospatiale; Mark Derren Summers, Airbus UK*

Time	Paper No.	Title

1:30 p.m.	***~~2015-01-2597~~***	***Shimless Aerospace Assembly***
	ORAL ONLY	*Michael Morgan, Colm Higgins, Caroline McClory, NITC, Queens University Belfast; Adrian Murphy, Yan Jin, Queens University Belfast; William Bradley, NITC, Queens University Belfast; Glenn Rutherford, Bombardier*
2:30 p.m.	***~~2015-01-2599~~***	***High Accuracy Aerospace Drilling utilising PKMs***
	ORAL ONLY	*Caroline McClory, NITC,Queens University Belfast; Colm Joseph Higgins, NITC, Queen's University Belfast.; Adrian Murphy, Queens University Belfast; Michael Morgan, NITC, Queens University Belfast; Yan Jin, Queens University Belfast*

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

Wednesday, September 23

Manufacturing/Materials/Structures - Lean Manufacturing, Six Sigma & Supply Chain

Session Code: ***ATC906***

Room 614 ***Session Time:*** ***3:30 p.m.***

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 - *George Nicholas Bullen, Smart Blades Inc.; Carroll G. Grant, Aerospace Composites Consulting; Kevin Sweeney, Boeing Commercial Airplanes; Monica Tatar, Boeing Co.*

Time	***Paper No.***	***Title***
3:30 p.m.	***2015-01-2625***	***Virtual Allowable Computation to Speed-Up CFRP Material Development and Certification***
		Anthony Cheruet, Robert Schmitz, e-Xstream Engineering
4:00 p.m.	***ORAL ONLY***	***Self tooling & Automation-Building Aluminum Fuselage in the Future***
		Lin Xi, Boeing
4:30 p.m.	***~~2015-01-2612~~***	***PFMEA deployment situation in Aerospace Aerostructures supply chain ¿ ¿as is¿ situation and ¿to be¿ proposal for improvement.***
	ORAL ONLY	*Laerte de ARAUJO LIMA, Airbus*
5:00 p.m.	***ORAL ONLY***	***Overview of SAE¿s AS6500***
		David M. Karr, Air Force

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

Wednesday, September 23

Manufacturing/Materials/Structures - Dimensional Management and Metrology Systems (Part 1 of 2)

Session Code: ***ATC908***

Room 615 ***Session Time:*** ***10:30 a.m.***

Dimensional management and metrology systems have progressed significantly in recent years. This session will present and discuss the applications of these systems in aerospace product realization. It features concepts for dimensional management and developments in metrology for geometrical measurements of airframe parts and assemblies and for critical machine control, accuracy enhancement and system performance evaluation to meet the demands of new aircraft programs.

Organizers - *Carroll G. Grant, Aerospace Composites Consulting; Paul Lightowler, Nikon Metrology; Richard Lindqvist, Saab AB*

Time	Paper No.	Title
10:30 a.m.	2015-01-2616	**Creating an Efficient Geometrical Measurement Planning Process** *Richard Lindqvist, Tobias Jansson, Saab AB*
11:00 a.m.	2015-01-2617	**Real-Time Robot Positioning based on Measurement Feedback Control** *Raimund Loser, Leica Geosystems Inc.; Michael Kleinkes*
11:30 a.m.	2015-01-2618	**SCALE Optical Hole Probe - The Next Step to Save Time and Cost in Auto Fastening with the Help of Optical Measurement Technology** *Bernd-Michael Wolf, Broetje-Automation GmbH; Christian Meiners, Compose 2 Compete GmbH*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00524, and also individually. To purchase visit collections.sae.org

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

Wednesday, September 23

Manufacturing/Materials/Structures - Dimensional Management and Metrology Systems (Part 2 of 2)

Session Code: ***ATC908***

Room 615 ***Session Time:*** ***1:30 p.m.***

Dimensional management and metrology systems have progressed significantly in recent years. This session will present and discuss the applications of these systems in aerospace product realization. It features concepts for dimensional management and developments in metrology for geometrical measurements of airframe parts and assemblies and for critical machine control, accuracy enhancement and system performance evaluation to meet the demands of new aircraft programs.

Organizers - *Carroll G. Grant, Aerospace Composites Consulting; Paul Lightowler, Nikon Metrology; Richard Lindqvist, Saab AB*

Time	Paper No.	Title
1:30 p.m.	2015-01-2615	**Total Quality Assurance of Aerospace Components Applying Process Capability Analysis** *Donald Jasurda, DCS Inc.*
2:00 p.m.	ORAL ONLY	**System And Method For Automated Inspection And Repair Of Large Scale Carbon Fiber Aircraft Structures** *Bobby Joe Marsh, Boeing Co.*
2:30 p.m.	2015-01-2619	**Next Generation Manufacturing Fixtures: CFRP Structures Using ¿In Situ¿ Health Monitoring** *Karl-Otto Strömberg, Flexprop AB; Stefan Borgenvall, SAAB Aeronautics; Mohamed Loukil, Swerea SICOMP; Bertrand Noharet, Carola Sterner, Magnus Lindblom, Swedish ICT ACREO; Orjan Festin, Swerea IVF*

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

Wednesday, September 23

Manufacturing/Materials/Structures - Metals, Fabrication and Processing (Part 2 of 2)

Session Code: ***ATC907***

Room 615 ***Session Time:*** ***3:30 p.m.***

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 - *Jeffrey Morgan, Boeing; Paul Jeffrey Tauzer, Boeing Commercial Airplanes; Carroll G. Grant, Aerospace Composites Consulting*

Assistant Chairpersons - *Paul Jeffrey Tauzer, Boeing Commercial Airplanes*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2614***	***Refill Friction Spot Joining for Aerospace Application*** *Hideki Okada, Kenichi Kamimuki, Syuhei Yoshikawa, Shintaro Fukada, Kawasaki Heavy Industries, Ltd.*
4:00 p.m.	***ORAL ONLY***	***High Dynamics Milling Machine based on PK Technology*** *Enrique J. Cristobalena, Loxin 2002 SL*
4:30 p.m.	***ORAL ONLY***	***Drilling Hybrid Stacks: How to Maintain High Quality and Increase Productivity*** *Robert Harper, Jay Steven Hissett, Arnaud Van Groenendael, Fives Machining Systems*

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

Wednesday, September 23

Avionics - Software Platforms & Middleware

Session Code: ***ATC410***

Room 616 ***Session Time:*** ***8:00 a.m.***

The aim of this session is to look at software execution platforms (including frameworks) for avionics software:
- Operating Systems
- Middleware
  - Communications
  - File System
  - HMI

Organizers - *Marc Gatti, Thales Avionics Meudon; Alex Wilson, Wind River; David P. Zika, Boeing Research & Technology*

Chairpersons - *Alex Wilson, Wind River*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Partitioning Aspects for Safety Critical Avionics*** *Olivier Charrier, WindRiver*
8:30 a.m.	***ORAL ONLY***	***Deterministic Platform Software for Hard Real-Time Systems using Multi-Core COTS*** *Xavier Jean, Thales Research&Technology; Marc Gatti, Thales Avionics Meudon*
9:00 a.m.	***2015-01-2554***	***Integration and Performances Analysis of a Data Distribution Service Middleware in Avionics*** *Kevin Landry, Jean-François Boland, Ecole de Technologie Superieure; Guy Bois, École Polytechnique de Montréal*
9:30 a.m.	***ORAL ONLY***	***COTS GPU Selection Considerations for Avionics Electronics*** *Lee Melatti, Core Avionics and Industrial Inc.*

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Airborne Electronics Hardware Certification and DO-254 (Part 1 of 2)

Session Code: ***ATC401***

Room 616 ***Session Time:*** ***10:30 a.m.***

The avionics industry has been working to the DO-254 standard for FPGAs, ASICs, PLDs and Hardware designs for systems, avionics LRUs and IMA hardware applications. There are many areas of this standard which are in flux due to the complexities of the technology as well as the changes in the certification policies in commercial and military programs.

