



# AEROSPACE STANDARDS NEWSLETTER

Creating global consensus-based solutions.  
Moving the aerospace industry forward.

## TABLE OF CONTENTS:

- C2 Revisions of Aerospace Quality Management Systems Standards Published
- C2 2017 is 100<sup>th</sup> Anniversary of First Aerospace Standard
- 1 New Counterfeit Electronic Parts Avoidance Standards Issued
- 1 SAE 2016 Aerospace Standards Summit Addresses Transformational Technologies
- 2 Global Deicing Standards Issued, More in Development
- 3 New Unmanned Air Vehicle Propulsion Committee Proposed
- 3 Aerospace Engine Supplier Quality Committee, Strategy Group, Meet at World Headquarters
- 3 Aircraft Ground Support Committee Reconstituted
- 4 New Reliability, Supportability, and Health Management Systems Group Created
- 4 New G-28 Committee to Develop Aircraft Artificial Bird Strike Testing Standards
- 5 New Revision of Former Federal Color Matching Standard to be Issued
- 5 Recent SAE Aerospace Award Winners
- 5 SAE Standards Development Committees Seeking Experts and Volunteers
- 8 Upcoming Technical Committee Meeting Schedule
- 12 From the Council Chair

## SAE INTERNATIONAL TEAM MEETS WITH ICAO, IATA LEADERS

SAE International Chief Executive Officer David L. Schutt, along with David Alexander, Director, Aerospace Standards, and Laura Feix, Aerospace Standards Engineer, met with leaders from the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA) on October 3 in Montreal.



SAE representatives attended the ICAO 39th Triennial Assembly in Montreal in October

During the ICAO 39th Triennial Assembly, the SAE team met with Dr. Olumuyiwa Benard Aliu, President, ICAO Council, and Steve Creamer, Director, Air Navigation Bureau. Discussion items included the development of global aviation safety standards, the exchange of technical information, and the ICAO tasking of SAE to develop performance standards for the carriage of lithium batteries.

Earlier in 2016, ICAO, a UN specialized agency, recognized SAE for inclusion on the list of international organizations that may be invited to attend suitable ICAO meetings. The ICAO Secretariat participates in SAE standards committees, and ICAO publications contain numerous references to SAE documents.

Schutt, Alexander, and Feix also met with Gilberto Lopez Meyer, IATA's Senior Vice President for Safety and Flight Operations. IATA provides a vital airline stakeholder voice in several SAE technical committees in diverse areas such as materials, aircraft prognostics, deicing, cargo, and ground support equipment.

On October 4, SAE participated in the ICAO Standards Roundtable with other Standards Development Organizations (SDO) and regulatory authorities to discuss ICAO's use of industry standards which complement ICAO's performance-based SARPs (Standards and Recommended Practices). ICAO Assembly Resolution A38-11 instructs ICAO, to the maximum extent appropriate, to make use of material developed by SDOs when adopting ICAO provisions. SAE is one of the key SDO partners providing guidance material and acceptable means of compliance to ICAO provisions.

## REVISIONS OF AEROSPACE QUALITY MANAGEMENT SYSTEMS STANDARDS PUBLISHED

“AS9100D, Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations,” a standard for quality management systems requirements for aviation, space and defense organizations, was published in September.

“AS9100 Revision D integrates an organization’s strategic objectives and business processes by directly linking them to the quality management system, which, when combined with risk-based thinking and the identification of opportunities, enables this revision to provide more value to the organization,” said **Alan Daniels, chair of the SAE G-14 Americas Aerospace Quality Standards Committee (AAQSC)**.

The standard has been revised to incorporate the requirements of ISO 9001:2015. The revision takes into consideration aviation, space and defense stakeholders’ needs, and it incorporates clarifications to 9100 series requested by IAQG users since the last revision.

Revisions of these aerospace quality standards were also issued in October and November:

- AS9101F, Quality Management Systems Audit Requirements for Aviation, Space, and Defense Organizations
- AS9110C, Quality Management Systems - Requirements for Aviation Maintenance Organizations
- AS9120B, Quality Management Systems - Requirements for Aviation, Space and Defense Distributors

The G-14 committee also issued these three new standards in November:

- AS9145, Aerospace Series – Requirements for Advanced Product Quality Planning and Production Part Approval Process
- AS9162, Aerospace Operator Self-Verification Programs
- ARP9136, Aerospace Series - Root Cause Analysis and Problem Solving (9S Methodology)

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## 2017 IS 100<sup>TH</sup> ANNIVERSARY OF FIRST AEROSPACE STANDARD

In 2017, SAE International will celebrate the 100 year legacy of SAE aerospace standards. Next year will mark the 100th anniversary of the first aerospace standard – for an interchangeable aircraft engine spark plug – which was published in early 1917.

Throughout its history, SAE has worked with industry, government and regulatory agencies to create an extensive family of standards that form the technical basis of regulations and government requirements that are essential for aircraft certification, airworthiness, and interoperability.

In addition to globally-adopted Aerospace Standards (AS), Aerospace Material Specifications (AMS), Aerospace Industry Reports (AIR) and Aerospace Recommended Practices (ARP), SAE offers numerous supporting programs to serve industry’s growing need for future harmonized solutions, and knowledge programs such as events and lifelong engineering education that work to serve current practitioners and the engineers of the future.