Organizers - *Marc Gatti, Thales Avionics Meudon; Tammy M. Reeve, Patmos Engineering Services Inc.; David P. Zika, Boeing Research & Technology*

Chairpersons - *Tammy Reeve, Patmos Engineering Services Inc*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2525***	***Verification of Robustness for FPGAs and CEH to Meet Compliance to Objectives (DO-254 and FAA Order 8110.105)***
		Dave Duncan, Purple Seal Inc.
11:00 a.m.	***ORAL ONLY***	***What is New in the Area of DO-254A (FAA/EASE) - Is DO-254A Coming?***
		Tammy M. Reeve, Patmos Engineering Services Inc.
11:30 a.m.	***ORAL ONLY***	***An Efficient and Economical Approach to Using COTS IP in DO-254 Programs***
		Michelle Erika Lange, Logicircuit Inc.

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Airborne Electronics Hardware Certification and DO-254 (Part 2 of 2)

Session Code: ***ATC401***

Room 616 ***Session Time:*** ***1:30 p.m.***

The avionics industry has been working to the DO-254 standard for FPGAs, ASICs, PLDs and Hardware designs for systems, avionics LRUs and IMA hardware applications. There are many areas of this standard which are in flux due to the complexities of the technology as well as the changes in the certification policies in commercial and military programs.

Organizers - *Marc Gatti, Thales Avionics Meudon; Tammy M. Reeve, Patmos Engineering Services Inc.; David P. Zika, Boeing Research & Technology*

Chairpersons - *Tammy Reeve, Patmos Engineering Services Inc*

Time	Paper No.	Title
1:30 p.m.	***ORAL ONLY***	***Techniques to accelerate bring-up and DO-254 compliance of FPGAs in target hardware***
		TJ Boer, Synopsys Inc; Tammy Reeve, Patmos Engineering Services Inc.
2:00 p.m.	***2015-01-2524***	***Evaluation of Key Certification Aspects of Multi Core Platforms for Safety Critical Applications in Avionics Industry***
		Srikanth Gampa, UTC Aerospace Systems

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Model-based Avionics System, Software & Electronic Engineering (Part 2 of 2)

Session Code: ***ATC403*** ***3:30 p.m.***

Room 616 ***Session Time:***

Model-based engineering is the key paradigm for reducing the development costs and cycle of complex real-time and safety-critical systems. This session focuses on model-based engineering for avionics, software, system architecture and specification, and covers different methodologies, tools, and their practical application in different phases of the system lifecycle.

Organizers - *Jace Allen, dSPACE Inc.; David P. Zika, Boeing Research & Technology*

Chairpersons - *Jace Allen, dSPACE Inc.*

Time	Paper No.	Title
3:30 p.m.	***ORAL ONLY***	***Model-Based Workflow for the Development of Integrated Real-Time Systems***
		David Cook, Moog Aircraft Group
4:00 p.m.	***ORAL ONLY***	***Taking Honda's ASITF to the new heights - Certifying CAS via automated verification***
		Benjamin Hager, Honda Aircraft Company, LLC.
4:30 p.m.	***2015-01-2529***	***Best Practices and Recommendations for the Model-Based Development Process***
		Mahendra Muli, Vivek Moudgal, Jace Allen, dSPACE Inc.
5:00 p.m.	***2015-01-2530***	***Virtual Execution of Real Time Software Architecture Models***
		Pierre Dissaux, Ellidiss Technologies

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - System Testing, Integration and Simulation (Part 1 of 3)

Session Code: ***ATC409***

Room 617 ***Session Time:*** ***8:00 a.m.***

Within this session activities related to system integration and testing within aeronautical industries will be presented.
The session focusses on advanced methods and tools used for complex system V&V including certification aspects.
The presented material should be geared towards (multi-)system integration approaches and applications.

Organizers - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS; David P. Zika, Boeing Research & Technology*

Chairpersons - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2552***	***Ground Test Facilities and Integration Concepts for Combat Air Systems at Airbus Defence and Space***
		Helmut Plankl, Airbus Defence and Space GmbH
8:30 a.m.	***2015-01-2546***	***Laboratory Test Means Scalable to the Test***
		Sylvain Delrieu, Airbus Operations SAS
9:00 a.m.	***2015-01-2548***	***Coupling HIL Simulations Over Long Distance - A Way Forward***
		Andreas Himmler, dSPACE GmbH
9:30 a.m.	***2015-01-2550***	***Methodologies for Maximizing Utilization of Test Lab***
		Kiran Thupakula, UTC Aerospace Systems

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00523, and also individually. To purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - System Testing, Integration and Simulation (Part 2 of 3)

Session Code: ***ATC409***

Room 617 ***Session Time:*** ***10:30 a.m.***

Within this session activities related to system integration and testing within aeronautical industries will be presented.
The session focusses on advanced methods and tools used for complex system V&V including certification aspects.
The presented material should be geared towards (multi-)system integration approaches and applications.

Organizers - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS; David P. Zika, Boeing Research & Technology*

Chairpersons - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2553***	***Model-Based Testing: Automatic Generation of Test Cases, Test Data and Test Procedures from SysML Models*** *Markus Dahlweid, Jörg Brauer, Verified Systems International GmbH; Jan Peleska, University of Bremen*
11:00 a.m.	***ORAL ONLY***	***Application of an Off-the-Shelf Test Automation Tool for DO-178C Related Projects*** *Andreas Himmler, Klaus Lamberg, dSPACE GmbH*

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - System Testing, Integration and Simulation (Part 3 of 3)

Session Code: ***ATC409***

Room 617 ***Session Time:*** ***1:30 p.m.***

Within this session activities related to system integration and testing within aeronautical industries will be presented.
The session focusses on advanced methods and tools used for complex system V&V including certification aspects.
The presented material should be geared towards (multi-)system integration approaches and applications.

Organizers - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS; David P. Zika, Boeing Research & Technology*

Chairpersons - *Andreas Himmler, dSPACE GmbH; Thomas Krueger, Airbus Operations SAS*

Time	Paper No.	Title
1:30 p.m.	***2015-01-2551***	***Bow-Free Tri-Component Mechanically Pre-Stressed Failure-Oriented-Accelerated-Test (FOAT) Specimen*** *Ephraim Suhir, Portland State University; Alain Bensoussan, Institut de Recherche Technologique; Johann Nicolics, Vienna University of Technology*
2:00 p.m.	***2015-01-2549***	***Towards Analysis of the Radiation Sensitivity of Digital Designs at High Level of Abstraction*** *Marc-André Léonard, Jean-François Boland, École de Technologie Supérieure; Christophe Jégo, University Bordeaux, Bordeaux INP; Claude Thibeault, École de Technologie Supérieure*
2:30 p.m.	***~~2015-01-2547~~*** ***ORAL ONLY***	***Single Event Effects from atmospheric radiation, the need for testing, and an analysis for a new test facility at Oak Ridge National Labs*** *Laura Dominik, Honeywell*

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

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

Session Code: ***ATC405***

Room 617 ***Session Time:*** ***3:30 p.m.***

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 - *Brecht Baert, Esterline; Marc Gatti, Thales Avionics Meudon; David P. Zika, Boeing Research & Technology*

Chairpersons - *Marc Gatti, Thales Avionics*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2537***	***Human Factors Drivers Behind Next Generation AV2020 Cockpit Display***
		Sylvain Hourlier, Thales Avionics
4:00 p.m.	***2015-01-2535***	***Flight Deck Lighting for Commercial Transport Aircraft - SAE ARP 4103***
		Steven Donald Ellersick, The Boeing Company; Bill Reisenauer, LED Specialists, Inc.; Mickey Jacobson, Esterline Corporation; Newel Stephens, Honeywell International, Inc.
4:30 p.m.	***2015-01-2533***	***A Projected Capacitive Touchscreen Operating under High Intensity Radiated Field***
		Philippe Coni, Frederic Merino, Frederic Renaud, Thales Avionics
5:00 p.m.	***2015-01-2532***	***Testing Touch Screens in Realistic Aeronautic Turbulent Conditions (Light to Severe)***
		Sylvain Hourlier, Thales Avionics; Sandra Guérard, Jean Luc BAROU, Arts et Métiers ParisTech - I2M; Xavier Servantie, Thales Avionics

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00523, and also individually. To purchase visit collections.sae.org

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Aircraft Networks (Part 1 of 2)

Session Code: ***ATC402***

Room 618 ***Session Time:*** ***8:30 a.m.***

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 - *Serge A. Bruillot, Dassault Aviation; Mirko Jakovljevic, TTTech. Computertechnik AG; David P. Zika, Boeing Research & Technology*

Chairpersons - *Serge A. Bruillot, Dassault Aviation*

Time	Paper No.	Title
8:30 a.m.	***ORAL ONLY***	***Deterministic Ethernet Principles ¿ ARINC, SAE and IEEE Standards***
		Mirko Jakovljevic, TTTech. Computertechnik AG

9:00 a.m.	***ORAL ONLY***	***An optimized answer toward a Switchless avionics communication Network***
		Marc Gatti, Thales Avionics Meudon; Patrice Toillon, David Faura, William Terroy, Paul Boivin-Champeaux, Thales Avionics
9:30 a.m.	***ORAL ONLY***	***Control and Analyze Big Test Data Sets of Electronic Networks - Customer's Best Practices***
		Arne Brehmer, Vector Informatik GmbH

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Aircraft Networks (Part 2 of 2)

Session Code: ***ATC402***

Room 618 ***Session Time:*** ***10:30 a.m.***

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 - *Serge A. Bruillot, Dassault Aviation; Mirko Jakovljevic, TTTech. Computertechnik AG; David P. Zika, Boeing Research & Technology*

Chairpersons - *Serge A. Bruillot, Dassault Aviation*

Time	***Paper No.***	***Title***
10:30 a.m.	***2015-01-2527***	***Design and Verification for Complex Deterministic Ethernet Networks in IMA Systems***
		Mirko Jakovljevic, Jan Radke, TTTech Computertechnik AG
11:00 a.m.	***2015-01-2528***	***Design and Simulation of Fault Tolerant Flight Control Schemes Implemented on a Parallel and Distributed Computational Cluster***
		Srikanth Gururajan, Saint Louis University

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Cabin Systems, In-Flight Entertainment and Connectivity (Part 1 of 2)

Session Code: ***ATC408***

Room 618 ***Session Time:*** ***1:30 p.m.***

Demands on cabin management systems, in-flight services and connectivity in the cabin are high as passengers utilize electronics throughout their flights. This session explores electronic systems in the cabin, including external communications, various standards, architectures, and practical implementation of these systems which provide support to the crew, access to services (In-flight entertainment, Office-In the Sky, xG phone), and passenger comfort (lighting, cabin conditioning, ¿).

Organizers - *Serge A. Bruillot, Dassault Aviation; Ralf God, Hamburg University of Technology; David P. Zika, Boeing Research & Technology; James Sherman, SAE International*

Chairpersons - *Serge A. Bruillot, Dassault Aviation; Ralf God, Hamburg University of Technology*

Assistant Chairpersons - *Ralf God, Hamburg University of Technology*

Time	***Paper No.***	***Title***

1:30 p.m.	***ORAL ONLY***	***Diehl Cabin Management and Services System (CMSS)***
		Ursula Hoffmann, Diehl Aerospace GmbH
2:00 p.m.	***ORAL ONLY***	***Aircraft Cabin Design ¿ An Architectural Approach for a Next Generation Cabin Management System***
		Hartmut Hintze, Hamburg University of Technology; Wolfgang Fischer, Jean-Marc Graumann, Airbus Operations GmbH
2:30 p.m.	***2015-01-2545***	***An Adaptive Software Architecture for Future CMS***
		Reza Ahmadi, Oliver Marquardt, Marc Riedlinger, Reinhard Reichel, University of Stuttgart

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Avionics - Avionics Component Management Challenges: Supply Chain, Obsolescence, Reliability, Counterfeit

Session Code: ***ATC412***

Room 618 ***Session Time:*** ***3:30 p.m.***

This aerospace industry had been managing its electronic components under several serious constraints of part availability, obsolescence, configuration management under frequent changes in parts, counterfeit electronic components, lack of tools and methods to assess part reliability under application conditions, and lack of radiation tolerant parts. This session will present the methods and tools that they have developed to overcome these problems.

Organizers - *Diganta Das, Univ. of Maryland; David P. Zika, Boeing Research & Technology*

Chairpersons - *Diganta Das, Univ of Maryland; Marc LeDuc, SAE International*

Time	***Paper No.***	***Title***
3:30 p.m.	***2015-01-2556***	***A New Platform to Study the Correlation between Aging and SEE Sensitivity for the Reliability of Deep SubMicron Electronics Devices***
		Thomas Rousselin, Thales Avionics; Guillaume Hubert, ONERA Toulouse; Didier Regis, Marc Gatti, Thales Avionics
4:00 p.m.	***2015-01-2555***	***Predicted Device-Degradation Failure-Rate***
		Ephraim Suhir, Portland State University; Alain Bensoussan, Institut de Recherche SAINT EXUPERY; Johann Nicolics, Vienna University of Technology

Planned by Avionics Committee / EMB Air and Space Group

Wednesday, September 23

Aerospace Operations - Aerospace Modeling & Simulation (Part 1 of 3)

Session Code: ***ATC101***

Room 619 ***Session Time:*** ***8:00 a.m.***

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; Jose R. Cintron, Lockheed Martin Missiles & Fire Control; Luis Rabelo, Univ. of Central Florida*

Chairpersons - *Luis Rabelo, Univ. of Central Florida*

Time	***Paper No.***	***Title***

8:00 a.m.	***2015-01-2402***	***An Efficient Algorithm for Solving Differential Equations to Facilitate Modeling and Simulation of Aerospace Systems***
		Yucheng Liu, Mississippi State University
8:30 a.m.	***ORAL ONLY***	***A Framework for Fast Uncertainty Quantification***
		Peter Qian, SmartUQ
9:00 a.m.	***2015-01-2397***	***Utilizing Discrete Event Simulation for Schedule Analysis: Processes and Lessons Learned from NASA's GOPD Integrated Timeline Model***
		Angelo C. Conner, Luis Rabelo, University of Central Florida
9:30 a.m.	***2015-01-2390***	***Cessna Citation X Engine Model Identification from Flight Tests***
		Georges Ghazi, Ruxandra Botez, Joseph Messi Achigui, École de Technologie Supérieure

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Aerospace Operations Committee / EMB Air and Space Group

Wednesday, September 23

Aerospace Operations - Systems Engineering & Design

Session Code: ***ATC100***

Room 619 ***Session Time:*** ***10:30 a.m.***

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; Jose R. Cintron, Lockheed Martin Missiles & Fire Control; Luis Rabelo, Univ. of Central Florida*

Time	***Paper No.***	***Title***
10:30 a.m.	***~~2015-01-2399~~***	***Middleware Technology in Space Exploration Medical Capabilities***
	ORAL ONLY	*Jorge Bardina, NASA Ames Research Center; Luis Rabelo, University of Central Florida*
11:00 a.m.	***2015-01-2385***	***A Multifaceted Investigation and Intervention into the Process of Flight Clearance for UAS Experimental Flight Test***
		Richard C. Millar, Naval Postgraduate School
11:30 a.m.	***2015-01-2388***	***Modeling Space Operations Systems Using SysML as to Enable Anomaly Detection***
		Luis Rabelo, University of Central Florida; Tom Clark, ERC Inc.