### CONSENSUS BASED STANDARDS AND MORE FROM SAE INTERNATIONAL

While consensus-based standards are the cornerstone of the program responsible for developing more vehicle technical standards than any other organization, SAE International also offers a full range of development capabilities for global standardization including:

- Standards Consortium Administration • Cooperative Research • Database Creation and Management
- Accreditation and Certification • Committee Management

## NEW COUNTERFEIT ELECTRONIC PARTS AVOIDANCE STANDARDS ISSUED

Three new or revised standards related to counterfeit electronic parts have recently been published.

A revised edition of AS5553B, “Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts: Avoidance, Detection, Mitigation, and Disposition,” was issued in September. Last revised in 2013, this standard was originally created in response to concerns about an increasing number EEE parts entering the supply chains of the aerospace and other high-reliability and critical sectors, posing significant performance, reliability, and safety risks.

The newly updated document has been expanded to address counterfeit risk mitigation across multi-sector electronic supply chain industries and to provide uniform requirements, practices, and methods to mitigate the risks of receiving and installing counterfeit EEE parts.

AS5553B’s counterpart document, ARP6328 (“Guideline for Development of Counterfeit Electronic Parts: Avoidance,

Detection, Mitigation, and Disposition Systems”) was also published in September. The document provides definitions and guidelines for developing and implementing a counterfeit mitigation program in accordance with AS5553B.

Both standards were issued by the **SAE G-19CI Continuous Improvement Committee**.

In October, the **G-19A Test Laboratory Standards Development Committee** issued AS6171 (“Test Methods Standard – General Requirements, Suspect/Counterfeit, Electrical, Electronic, and Electromechanical Parts”). This document standardizes inspection and test procedures, and minimum training and certification requirements to detect suspect/counterfeit electrical, electronic, and electromechanical parts. The standard ensures consistency across the supply chain for test techniques, and mitigates the technical risk of performing insufficient inspections and tests to determine suspected counterfeit EEE parts.

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## SAE 2016 AEROSPACE STANDARDS SUMMIT ADDRESSES TRANSFORMATIONAL TECHNOLOGIES

The SAE 2016 Aerospace Standards Summit was held September 20-21 in Arlington, Virginia. With the theme of “Emerging Technologies and the Enabling Role of Standards,” the Summit addressed critical technology breakthroughs, and the standards and certification needed to bring new product development to market in a timely manner. The event detailed the standardization needs for which SAE can support the global aerospace community.

The event’s keynotes were delivered by:

- John Hickey, Deputy Associate Administrator for Aviation Safety, FAA (Keynote)
- Rob Gold, Director, Engineering Enterprise, U.S. Department of Defense (Keynote)
- Miguel Marin, Technical Officer, Structures, ICAO - Lithium Ion Battery Packaging
- David Abbott, Principal Engineer – Additive Manufacturing, GE Aviation

Six panel sessions were held:

- **Cybersecurity:** Topics included: information sharing and analysis; enterprise and product security, common terms and definitions for aerospace cybersecurity; management of network logs; data corruption issues; and vulnerability of GPS for position and time data.
- **Unmanned Aircraft Systems Propulsion:** Topics included: types of propulsion systems; reliability of internal combustion engines; standards for nitromethane fuels; UAV turbines; and performance rating of UAV engines.



- **Electric Aircraft:** Topics included: electric aircraft steering; wide band gap technology; and the NASA approach regarding energy storage.
- **Certification of UAS Operating Personnel:** Topics covered included: education of drone operators; EASA and FAA approaches to regulation; practical test standards for ground trainers, flight trainers and observers; and mission-based standards.
- **Sensor Technologies:** Issues covered included: the large amounts of data per flight; the increasing number of sensors, ground-based data analysis; linear polarization resistance standards; multi-function sensors; and lack of standardization of data retrieval methods.
- **Optical Fibers and Photonics:** Topics included: replacing coax cable with fiber optics on aircraft; in-flight entertainment systems; noise and vibration; fiber optic connection contamination; fusion splicing; and small form factor terminations.

The next SAE Aerospace Standards Summit will be held April 25-26, 2017 in Cologne, Germany.



## GLOBAL DEICING STANDARDS ISSUED, MORE IN DEVELOPMENT



A series of global aircraft deicing standards whose development was facilitated by the SAE ICAO IATA Council for Globalized Aircraft Deicing Standards were recently issued by the **SAE G-12M Methods Committee** and **G-12T Training and Quality Programs Committee**.

AS6285 (“Aircraft Ground Deicing/Anti-Icing Processes”), establishes the minimum requirements for ground based aircraft deicing/anti-icing methods and procedures to ensure the safe operation of aircraft during icing conditions on the ground and was published in August.

ARP6257 (“Aircraft Ground Deicing/Anti-Icing Communication Phraseology for Flight and Ground Crews”), establishes standard phraseology for communication procedures during aircraft ground deicing operations, and was issued in October. Standardized aircraft deicing communication protocols and phraseology are needed to ensure that important safety, quality, and efficiency information exchange occurs between the participating flight and ground crews.