Planned by Aerospace Operations Committee / EMB Air and Space Group

Wednesday, September 23

Aerospace Operations - Aerospace Modeling & Simulation (Part 2 of 3)

Session Code: ***ATC101***

Room 619 ***Session Time:*** ***1:30 p.m.***

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; Jose R. Cintron, Lockheed Martin Missiles & Fire Control; Luis Rabelo, Univ. of Central Florida*

Time	Paper No.	Title
1:30 p.m.	~~2015-01-2393~~ ORAL ONLY	**Modelling and Simulation of Axial Fan using CFD** *Hemant Kumawat*
2:00 p.m.	~~2015-01-2386~~ ORAL ONLY	**Comparison of Statistical Validation Techniques for a 330kW Drive Stand Model** *Thierry Pamphile, Air Force Research Lab.*
2:30 p.m.	2015-01-2396	**Simulation of Riveting Process in Case of Unsupported Part Presence** *Sergey Lupuleac, Margarita Petukhova, Mariia Stefanova, Yulia Shinder, Evgeniy Victorov, Alexander Smirnov, Saint Petersburg Polytechnic University; Elodie Bonhomme, Airbus Operations SAS*

Planned by Aerospace Operations Committee / EMB Air and Space Group

Wednesday, September 23

Aerospace Operations - Aerospace Modeling & Simulation (Part 3 of 3)

Session Code: ***ATC101***

Room 619 ***Session Time:*** ***3:30 p.m.***

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; Jose R. Cintron, Lockheed Martin Missiles & Fire Control; Luis Rabelo, Univ. of Central Florida*

Chairpersons - *Luis Rabelo, Univ. of Central Florida*

Time	Paper No.	Title
3:30 p.m.	2015-01-2394	**Bivariate ¿Cut-Glue¿ Approximation of Strongly Nonlinear Mathematical Models Based on Experimental Data** *Rudolf Neydorf, Don State Technical University*
4:00 p.m.	2015-01-2389	**The Jet Fuel Hydrodynamic Cavitation Bubble Size with Cavitation Power and Energy from Rayleigh-Plesset Equation** *William W. Ni, United Technology Aerospace Systems; Michael Cass, United Technologies Aerospace; Daniel Bartholme, UTC Aerospace Systems*
	2015-01-2395	**ZENITH: A Nano-Satellite for Atmospheric Monitoring (Written Only - - No Oral Presentation)** *Vikhyat Chaudhry; Ishan Mishra*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Aerospace Operations Committee / EMB Air and Space Group

Wednesday, September 23

Safety - Industry Safety Initiatives (Part 1 of 2)

Session Code: ***ATC1300***

Room 620 ***Session Time:*** ***8:00 a.m.***

This session will explore the safety initiatives under development or being actively implemented within the aerospace industry.

Organizers - *Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Development Process Objectives - Comparison of Commercial Aviation Development Guidelines*** *Bruce F. Vacey, Electron International II Inc.*
8:30 a.m.	***ORAL ONLY***	***From Fault Tree Analysis to Model Based Safety Assessment (MBSA) using Cecilia Workshop: 30 Years of Improvement Activity at Dassault Aviation*** *Jean Gauthier, Christophe Giraudeau, Romain Bernard, Dassault Aviation*
9:00 a.m.	***ORAL ONLY***	***Using Model Based Safety Assessment during System Development (from PSSA to SSA)*** *Jean Gauthier, Christophe Giraudeau, Romain Bernard, Dassault Aviation*

Planned by Safety Committee / EMB Air and Space Group

Wednesday, September 23

Safety - Industry Safety Initiatives (Part 2 of 2)

Session Code: ***ATC1300***

Room 620 ***Session Time:*** ***10:30 a.m.***

This session will explore the safety initiatives under development or being actively implemented within the aerospace industry.

Organizers - *Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
10:30 a.m.	***~~2015-01-2430~~*** ***ORAL ONLY***	***The Autonomous and Instant Acting Thread Locking Mechanism (ATLM)*** *Wolfgang Weiss, IBW-Ingenieurbuero Wolfgang Weiss*
11:00 a.m.	***2015-01-2429***	***On Safety Solutions in an Assembly HMI-Cell*** *Rickard Olsen, Kerstin Johansen, Linköping University; Magnus Engstrom, Saab AB*
11:30 a.m.	***ORAL ONLY***	***Aeroelastic FEM for Safety and Reliability*** *Tomasz R. Seibert, Bombardier Aerospace*

Planned by Safety Committee / EMB Air and Space Group

Wednesday, September 23

Safety - Systems Safety (Part 3 of 3)

Session Code: ***ATC1303***

Room 620 ***Session Time:*** ***1:30 p.m.***

This session will focus on the development and implementation aspects associated with assuring system safety. The use in industry practices, guidance documentation and systems safety lessons learned are postulated topics.

Organizers - *Steven Beland, Boeing Commercial Airplanes; Eric M. Peterson, Electron International II Inc.; Andrew Paul Wallington, Gulfstream Aerospace Corp.*

Chairpersons - *Steven Beland, Boeing Commercial Airplanes*

Time	Paper No.	Title
2:00 p.m.	***~~2015-01-2433~~***	***An Evolution of Common Cause Analysis***
	ORAL ONLY	*Simon Taylor, Fokker Elmo B.V.*
2:30 p.m.	***~~2015-01-2437~~***	***The Safety Assessment of Interconnection Systems***
	ORAL ONLY	*Simon Taylor, Fokker Elmo B.V.*

Planned by Safety Committee / EMB Air and Space Group

Wednesday, September 23

Safety - Flight Operations Safety

Session Code: ***ATC1310***

Room 620 ***Session Time:*** ***3:30 p.m.***

This session will focus on initiatives and activities associated with conducting safe flight operations.

Organizers - *Zdzislaw H. Klim, Bombardier Aerospace; Eric M. Peterson, Electron International II Inc.*

Time	Paper No.	Title
3:30 p.m.	***2015-01-2440***	***Wearable Technologies as a Path to Single-Pilot Part 121 Operations***
		Robert Moehle, Jason Clauss, Clauss Concepts
4:00 p.m.	***2015-01-2443***	***Redundant Transmitting System in Aircraft (RTSA)***
		Nivedita Chanda, SRM University
4:30 p.m.	***2015-01-2441***	***Development of a Safety Assessment Tool for Air Traffic Control System (Written Only -- No Oral Presentation)***
		Ahmet Oztekin, Hi-Tec Systems Inc., FAA WJHTC

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

Planned by Safety Committee / EMB Air and Space Group

Wednesday, September 23

Executive Management Panel Discussion: Global Manufacturing Challenges

Session Code: ***ATC3003***

Room 6E ***Session Time:*** ***8:00 a.m.***

The future of aerospace requires that new technologies and processes be seamlessly incorporated the manufacturing line to meet the advanced engineering designs such as

(1)The increased use of composites

(2)High integrated and complex systems

(3)More electric technologies

(4)Sensors and predictive technologies

(5)Virtual / augmented reality technologies

This panel provides opportunities for attendees, especially students and young professionals, to get a broad future perspective in science, technology, and engineering and emerging innovations, technologies, future aerospace strategies and plans in particular from senior executives in the panel. The panel enables expression and face-to-face discussion of diverse industrial, academic and government views about effectiveness and efficiency of global manufacturing, supply chain, and logistics. The panel fosters future collaborations resulting in cost avoidance on both sides

Moderators - *John Vickers, NASA Marshall Space Flight Center*

Panelists - *Julie-Ellen Acosta, Boeing Co.; Lance Bryant, Northrop Grumman Corp.; Curtis Carson, Airbus; Don A. Kinard, Lockheed Martin Aeronautics Co.; Greg Morris, GE Aviation; Peter Smith, UTC Aerospace Systems;*

Time	Paper No.	Title
	ORAL ONLY	***Learn More About the Panelists*** *John Vickers, NASA Marshall Space Flight Center; Julie-Ellen Acosta, Boeing Co.; Lance Bryant, Northrop Grumman Corp.; Curtis Carson, Airbus; Don A. Kinard, Lockheed Martin Aeronautics Co.; Greg Morris, GE Aviation; Peter Smith, UTC Aerospace Systems*

Wednesday, September 23

Cliff Garrett Turbomachinery and Applications Engineering Award Lecture

Session Code: ***ATC1900***

Room 6E ***Session Time:*** ***10:30 a.m.***

Established in 1984, this award promotes engineering developments and the presentation of SAE papers on turbomachinery and/or developments that enable or advance the use of turbomachinery. The award honors Cliff Garrett and the inspiration he provided to engineers by his example, support, encouragement, and many contributions as an aerospace pioneer. To perpetuate recognition of Mr. Garrett's achievements and dedication as an aerospace pioneer, SAE administers an annual lecture by a distinguished authority in the engineering of turbomachinery and/or engineering related to creating, enabling, or advancing applications of turbomachinery in power systems, on-highway, off-highway, aircraft, and/or spacecraft uses.

Organizers - *James Breneman*

Presenters - *Dara Childs, Texas A&M University*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2487***	***The Remarkable Turbomachinery-Rotordynamics Developments During the Last Quarter of the 20th Century*** *Dara Childs, Texas A&M University*

Wednesday, September 23

Littlewood Lecture

Session Code: ***ATC4***

Room 6E ***Session Time:*** ***11:00 a.m.***

Organizers - *Robert L. Ireland, Airlines for America*

Time	Paper No.	Title
11:15 a.m.	***2015-01-2626***	***Nurturing Innovation - Growing Our Future*** ***Organizers -*** *Robert L. Ireland, Airlines for America Charla Wise, Wise Consulting*

Wednesday, September 23

Executive Management Panel Discussion: Integration of Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS): A Global Perspective

Session Code: ***ATC3001***

Room 6E ***Session Time: 1:30 p.m.***

The greatest challenge facing the realization of th efull potential of a civil Unmanned Aircraft Systems industry is the development of procedures and technologies to facilitate their safe operation in non-segregated airspace. UAS could be considered the first in a wave of new airspace users, ranging from personal air vehicles to reusable sub-orbital aircraft. These airspace esers will utilize airspace in fundamentally new ways and the challenge for regulators is to integrate their operations whilst continuing to meet safety, efficiency, and environmental expectations. This panel session will highlight the key issues, international programs exploring UAS integration, and discuss the broader challenges of integrating UAS into the Air Traffic Management System.

Moderators - *Courtney Howard, Pennwell*

Panelists - *James Coyne, UAS International; Doug Davis, Northrop Grumman; Jarrett Larrow, FAA;*

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn More About the Panelists***
		Courtney Howard, Pennwell; Doug Davis, Northrop Grumman; Jarrett Larrow, FAA; James Coyne, UAS International

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

Wednesday, September 23

Executive Management Panel Discussion: Transport Aircraft Maintenance ¿ A Global Enterprise From Design to End of Service Life

Session Code: ***ATC3002***

Room 6E ***Session Time: 3:30 p.m.***

The future of commercial transportation requires that airlines, airframers, and suppliers work closely to define the next generation of airplane and the equipment to support, maintain, and sustain them. This panel brings together leaders from the airlines to talk about how this collaboration works today, and how it needs to change for future design and development programs.

1. Highlight the recent successes (i.e. B787, A350...)

2. Discuss the areas where we need some deeper thought (i.e. supply chain, event response, R&D needs, policy issues,...)

3. Identify the next steps for the commercial aviation industry

Moderators - *Robert L. Ireland, Airlines for America*

Panelists - *Bruno James, Airbus UK; Tony Muller, Delta; Michael K. Sinnett, Boeing Commercial Airplanes; Constance von Meuhlen, Alaska Airlines;*

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn More About the Panelists***
		Tony Muller, Delta Air Lines; Robert Ireland, Airlines for America; Ray Carroll, FedEx Corporation; Michael K. Sinnett, Boeing Commercial Airplanes; Bruno James, Airbus S.A.S.; Constance von Meuhlen, Alaska Airlines

Thursday, September 24

Environment - Alternative Fuels and Energies

Session Code: ***ATC602***

Room 310 ***Session Time: 8:00 a.m.***

Research and development efforts that enable the use of alternative energy sources for aviation, with emphasis on commercial aviation fuels and energies 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 - *Edwin Corporan, Wright-Patterson Air Force Base; Richard B. Fox, Honeywell Aerospace; Rainer Von Wrede, Airbus*

Chairpersons - *Edwin Corporan, Wright-Patterson Air Force Base*

Assistant Chairpersons - *Richard B. Fox, Honeywell Aerospace*

Time	Paper No.	Title
8:00 a.m.	***ORAL ONLY***	***Hydrogen as a Fuel in Jet Engine***
		Ravi Nandu, SRM University; Kuldeep Singh, Fergusson College; Vikram Singh Mangat, SRM Univ; Suvriti Dhawan, SRM University
8:30 a.m.	***2015-01-2563***	***Water Solubility in Different Alternative Jet Fuels: A Comparison with Petroleum-Based Jet Fuel***
		Alberto Charro, Solange Baena, Airbus Group Innovations; Joseph K-W Lam, Airbus Operations, Ltd.
9:30 a.m.	***ORAL ONLY***	***Alternative Energy In Aerospace Vehicles using Nuclear Technology***
		Ashwin Kumar Kuchibhotla, Vidya Jyothi Institute Of Technology
	2015-01-2562	***Characterization of the Ultrafine and Black Carbon Emissions from Different Aviation Alternative Fuels (Written Only -- No Oral Presentation)***
		Tak W. Chan, Environment Canada; Wajid Chishty, Craig Davison, National Research Council Canada; David Buote, Environment Canada

Planned by Environment Committee / EMB Air and Space Group

Thursday, September 24

Unmanned Aerial Systems - Remote Sensing & Payloads

Session Code: ***ATC1508***

Room 603 ***Session Time:*** ***8:00 a.m.***

Recent UAS popularity has driven numerous advancements in payloads and remote sensing capabilities. These advancements have led to smaller, lighter, and more energy efficient payload packages, and led to the reduced cost of acquiring, operating, and maintaining UAS platforms. This session focuses specifically on UAS payload technologies including remote sensory equipment from design through implementation.

Organizers - *Yin M. Chen, US Army ARDEC; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Time	Paper No.	Title
8:30 a.m.	~~***2015-01-2476***~~ ***ORAL ONLY***	***Versatility of Quadcopters in Firefighting and Tunnel Detection***
		Pranav Mohan Parki
9:00 a.m.	***2015-01-2477***	***Bistatic DIAL for Multi-Species Aviation Pollutant Measurements from RPAS***
		Alessandro Gardi, Roberto Sabatini, RMIT University

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

Thursday, September 24

Unmanned Aerial Systems - Avionics, UAS¿s Human-Machine Interface and Systems Integration

Session Code: ***ATC1507***

Room 603 ***Session Time:*** ***10:30 a.m.***

This session discussed aspects of UAS system integration, from mission planning to multi-aircraft and payload control, post-mission analysis and dissemination. UAS operators can discuss complete and intuitive aspects of systems operation, versatile payload installation, and control throughout every mission phase, from launch to recovery. Hardware, software, logistics, and design aspects of UAS that might be generalized to be interoperable with other operations are of interest.