AS6286 (“Training and Qualification Program for Deicing/Anti-Icing of Aircraft on The Ground”) and six associated slash sheets establish the minimum criteria for effective training of air carrier and contractor personnel to deice/anti-ice aircraft and to ensure the safe operation of aircraft during ground icing conditions. This series of seven documents were released in November and December. Still under development by G-12T is AS6332 (“Quality Assurance Program for Deicing/Anti-Icing of Aircraft on The Ground”) which establishes the minimum requirements for ground based aircraft deicing/anti-icing quality assurance to ensure the safe operation of aircraft during icing conditions.

The SAE ICAO (International Civil Aviation Organization) IATA (International Air Transport Association) Council for Globalized Aircraft Deicing Standards was established in 2011 to coordinate the development of harmonized global deicing standards. Regulatory agencies, including the FAA (Federal Aviation Administration), EASA (European Aviation Safety Agency), Transport Canada, and ICAO plan to reference the global standards in their guidance material.

### **SAE-ITC Engine and Airframe Standard Published**

The first standard to be developed start-to-finish under the SAE-ITC Engine and Airframe Standards program was published in October.

“AS70000 Bolt, External MORTORQ® Super Extended Washer Head, PD Shank, .164-32 UNJC to .500-20 UNJF-3A, Heat Resisting Nickel Alloy (INCONEL 718), Unplated, Classification  $R_m \geq 1275$  MPa (185,000 lbf/in<sup>2</sup>) @ TA / +650°C” was issued by the SAE-ITC Engine and Airframe Technical Standards Committee. The development of the standard was supported by Airbus and Rolls-Royce Plc.

*SAE ITC is an affiliate of SAE International.*

## NEW UNMANNED AIR VEHICLE PROPULSION COMMITTEE PROPOSED

The Aerospace Council is reviewing a proposal to establish a new **E-39 Unmanned Air Vehicle Propulsion System Committee**. The proposed committee would develop common aerospace industry standards for the development, testing, production, and maintenance of unmanned vehicle propulsion systems.

Currently there are no global consensus standards specifically for unmanned aircraft propulsion systems. As the production of unmanned aircraft continues to proliferate, the issue of safety becomes increasingly critical. The area of propulsion is important, because of the wide variety of small UAS designs – ranging from multi-copters to fixed-wing aircraft. Thus, unmanned aerospace vehicles introduce propulsion systems that differ significantly from each other (and from those powering manned vehicles). Unmanned vehicle designers need information to make choices when integrating a propulsion system and an airframe together.

The objectives of the proposed E-39 committee are to:

- Define propulsion system types as they relate to airframes (rotary or fixed wing, for example) and develop appropriate classifications and distinctions.
- Coordinate activities with appropriate existing regulatory authorities to prioritize efforts.
- Develop SAE Technical Reports [Aerospace Standard (AS), Aerospace Recommended Practice (ARP), and/or Aerospace Information Report (AIR), which define test requirements and manufacturing criteria, for unmanned vehicle propulsion systems.

Both chemical and electrical propulsion and the supporting systems will be addressed, including engines, servo actuators, fuel, motors, electronic speed controllers, batteries, propellers, wiring, connectors, plumbing, filler valves, filters, pumps, propellers, propeller balancing rigs, test stands, thrust measurement rigs, and flight management controllers for energy efficient flight.

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## AEROSPACE ENGINE SUPPLIER QUALITY COMMITTEE, STRATEGY GROUP, MEET AT SAE WORLD HEADQUARTERS

The **SAE G-22 Aerospace Engine Supplier Quality Committee** held its quarterly meeting at SAE World Headquarters on October 5 to work on the development of several new standards including:

- AS13001, A Delegated Product Release Verification Training Requirements
- AS13004, Process Risk Identification, Assessment, Mitigation and Prevention
- AS13005, Internal Audit Requirements for Suppliers
- AS13006, Process Control Methods
- AS13007, Supplier Management
- AS13008, Customer Audits Frequency

The committee was formed to develop, specify, maintain, and promote quality standards specific to the aerospace engine supply chain. Their objective is to reduce customer-specific (OEM) requirements through a focused set of standards that integrate industry best practice and aerospace engine unique elements.



Attendees of the AESQ committee meeting in October at SAE World Headquarters

Additionally, the Aerospace Engine Supplier Quality (AESQ) Strategy Group, an SAE ITC Participant Group, met at SAE World Headquarters on October 6 to discuss strategic deployment and related training of the G-22 standards.

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## AIRCRAFT GROUND SUPPORT COMMITTEE RECONSTITUTED

SAE's technical committee which develops standards, specifications, and reports related to aircraft ground servicing has been reconstituted as AGE-3 Aircraft Ground Support Equipment Committee.

The committee's mission is to provide safe, efficient, and environmentally-friendly aircraft ground servicing. Areas of focus will include: airport ground service equipment (GSE); aircraft to GSE interface; GSE operation, maintenance and

operator training; airport facilities and systems that have a direct relationship to and interface with GSE; and GSE environment-related issues, including noise and emissions. Currently, the committee has responsibility for more than 60 standards and specifications.

Diego Alonso Tabares, Senior Engineer, Airport Operations - EIJG of Airbus serves as the committee chair, and Scott Barninger of Piedmont Airlines is the vice chair.

## NEW RELIABILITY, SUPPORTABILITY, AND HEALTH MANAGEMENT SYSTEMS GROUP CREATED

A new Reliability, Supportability, and Health Management Systems Group has been formed to expand on the synergistic relationship between Integrated Vehicle Health Management (IVHM) and condition-based maintenance (CBM) and enable a close coordination of standards related to health management, reliability and maintenance.

This new Systems Group is comprised of the following committees:

- G-11M Maintainability, Supportability and Logistics
- G-11PM Probabilistic Methods Technology

- G-11R Reliability
- AISC-SHM Aerospace Industry Steering Committee on Structural Health Monitoring
- E-32 Aerospace Propulsion Systems Health Management
- HM-1 Integrated Vehicle Health Management

Rhonda Walthall, Manager of Prognostics and Health Management, United Technologies Aerospace Systems agreed to serve as the inaugural Chair. Ms. Walthall is also the current chair of the SAE IVHM Steering Group.

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## NEW G-28 COMMITTEE TO DEVELOP AIRCRAFT ARTIFICIAL BIRD STRIKE TESTING STANDARDS

The recently-established **SAE G-28 Committee, Simulants for Impact and Ingestion Testing**, held its first meeting August 31 – September 1 at SAE International's World Headquarters in Warrendale, PA.

This committee will establish global industry standards for the manufacture of artificial simulants (e.g. artificial birds) for the purposes of development and certification testing of structures and engines for bird strike testing. The committee will define test requirements for approval of artificial stimulants, provide means of correlation of artificial stimulant test results with real object test results, and substantiate and define manufacturing procedures for artificial stimulants and the guidelines for their usage.

All aerospace companies are faced with the issue of certification for bird strikes. Traditionally, company-specific artificial birds have been used to achieve initial development of design. The differing construction and performance criteria used by various organizations often have subtle differences and are viewed as proprietary, creating confusion and a lack of clarity.

The G-28 committee's initial project will focus the manufacture of artificial birds of varying sizes. The committee will work in



conjunction with defense agencies and regulatory authorities to ensure that the standards developed will meet regulatory requirements for certification testing. Julian Reed, Engineering Fellow – Impact, Rolls-Royce Plc, serves as the committee chair.

## SAE STANDARDS DEVELOPMENT COMMITTEES SEEKING EXPERTS AND VOLUNTEERS

- E-39 Unmanned Aircraft Propulsion Committee
- G-48 System Safety
- AE-8B Protective and Control Devices
- G-25 Avionics/Electronics Corrosion
- E-33 In-Flight Propulsion Measurement
- SSTCEIDM Enterprise Information and Data Management
- SSTCG47 Systems Engineering Committees
- AGE-2D Packaging, Handling and Transportability Committee
- Aerospace Industry Steering Committee on Structural Health
- AMS CACRC Commercial Aircraft Composite Repair Committee
- E-32 Aerospace Propulsion Systems Health Management
- G-11 Reliability Maint Support and Probabilistic Methods
- S-9 Cabin Safety Provisions Committee
- G-41 Reliability

If you are interested in participating in these or other SAE standards committees, contact Kerri Rohall at [KERRI.ROHALL@SAE.ORG](mailto:KERRI.ROHALL@SAE.ORG).

## NEW REVISION OF FORMER FEDERAL COLOR MATCHING STANDARD TO BE ISSUED

AMS-STD-595A (“Colors Used in Government Procurement”) is expected to be published by the AMS G8 Aerospace Organic Coatings Committee early in 2017.

This standard presents the colors used in government procurement in a format suitable for color selection, color matching, and quality control inspection for paints and coatings. As Federal Standard 595, it dates back to 1956. In 2014, SAE International was recognized as the standards development organization that would develop a standard to supersede the federal standard.

The forthcoming document contains 42 new colors added at the request of the U.S. Army, U.S. Marine Corps, and Canadian

Air Force. It will also include corrections to the references to the old federal standard. New color chips and other related media to support the standard will also be published by SAE.

The standard is used by the Department of Defense and other federal agencies as a source of color reference, primarily for paints and coatings. Additionally, compliance with certain military specifications requires up-to-date color matching material.

The printed color matching material associated with AMS-STD-595A that is also available from SAE is individual color chips, a complete set of color chips, and a fan deck of all color chips.

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## RECENT SAE AEROSPACE AWARD WINNERS

William Harkness won the Steven M. Atkins Ability and Achievement in Science, Engineering, and Technology (AASET) Award.

JJ Machon won the Franklin W. Kolk Air Transportation Progress Award.

### Upcoming Nomination Deadlines for Aerospace Awards

William Littlewood Memorial Lecture—Deadline January 15, 2017.

This award provides for an annual lecture dealing with a broad phase of civil air transportation considered of current interest and major importance. The objective is to advance air transport engineering and to recognize those who make personal contributions to the field. The award consists of a framed



William Harkness



JJ Machon

certificate and a \$8,000 honorarium and is presented each year at a national meeting of one of the sponsoring societies.

For a full list of our 60+ awards across the aerospace, automotive, and commercial industries, visit [AWARDS.SAE.ORG](http://AWARDS.SAE.ORG).



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## LEADERSHIP RECOGNITION: DOCUMENT SPONSORS

(DOCUMENTS PUBLISHED BETWEEN JANUARY 2016-DECEMBER 1, 2016)

The SAE Aerospace Standards Development Program wishes to thank its document sponsors. These individuals have served not only as active committee members but have dedicated their time and talent in guiding the development of standards documents from the preparation of all drafts through balloting and publication.