Organizers - *Alessandro Ceruti, University of Bologna; Richard Garcia, Southwest Research Institute; Piergiovanni Marzocca, Clarkson University*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2474***	***Automatic Wildfire Detection and Simulation using Optical Information from Unmanned Aerial Systems***
		Christopher W. Lum, Alexander Summers, Brian Carpenter, Angel Rodriguez, University of Washington; Matthew Dunbabin, Queensland University of Technology
11:00 a.m.	***2015-01-2473***	***A 3D User and Maintenance Manual for UAVs and Commercial Aircrafts Based on Augmented Reality***
		Alessandro Ceruti, Alfredo Liverani, University of Bologna; Piergiovanni Marzocca, RMIT University
11:30 a.m.	***2015-01-2471***	***Image Processing Based Air Vehicles Classification for UAV Sense and Avoid Systems***
		Alessandro Ceruti, Simone Curatolo, Alessandro Bevilacqua, University of Bologna; Piergiovanni Marzocca, RMIT University
12:00 p.m.	***2015-01-2475***	***Multi-Sensor Data Fusion Techniques for RPAS Detect, Track and Avoid***
		Francesco Cappello, Royal Melbourne Institute of Technology; Roberto Sabatini, Subramanian Ramasamy, RMIT University
12:30 p.m.	***2015-01-2472***	***SUAV: Project Case Study to Integrate a Tubular Solid Oxide Fuel Cell Hybrid System into a Small UAV***
		Tom Owen, Airbus Group Innovations

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519, and also individually. To purchase visit collections.sae.org

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

Thursday, September 24

Integrated Vehicle Health Management - IVHM Business Case

Session Code: ***ATC802***

Room 604 ***Session Time:*** ***8:00 a.m.***

The maturity of IVHM technologies has reached a point at which decision-makers responsible for asset operations and management want to assess the return on investment on the promising capabilities before implementation. This session will examine successful applications of IVHM and the resulting benefits, look at how the implementation decisions were made and discuss ways of approaching a business case analysis for an IVHM system, and the parameters involved.

Organizers - *Christopher J. Pomfret, Treble One Aerospace Consulting; David Kinney, Boeing Commercial Airplanes; Rhonda D. Walthall, UTC Aerospace Systems*

Chairpersons - *Christopher J. Pomfret, Treble One Aerospace Consulting; David Kinney, Boeing Commercial Airplanes; Ginger Shao, Honeywell Intl. Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2584***	***Determining Remaining Useful Life for Li-ion Batteries***
		Andrew Dickerson, Ravi Rajamani, Meggitt USA; Mike Boost, John Jackson, Securaplane Technologies

8:30 a.m.	***ORAL ONLY***	***Value Drivers for Prognostic Health Management Solutions in Commercial Aviation***
		Juan D. Lopez, Boeing

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

Thursday, September 24

Manufacturing/Materials/Structures - Composites Fabrications and Joining (Part 2 of 2)

Session Code: ***ATC904***

Room 606 ***Session Time:*** ***8:00 a.m.***

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 - *George Nicholas Bullen, Smart Blades Inc.; James H. Campbell, Lockheed Martin Aeronautics Co.; Carroll G. Grant, Aerospace Composites Consulting*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-2610***	***Technology Review of Thermal Forming Techniques for use in Composite Component Manufacture***
		Patrick Land, Richard Crossley, David Branson, Svetan Ratchev, University of Nottingham
8:30 a.m.	***ORAL ONLY***	***Adhesive Bond Strength Evaluation for Bonded Structures***
		David Lahrman, LSP Technologies
9:00 a.m.	***2015-01-2609***	***Optimization of Spatially Varying Fiber Paths for a Symmetric Laminate with a Circular Cutout under Remote Uniaxial Tension***
		Pinar Acar, Avinkrishnan A. Vijayachandran, Veera Sundararaghavan, University of Michigan; Anthony Waas, University of Washington; Mostafa Rassaian, Boeing
9:30 a.m.	***ORAL ONLY***	***Strategies for Drilling Composite and Composite-Metal Structure***
		Jeffrey Lantrip, Boeing Research & Technology

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

Thursday, September 24

Manufacturing/Materials/Structures - Trimming, Drilling & Assembly of Composites Structures

Session Code: ***ATC911***

Room 606 ***Session Time:*** ***10:30 a.m.***

This session is focused on providing technical presentations on automated processing of cured aerospace composite structural details and assemblies. Topics include but are not limited to: Automated Trimming, Drilling, Assembly, and the associated support process of: Flexible Tooling system, End Effector Design and Development, placement Vision and Measurement systems, detail part /assembly handling/manipulation for joining.

Organizers - *Carroll G. Grant, Aerospace Composites Consulting; Come Rene-Bazin, PaR Systems Inc.; Ronald Weddle*

Chairpersons - *Jeffrey Morgan, Boeing*

Time	***Paper No.***	***Title***

10:30 a.m.	***ORAL ONLY***	***Trimming and Slotting of Carbon Fibre Reinforced Polymer (CFRP) with Polycrystalline Diamond (PCD) End Mills***
		Matt Collier, Element Six, Ltd.
11:30 a.m.	***ORAL ONLY***	***Single Function vs Multi-Function End-Effectors***
		Daniel Long, Boeing Commercial Airplanes
12:00 p.m.	***ORAL ONLY***	***High Accuracy Systems: Drilling, Positioning and Metrologic Cell***
		Jordi Anducas Aregall, Aritex Cading SA

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

Thursday, September 24

Business/Economics - New Global Markets (Part 2 of 2)

Session Code: ***ATC505***

Room 607 ***Session Time:*** ***8:00 a.m.***

Continued growth in aerospace requires new global markets. What are these markets and how will they be addressed? What steps will manufacturers and service providers take to address these new markets? Papers and presentations should address future growth areas/locations; strategies for managing and developing international opportunities; new product/service offerings for global markets; new technologies; and new applications for existing products/technologies.

Organizers - *William Rickard, Mooney International - Chino*

Chairpersons - *William Rickard, mooney international*

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***New Rules for the 21st Century Supply Chain***
		Chad J. Smith, Demand Driven Institute
8:30 a.m.	***ORAL ONLY***	***Opening of Chinese Airspace to Civil Aviation***
		Aizhang Wang, CAAC North Region

Planned by Business Economics Committee / EMB Air and Space Group

Thursday, September 24

Business/Economics - Aerospace Business Models

Session Code: ***ATC501***

Room 607 ***Session Time:*** ***9:30 a.m.***

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, Mooney International - Chino*

Chairpersons - *William Rickard, mooney international*

Time	***Paper No.***	***Title***
9:30 a.m.	***ORAL ONLY***	***International working models and six principles for increasing their effectiveness***
		Dan J. Brown, Atkins

Planned by Business Economics Committee / EMB Air and Space Group

Thursday, September 24

Auto Fastening/Assembly & Tooling (AeroFast) - Robotic Applications in Drilling, Fastening and Assembly (Part 1 of 2)

Session Code: ***ATC205***

Room 608 ***Session Time:*** ***8:00 a.m.***

This session is dedicated to the advancements in drilling and fastening applications through the utilization of robots for positioning the drilling and/or fastening end effector to the airframe assembly or positioning of an airframe assembly to a fixed drilling and fastening system. This session also includes innovative end-effectors, advancements in robot accuracy and stiffness and new system architecture and programming.