### THANK YOU.

<b>Marc Albero</b>	FXI	<b>Dan DiMase</b>	Honeywell Aerospace
<b>Diego Alonso-Tabares</b>	Airbus	<b>Colister Dickson</b>	Lockheed Martin Aeronautics Co
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<b>Donna Limburg</b>	Avox Systems Inc	<b>Mark Scott</b>	Boeing Co
<b>Michael Long</b>	Boeing Commercial Airplanes	<b>Mark Shea</b>	General Atomics
<b>Kenneth Lorenz</b>		<b>Donald Simon</b>	NASA John Glenn Research Center
<b>Jean-Jacques Machon</b>	CEP Exempt Aerospace	<b>Roger Sines</b>	Honeywell Aerospace
<b>Puliyur Madhavan</b>	Pall Aeropower Corp	<b>Jeff Skinner</b>	Eaton Aerospace
<b>Steven Martell</b>	Sonoscan Inc.	<b>Jason Smith</b>	Zip Chem Products
<b>Jimmie Mathis</b>	Boeing Co	<b>Thomas Smoots</b>	Boeing Co
<b>Doug Matson</b>	Boeing Commercial Airplanes	<b>Bhanu Sood</b>	NASA Goddard Space Flight Center
<b>Richard Maybaum</b>	Accurate Bushing Co Inc	<b>Brian Sova</b>	Boeing Co
<b>John Mazurowski</b>	Penn State Electro-Optics Center	<b>Renatas Stanislovaitis</b>	GE Aviation
<b>Michael McCabe</b>	Rubbercraft Corp	<b>William Steenken</b>	GE Aircraft Engines
<b>Bryan McCreary</b>	Deicing Solutions LLC	<b>Robert Steffen</b>	Raytheon Precision Manufacturing
<b>Paul McMurtry</b>		<b>Sy Sweet</b>	Perryman Company
<b>James McNamara</b>	Navmar Applied Science Corp	<b>Matthew Tagliaferro</b>	RBC Bearings
<b>Peter Meecham</b>	P C Meecham International Ltd	<b>Edwin Taylor</b>	Eagle Systems Inc
<b>Alex Meyers</b>	Clariant Corporation	<b>Eric Thomas</b>	DuPont Co
<b>Tim Midlane</b>	Sunbelt Design & Development Inc	<b>Randall Thomas</b>	Lockheed Martin Corp
<b>Alan Miklos</b>	Glennair	<b>David Thornton</b>	Integrated Deicing Services
<b>John Mitchell</b>	Avox Systems Inc	<b>Robert Tonkin</b>	Cummins Inc
<b>Hossein Motlagh</b>	Garrett Aviation Services LLC	<b>Anduin Touw</b>	Boeing Network & Space Systems
<b>Patrick Moynihan</b>	United Technologies Aerospace	<b>Terry Tressler</b>	Ellwood City Forge Corp
<b>Inho Myong</b>	TE Connectivity	<b>Arnaud Tronche</b>	AUBERT & DUVAL
<b>Shadrach Nanney</b>	Parker Hannifin Corp	<b>Thomas Tsareff</b>	SAE International
<b>Richard Newman</b>		<b>Tracy Tschauner</b>	Hummingbird Technologies
<b>David Nguyen</b>	Boeing Commercial Airplanes	<b>Michelle Tuttle</b>	Boeing Aircraft Co
<b>Michael Niedzinski</b>	Constellium	<b>Donald Tyler</b>	Corfin Industries LLC
<b>Paul O'Brien</b>	NHBB Inc	<b>Jeff Utecht</b>	Utecht Aero
<b>Patrick Oakes</b>	Glennair International	<b>Jean-Francois Vachez</b>	Zodiac Aerospace
<b>Deborah Oberhausen</b>	United Technologies Corp	<b>Eric Villeneuve</b>	AMIL
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<b>Burt Parry</b>	O2 Corporation	<b>David Walen</b>	Federal Aviation Administration
<b>Michael Peppas</b>	Peppas Consulting LLC	<b>Brad Wall</b>	Rolls-Royce Corp
<b>Ronnie Peterson</b>		<b>Kevin Walsh</b>	Boeing Co
<b>Scott Peterson</b>	SIFCO Applied Surface Concept	<b>Elizabeth Walters</b>	Boeing Co
<b>James Phillips</b>	Unitron LP	<b>Steve Walters</b>	Honeywell Inc
<b>Richard Pomykala</b>	Hentzen Coatings Inc	<b>Rhonda Walthall</b>	UTC Aerospace Systems
<b>Kevin Rankin</b>	UTC Aerospace Systems	<b>Kenton Warner</b>	KDW Consulting LLC
<b>Crystal Reed</b>	SPAWAR HQ	<b>Allison Warren</b>	Boeing Commercial Airplanes
<b>William Reisenauer</b>	LED Specialists Inc	<b>Gregory Waugh</b>	Boeing Co
<b>Fabien Reversat</b>	Laselec SA	<b>Brian Weber</b>	Naval Air Systems Command
<b>Felipe Reyes</b>	CHC Helicopters	<b>Alun Williams</b>	Airbus SAS
<b>Rob Riccio</b>	Rolled Alloys	<b>Kevin Williams</b>	Federal Aviation Administration
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<b>Tim Rickmeyer</b>	US Army	<b>Rebecca Wyss</b>	Arconic
<b>Mark Roberto</b>	GE Aircraft Engines	<b>Ronald Yungk</b>	Eastman Chemical Co
<b>Glenn Robertson</b>	Process Sciences Inc.	<b>Ronald Zielinski</b>	Polymod Technologies Inc
<b>Mario Roma</b>	Bombardier Aerospace	<b>Daniel Zierten</b>	Boeing Helicopters
<b>Ken Sabo</b>	Lockheed Martin Aeronautics Co		

## UPCOMING TECHNICAL COMMITTEE MEETING SCHEDULE

This list is current as of publication. For updates and changes, please visit [SAE.ORG/STANDARDS](http://SAE.ORG/STANDARDS), the “Overview” tab, and “Technical Committee Meeting Schedule.”

December 6, 2016	<b>G-25 Avionics/Electronics Corrosion Committee</b> Albuquerque, NM, USA	March 7-9, 2017	<b>E-36 Electronic Engine Controls Committee</b> Jacksonville, FL, USA
December 8-9, 2016	<b>G-26 Helicopter Hoists Committee</b> Cologne, Germany	March 7-9, 2017	<b>S-16, Turbine Engine Inlet Flow Distortion Committee</b> Sedona, AZ, USA
January 3, 2017	<b>Electric Aircraft Steering Group</b> WebEx/Conference Call, PA, USA	March 8, 2017	<b>AGE-3 Aircraft Ground Support Equipment WebEx</b> WebEx, PA, USA
January 9-12, 2017	<b>SSTC G11 Component Parts and SSTC G12 Solid State Devices Committees</b> San Antonio, TX, USA	March 13, 2017	<b>AMS K Non Destructive Methods and Processes Committee</b> Jacksonville, FL, USA
January 10-11, 2017	<b>G-45 Human Systems Integration</b> Crystal City, VA, USA	March 28-30, 2017	<b>HM-1 Integrated Vehicle Health Management Committee</b> Fort Worth, TX, USA
January 16-19, 2017	<b>AS-3 Fiber Optics and Applied Photonics</b> St. Petersburg, FL, USA	March 29-30, 2017	<b>A-20 Aircraft Lighting Committee</b> Nashville, TN, USA
January 16-20, 2017	<b>S-18 Airplane Safety Assessment Committee</b> Charleston, SC, USA	March 30, 2017	<b>Integrated Vehicle Health Management Steering Group</b> Fort Worth, TX, USA
January 23-24, 2017	<b>AE-4 Civil Aircraft EMC Working Group</b> Santa Barbara, CA, USA	April 4-6, 2017	<b>AE-5 Aerospace Fuel, Oil &amp; Oxidizer Systems</b> Southampton, United Kingdom
January 23-27, 2017	<b>E-31 Aircraft Exhaust Emissions Measurement</b> Madrid, Spain	April 4-6, 2017	<b>APMC Avionics Process Management</b> London, United Kingdom
January 24-26, 2017	<b>Aircraft SEAT Committee</b> San Diego, CA, USA	April 4, 2017	<b>SSTC G-45 Human Systems Integration WebEx</b> WebEx
January 24-26, 2017	<b>APMC Avionics Process Management Committee</b> Melbourne, FL, USA	April 10-13, 2017	<b>A-6 Aerospace Actuation, Control and Fluid Power Systems</b> Providence, RI, USA
January 25-27, 2017	<b>AE-2 Lightning Committee</b> Santa Barbara, CA, USA	April 18-20, 2017	<b>Airframe Control Bearings Group Committee</b> New Orleans, LA, USA
January 25-27, 2017 Pending	<b>AMS AMEC Aerospace Metals and Engineering Committee</b> Carmel, CA, USA	April 18-21, 2017	<b>AMS Metals Group Committee</b> Dayton, OH, USA
January 25, 2017	<b>G-41 Reliability in Conjunction with Ground Vehicle Reliability Committee</b> Orlando, FL, USA	April 18-20, 2017	<b>E-25 General Standards for Aerospace and Propulsion Systems Committee</b> Charleston, SC, USA
January 25, 2017	<b>G-48 System Safety</b> Orlando, FL, USA	April 19-20, 2017	<b>S-15, Gas Turbine Performance Simulation Nomenclature and Interfaces</b> Redondo, CA, USA
January 31, 2017 - February 2, 2017	<b>AMS CACRC Training Task Group</b> Reno, NV, USA	April 24, 2017	<b>AE-8 Executive Committee</b> Kissimmee, FL, USA
January 31, 2017 - February 2, 2017	<b>G-10 Aerospace Behavioral Engineering Technology (ABET) Committee</b> Melbourne, FL, USA	April 24-28, 2017	<b>S-18 Airplane Safety Assessment Committee</b> Barcelona, Spain
February 14-16, 2017	<b>GSEE</b> Orlando, FL, USA	April 25-27, 2017	<b>A-10 Aircraft Oxygen Committee</b> Vancouver, BC, Canada
February 20-23, 2017	<b>SSTC Systems Standards and Technology Committees</b> San Francisco, CA, USA	April 25-27, 2017	<b>AE-7 Aerospace Electrical Power &amp; Equipment</b> Kissimmee, FL, USA
February 21, 2017	<b>SSTC G-45 Human Systems Integration WEBEX</b> WebEx, PA, USA	April 25-27, 2017	<b>AE-8A, Elec Wiring &amp; Fiber Optics Interconnect Sys Install, AE-8B Protective &amp; Control Devices, AE-8D Wire &amp; Cable</b> Kissimmee, FL, USA
March 1-3, 2017	<b>G-3, Aerospace Couplings, Fittings, Hose and Tubing Assemblies</b> Munich, Germany	April 25-26, 2017	<b>AGE-2A Cargo Handling Committee</b> Memphis, TN, USA
March 6-9, 2017	<b>E-34 Propulsion Lubricants, AMS M Aerospace Greases and E38 Aviation Piston Engine Fuels and Lubricants Committees</b> Charlotte, NC, USA		