Organizers - *Ken Benczkowski, Broetje Automation USA Inc.; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2509***	***Development of a Mobile Drilling and Fastening System Based on a PKM Robotic Platform*** *Eric Reid, Boeing*
8:30 a.m.	***2015-01-2508***	***Fully Automated Robotic Tool Change*** *Jason Rediger, Kyle Fitzpatrick, Rob McDonald, Daniel Uebele, Electroimpact Inc.*
9:00 a.m.	***ORAL ONLY***	***Robotic based Assembly in Inner Structures*** *Christian Matthias Heyers, Broetje-Automation Gmbh*
9:30 a.m.	***2015-01-2512***	***Robotic Installation of OSI-Bolts*** *Mark W. Sydenham, Tim Brown, Electroimpact Inc.*

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Thursday, September 24

Auto Fastening/Assembly & Tooling (AeroFast) - Robotic Applications in Drilling, Fastening and Assembly (Part 2 of 2)

Session Code: ***ATC205***

Room 608 ***Session Time:*** ***10:30 a.m.***

This session is dedicated to the advancements in drilling and fastening applications through the utilization of robots for positioning the drilling and/or fastening end effector to the airframe assembly or positioning of an airframe assembly to a fixed drilling and fastening system. This session also includes innovative end-effectors, advancements in robot accuracy and stiffness and new system architecture and programming.

Organizers - *Ken Benczkowski, Broetje Automation USA Inc.; Paul Thompson, Electroimpact Inc.*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2513***	***Automated Drilling of Large Diameter Holes into Complex Aircraft Structures using a Robot Positioning Concept*** *Hans-Juergen Borchers, Precorp; Kadir Akku¿, Aerospace & Defence Industry; Cagatay Ucar, Sandvik*
11:00 a.m.	***2015-01-2510***	***3D Countersink Measurement*** *Ryan Haldimann, Electroimpact Inc.*
11:30 a.m.	***2015-01-2514***	***An Automated Production Fastening System for LGP and Hi-Lok Titanium Bolts for the Boeing 737 Wing Panel Assembly Line*** *Scott Tomchick, Joshua Elrod, Dave Eckstein, James Sample, Electroimpact Inc.; Dan Sherick, Boeing*

12:00 p.m.	***ORAL ONLY***	***One Up Spar Assembly By A Single Robotic System***
		Jarrod A. Wallace, James W. Mills, Electroimpact Inc.

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00521, and also individually. To purchase visit collections.sae.org

Planned by AeroFast International Committee / EMB Air and Space Group

Thursday, September 24

Power and Thermal System - Thermal Management for Aerospace Applications (Part 2 of 3)

Session Code: ***ATC1102***

Room 611 ***Session Time:*** ***8:00 a.m.***

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 - *Jon Fifield, Astronics AES; Vankatesan Manivannan, NAVAIR; Travis E. Michalak, US Air Force Research Laboratory; Christopher Severns, Boeing Commercial Airplanes*

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

Time	***Paper No.***	***Title***
8:00 a.m.	***ORAL ONLY***	***Thermal Management of Li-ion Batteries Employing Active Control Strategies***
		Lin Ma, Virginia Tech.
8:30 a.m.	***2015-01-2418***	***Passive Heat Exchange System for Aircraft Equipment Cooling Applications***
		Ricardo Gandolfi, Luiz Ribeiro, Embraer S.A.; Jorge Oliveira, Kleber Paiva, Marcia Mantelli, Federal University of Santa Catarina
9:30 a.m.	***ORAL ONLY***	***Computational Design and Experimental Validation of a Phase Change Material Thermal Energy Storage (PCM-TES) Device***
		C. O. Rodriguez, D. Y. Ettehadieh, J. D. Sole, Mainstream Engineering Corporation

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, September 24

Power and Thermal System - Thermal Management for Aerospace Applications (Part 3 of 3)

Session Code: ***ATC1102***

Room 611 ***Session Time:*** ***10:30 a.m.***

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 - *Jon Fifield, Astronics AES; Vankatesan Manivannan, NAVAIR; Travis E. Michalak, US Air Force Research Laboratory; Christopher Severns, Boeing Commercial Airplanes*

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

Time	***Paper No.***	***Title***

10:30 a.m.	***2015-01-2419***	***A Study of Air/Fuel Integrated Thermal Management System***
		Naoki Seki, Noriko Morioka, IHI Corporation; Hidefumi Saito, Shimadzu Corporation; Hitoshi Oyori, IHI Aerospace Co. Ltd.
11:00 a.m.	***ORAL ONLY***	***Characterization and Preliminary Testing of a Vapor Cycle System Cooled Thermal Energy Storage Subsystem***
		Travis E. Michalak, US Air Force Research Laboratory
11:30 a.m.	***ORAL ONLY***	***Aircraft Thermal Management***
		Mark Ahlers, Boeing Commercial Airplanes
	2015-01-2420	***An Analysis of Heat Generation in a Lithium Ion Cell (Written Only -- No Oral Presentation)***
		Henry A. Catherino, Oakland University

Planned by Power Systems Committee / EMB Air and Space Group

Thursday, September 24

Flight Sciences - Computational Fluid Dynamics (CFD)

Session Code: ***ATC706***

Room 612 ***Session Time:*** ***8:00 a.m.***

This session will cover CFD tools, methods and applications.

Organizers - *Reuben M. Chandrasekharan, Bombardier Learjet; Chester P. Nelson, Boeing Commercial Airplanes; Kamran Rokhsaz, Wichita State University*

Chairpersons - *Reuben M. Chandrasekharan, Bombardier Learjet*

Time	***Paper No.***	***Title***
8:00 a.m.	***2015-01-2576***	***Flow Simulation and Theoretical Investigation on Aerodynamics of NACA-2415 Aerofoil at Low Reynolds Number***
		Vasu Kumar; Vishvendra Tomar, Naveen Kumar, Samarth Jain, Delhi Technological University
8:30 a.m.	***2015-01-2575***	***The Lattice-Boltzmann Method: An Alternative to LES for Complex Aerodynamic and Aeroacoustic Simulations in the Aerospace Industry***
		Swen Noelting, Ehab Fares, Exa Corporation
9:00 a.m.	***ORAL ONLY***	***Extended Validation of a Lattice-Boltzmann Approach for Transonic and Supersonic Flow Simulations***
		Ehab Fares, Benedikt Koenig, Benjamin Duda, Exa Corporation
9:30 a.m.	***ORAL ONLY***	***Stall Prediction of the Piaggio Aerospace P1XX Aircraft Using a Lattice-Boltzmann Method Solution***
		Giorgio Travostino, Piaggio Aerospace; David Holman, Zaki Abiza, Ruddy Brionnaud PhD, Next Limit Dynamics

Planned by Flight Sciences Committee / EMB Air and Space Group

Thursday, September 24

Manufacturing/Materials/Structures - Advanced Low Cost Aircraft Structures

Session Code: ***ATC900***

Room 615 ***Session Time: 8:00 a.m.***

This session will address the manufacturing issues related to Advanced Low Cost Aircraft Structures. The specific aim will be to assess impacts of High Value Manufacturing within target products ranging from business jets to large civil airliners. Topics include; cost-effective manufacturing and assembly, design for manufacture, application of carbon fibre composites and hybrid material combinations to primary structures, meeting the challenge to reduce product lifecycle operating costs.

Organizers - *George Nicholas Bullen, Smart Blades Inc.; Carroll G. Grant, Aerospace Composites Consulting*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2596***	***Aspects of Damage Tolerance and Fatigue of CFRP Structural Components***
		Uli Burger, Technische Hochschule Ingolstadt; Ludovic Rochat, Institut für Technik und Design GmbH
8:30 a.m.	***2015-01-2595***	***An Enhanced Risk Reduction Methodology for Complex Problem Resolution in High Value, Low Volume Manufacturing Scenarios***
		Darren Winter, University of Bristol; Paul Ashton-Rickardt, GKN Aerospace; Carwyn Ward, Paul Gibbons, Chris Mcmahon, Kevin Potter, University of Bristol
9:00 a.m.	***ORAL ONLY***	***Lessons learned across the spectrum from deploying graphite composites on primary structure***
		Dan Day, Boeing
	2015-01-2594	***Reconfigurable Assembly System Design Methodology: A Wing Assembly Case Study (Written Only -- No Oral Presentation)***
		Thomas G. Jefferson, Panorios Benardos, Svetan Ratchev, University of Nottingham

The papers in this session are available in SAE Technical Paper Collection, COLL-TP-00519 and COLL-TP-00524, and also individually. To purchase visit collections.sae.org

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

Thursday, September 24

Laser Bondline Inspection Panel Discussion

Session Code: ***ATC3007***

Room 615 ***Session Time: 10:30 a.m.***

This panel discussion will address the challenges and solutions for using bonded structure to replace fasteners as the primary means of joining airframe parts into assemblies.

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

Panelists - *Doug Decker, Northrop Grumman Corp.; David F. Lahrman, LSP Technologies Inc.; Mary Mallory, Kimberly Clark Corp.; Marc J. Piehl, Boeing Research & Technology;*

Thursday, September 24

Avionics - Advanced System Architectures and IMA

Session Code: ***ATC400***

Room 616 ***Session Time: 10:30 a.m.***

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 - *Marc Gatti, Thales Avionics Meudon; Yann G. Le Masson, Bombardier*

Aerospace; Jeffrey VanDorp, GE Aviation; David P. Zika, Boeing Research & Technology

Chairpersons - *Marc Gatti, Thales Avionics*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2523***	***Self-Adaptive Embedded Network***
		Pierre Coustal, Franck Tailliez, Thales Systèmes Aéroportés
11:00 a.m.	***2015-01-2522***	***Deterministic Ethernet VPX 3U/6U Switches for Open Integrated Architectures***
		Mirko Jakovljevic, Jan Radke, TTTech Computertechnik AG; Perry Rucker, TTTech North America Inc.
11:30 a.m.	***ORAL ONLY***	***Multi-core Certification Approval: a systems-level approach***
		Joe Wlad, Wind River

Planned by Avionics Committee / EMB Air and Space Group

Thursday, September 24

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

Session Code: ***ATC405***

Room 617 ***Session Time:*** ***10:30 a.m.***

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 - *Brecht Baert, Esterline; Marc Gatti, Thales Avionics Meudon; David P. Zika, Boeing Research & Technology*

Chairpersons - *Marc Gatti, Thales Avionics*

Time	Paper No.	Title
10:30 a.m.	***2015-01-2536***	***Augmented Head Mount Virtual Assist for Pilot (Written Only -- No Oral Presentation)***
		Rinky Babul Prasad, Vinukonda Siddartha, UTC Aerospace Systems
11:00 a.m.	***ORAL ONLY***	***¿Evolution & Revolution¿ - The Head-Up Display of the Future!***
		Malcolm Homan, BAE Systems (Operations) Limited
11:30 a.m.	~~***2015-01-2534***~~ ***ORAL ONLY***	***Advanced Solutions for the Calculation, Simulation and Measurement to Optimize and Evaluate Aeronautics Cockpit Instrumentation in Virtual and Real Environments***
		Seth Lyles, OPTIS

Planned by Avionics Committee / EMB Air and Space Group

Thursday, September 24

Avionics - Cabin Systems, In-Flight Entertainment and Connectivity (Part 2 of 2)

Session Code: ***ATC408***

Room 618 ***Session Time:*** ***10:30 a.m.***

Demands on cabin management systems, in-flight services and connectivity in the cabin are high as passengers utilize electronics throughout their flights. This session explores electronic systems in the cabin, including external communications, various standards, architectures, and practical implementation of these systems which provide support to the crew, access to services (In-flight entertainment, Office-In the Sky, xG phone), and passenger comfort (lighting, cabin conditioning, ¿).

Organizers - *Serge A. Bruillot, Dassault Aviation; Ralf God, Hamburg University of Technology; David P. Zika, Boeing Research & Technology*

Chairpersons - *Serge A. Bruillot, Dassault Aviation; Ralf God, Hamburg University of Technology*

Assistant Chairpersons - *Ralf God, Hamburg University of Technology*

Time	Paper No.	Title
10:30 a.m.	***ORAL ONLY***	***DACAPO® ¿ The energy-autonomous cabin***
		Ronny A. Knepple, Diehl Aerospace GmbH
11:00 a.m.	***ORAL ONLY***	***Information Centric Operation of Future Connected Cabin***
		Oliver Lücke, Zodiac Inflight Innovations Germany; Matthias Kreutz, Zodiac Premium Galleys; Hermann Schotte, Zodiac Cabin Controls
11:30 a.m.	***ORAL ONLY***	***"Bring Your Own Device" - Enhance your Comfort Zone***
		Sven Taubert, Frank Niss, Helge Sachs, Lufthansa Technik AG

Planned by Avionics Committee / EMB Air and Space Group

Thursday, September 24

Safety - System Architecture of Safety Critical Systems

Session Code: ***ATC1308***

Room 620 ***Session Time:*** ***8:00 a.m.***

This session focuses on airborne electronics topics with a focus on the safety aspects of design, implementation, analysis of systems and their architectures supporting flight critical systems.

Organizers - *Daniel J. Fogarty, The Boeing Company; Eric M. Peterson, Electron International II Inc.*

Moderators - *John Dalton, Boeing Co*

Time	Paper No.	Title
8:00 a.m.	***2015-01-2439***	***Hardware and Software Development and Integration per SAE ARP4754A***
		Martin Hunter, BAE Systems
8:30 a.m.	***ORAL ONLY***	***Fluid Threat Analysis for Complex Integrated System Architecture***
		Noah Shaw, Boeing Commercial Airplanes
9:00 a.m.	***ORAL ONLY***	***Model Based Safety Analysis ARP4761A Appendix***
		Tyler Petri, The Boeing Company

Planned by Safety Committee / EMB Air and Space Group

Thursday, September 24

Executive Management Panel Discussion: Connected Aircraft Evolution

Session Code: ***ATC3000***

Room 6E ***Session Time: 8:00 a.m.***

The transformation from aircraft connectivity for the passenger, to connectivity for the total aircraft is still in its infancy. It is envisioned that the Connected Aircraft will follow the commercial sector¿s ¿internet of things¿ evolution, with resulting value added services to all parties in the value chain. Providing concierge services to the passenger and real-time analytics and diagnostics to the operators, as well as improved scheduling of catering, fuel delivery and other ground services are just some examples of a true Connected Aircraft. Unlike the commercial sector, the Aircraft industry poses some unique challenges. The longevity of the aircraft coupled with the complexity and cost of modification goes against the commercial sector¿s approach for continuous and frequent changes. The additional IT complexity and infrastructure required will require significant changes in facilities, personnel and operations. Operators of multiple fleet types, containing different aircraft equipment, face an added challenge of having consistent and uniform connected aircraft operations across their fleets. The goal of the panel is to highlight key issues that this evolving industry is facing, discuss potential solutions and foster dialogue among panel participants and attendees on new approaches and ideas.

Moderators - *Steven Velotas, NASA Langley Research Center*

Panelists - *Ed Anderson, Honeywell; Brian Johnson, United Airlines; Peter Lemme, Opcomm Inc.; Michael S. Murphy, Boeing Commercial Airplanes; Jeffrey Rex, Panasonic Avionics Corp.; Sven Taubert, Lufthansa Technik AG;*

Time	***Paper No.***	***Title***
	ORAL ONLY	***Learn More About the Panelists***
		Steven Velotas, NASA Langley Research Center; Ed Anderson, Honeywell Aerospace; Brian Johnson, United Airlines; Peter Lemme, Opcomm Inc.; Michael S. Murphy, Boeing Commercial Airplanes; Jeffrey Rex, Panasonic Avionics Corp.; Sven Taubert, Lufthansa Technik AG

Planned by Avionics Committee / EMB Air and Space Group