April 25-27, 2017	<b>AMS-AM Additive Manufacturing</b> Gloucestershire, United Kingdom	May 15-18, 2017	<b>AS-4 Unmanned Systems Committees</b> Nashville, TN, USA
April 25, 2017	<b>AMS J Aircraft Maintenance Chemicals and Materials Committee</b> Orlando, FL, USA	May 16-18, 2017	<b>AE-8C1, Connectors and AE-8C2, Terminating Devices &amp; Tooling</b> San Diego, CA, USA
April 25, 2017	<b>G-15 Airport Snow &amp; Ice Control Equipment Committee</b> Buffalo, NY, USA	May 16-18, 2017	<b>Aircraft SEAT Committee</b> Hamburg, Germany
April 26-28, 2017	<b>E-33, In-Flight Propulsion Measurement</b> Alexandria, VA, USA	May 18-26, 2017	<b>G-12 Aircraft Ground Deicing Committee</b> Athens, Greece
May 1-5, 2017	<b>AC-9 Aircraft Environmental Systems and AC-9C Aircraft Icing Technology Committee</b> Albuquerque, NM, USA	June 26-29, 2017	<b>SSTC Systems, Standards and Technology Council</b> Denver, CO, USA
May 2-4, 2017	<b>G-8 Organic Coatings and G-9 Aerospace Sealing</b> Dayton, OH, USA	July 10-14, 2017	<b>S-18 Airplane Safety Assessment Committee</b> Traverse City, MI, USA
May 2-4, 2017	<b>A-5 Aerospace Landing Gear Systems Committees</b> Alexandria, VA, USA	July 25-27, 2017	<b>S-16 Turbine Engine Inlet Flow Distortion Committee</b> Snowmass Village, CO, USA
May 8-11, 2017	<b>AE-2 Lightning Committee</b> Charleston, SC, USA		
May 9-10, 2017	<b>EG-1E Gas Turbine Test Facilities and Equipment Committee</b> Ottawa, ON, Canada		
May 10-11, 2017	<b>EG-1A Balancing Committee</b> Ottawa, ON, Canada		
May 15-18, 2017	<b>AS-1 Aircraft Systems and Systems Integration Committee</b> Nashville, TN, USA		
May 15-18, 2017	<b>AS-3 Fiber Optics and Applied Photonics Committee</b> Nashville, TN, USA		

## DOCUMENT PUBLICATION

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- International Civil Aviation Organization (ICAO)
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SAE International acknowledges the following organizations who have contributed to funding the Standards Development Program this year —supporters who acknowledge the benefits common engineering requirements bring to a global industry and their businesses.

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### NEW STANDARDS COMMITTEE CHAIRS

*Welcome new chairs! Thank you and know that your leadership efforts are greatly appreciated.*

- LCLS, Lifecycle Logistics Supportability – New Chair **Anmarie Flamingo**
- SSTC G-45 – New Vice Chair **Owen Seely**
- SSTC G-41 – New Chair **Dmitry Tananko** and New Vice Chair **Andy Long**
- AGE-2A New Vice chair **Hans Van Rooijen**
- AGE-2A New Chair **Jonathan Neeld**
- AGE-2 – New Chair **Bruce Grassano**



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*The only thing more important than using standards is helping to create them.*

## FROM THE COUNCIL CHAIR

2016 has been an exciting year for the Aerospace Council. In April 2016 the Council met in Beijing, China, hosted by the China Aero-Polytechnology Establishment (CAPE), which is a member of the Council. This was the first time that the Aerospace Council had met in China; the facilities provided by CAPE for the Aerospace Council meeting were excellent and helped us to hold a very productive and effective meeting.

A Standardization Workshop was held on the day following the Aerospace Council meeting. This included presentations from SAE International and from a number of Aerospace organizations from within and outside China on the importance of standards development.

In September 2016 the Aerospace Council met in Savannah, Georgia, hosted by Gulfstream Aerospace. The facilities provided for the meeting were excellent and the tour of the aircraft manufacturing and assembly facilities was very interesting.

The second SAE International Aerospace Standards Summit was held in Arlington, VA in September 2016. This included keynote presentations from John Hickey (FAA), Captain Miguel Marin (ICAO), Robert Gold (US Department of Defense) and

David Abbott (GE Aviation) together with panel sessions and presentations on emerging technology areas and opportunities for standardization activities. A number of new SAE International Standards Committees have been established as a result of discussions at this summit and at the first summit in Alexandria, VA in 2015, helping assure that SAE International is in the forefront developing standards for emerging technologies in the aerospace arena.

Finally, the formation of the Systems Methods Council was agreed at the SAE International Technical Standards Board meeting in November 2016. The Systems Methods Council includes most of the Committees that had previously been part of the Tech America organization and had initially been incorporated into the Aerospace Council structure. However, many of the Standards developed by these Committees are Systems Management standards that are not specific to the Aerospace Industry. The formation of the Systems Methods Council recognizes the industry-wide application of these Standards. On behalf of the Aerospace Council I would like to congratulate the Systems Methods Council on its "birthday"!



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# SAE Aerospace Council Organization Chart

[www.sae.org/standards/](http://www.sae.org/standards/)

**TECHNICAL STANDARDS BOARD**

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**INTEGRATED VEHICLE HEALTH MANAGEMENT (IVHM) STEERING GROUP**  
Laura Fek: +1 724 799 9198

**AEROSPACE GENERAL PROJECTS SYSTEMS GROUP COMMITTEES**  
Chair: John Dalton

- G-10 Technology Behavioral Engineering
- G-10A Aerospace (ABE) Steering Group
- G-10B System Architectural Information
- G-10C Executive Advisory Group
- G-10D Color Display
- G-10E Enhanced Vision/Synthetic Vision Systems
- G-10G Realistic Training
- G-10H Operational Lasers
- G-10P Perspective Flight Guidance
- G-10T Laser Safety Hazards
- G-10U Unmanned Aerospace Systems
- G-10V Vertical Flight Systems Information
- G-10W Wake Vortex
- G-10XDS Touch Interactive Display Systems
- G-10YD Head Worn Display
- G-10ZC Aircraft Systems Development and Safety Assessment

**AIRCRAFT SYSTEMS GROUP COMMITTEES**  
Chair: Robert Garner

- A-4 Aircraft Instruments
- A-4E Electronic Display
- A-4HD Head Up Displays
- A-4UD Underwater Locator Devices
- A-4ADWG Air Data Working Group
- A-4ADWG Air Data Working Group System Display
- A-5 Aerospace Landing Gear Systems
- A-5A Wheels, Brakes & Stud Controls
- A-5B Gears, Struts & Couplings
- A-5C Aircraft Tires
- A-10 Aircraft Oxygen Equipment
- A-20 Aircraft Lighting, Steering Group
- A-20A Crew Station Lighting
- A-20B Exterior Lighting
- A-20C Interior Lighting
- A-21 Aircraft Noise Measure and Noise Aviation Emission Modeling
- A-9 Aircraft Environmental Systems
- AC-9C Aircraft Lighting Technology
- S-7 Flight Deck & Handling Qualities Study for Transport Aircraft
- S-9 Cabin Safety Provisions
- S-9A Safety Equipment & Survival
- S-9B Cabin Interiors & Furnishings
- S-9C Operational & Human Factors Issues
- S-9FVWG Fire Extinguisher TG
- Aircraft SEAT
- ACBG Airframe Control Bearings Steering Group
- ACBG-1 Plain Bearing
- ACBG-2 Rolling Element

**AEROSPACE ELECTRONICS & ELECTRICAL SYSTEMS GROUP COMMITTEES**  
Chair: Jim Ide

- AE-2 Lighting
- AE-4 Electromagnetic Environmental Effects (E3)
- AE-4EMC Civil Aircraft/EMC Working Group
- AE-7 Aerospace Electrical Power & Equipment
- AE-7A Aerospace Controls/Magnetic Devices
- AE-7B Power Management, Distribution & Storage
- AE-7C Systems
- AE-7EU Europe
- AE-7M Aerospace Model Based Engineering
- AE-8 Aerospace Electrical/Electronic Distribution Systems Steering Group
- AE-8A Optical Interconnect Systems
- AE-8B Protective and Control Devices
- AE-8C1 Connectors
- AE-8C2 Cabling and Routing Devices
- AE-8D Wire & Cable

**AEROSPACE MECHANICAL & FLUID SYSTEMS GROUP COMMITTEES**  
Chair: Sanford Fleishman

- A-6 Aerospace Actuation, Control and Fluid Power Systems
- A-6A Systems/Sub-system Integration
- A-6B Commercial Aircraft
- A-6C Military Aircraft
- A-6A3 Flight Control Systems
- A-6B Actuation and Control TG
- A-6B1 Hydraulic Servo Actuation
- A-6B2 EHA/AP
- A-6B3 Electro-Mechanical Actuation
- A-6C Power Generation & Distribution TG
- A-6C1 Contamination & Filtration
- A-6C2 Seals
- A-6C3 Fluids
- A-6C4 Power Sources
- A-6C5 Components
- AE-5 Aerospace Fuel, Inerting & Lubrication Systems Steering Group
- AE-5A Aerospace Fuel, Inerting & Lubrication Systems
- AE-5B Lubrication Systems and Lubricant Systems Components
- AE-5C Aviation Ground Fueling Systems
- AE-5D Fuel Tank Flammability Reduction Systems
- G-3 Aerospace Couplings, Fittings, Hose and Tubing Assemblies
- ISO720/2010 U.S. SCAG
- PHI-UP/OML Panel

**AEROSPACE AVIONIC SYSTEMS GROUP COMMITTEES**  
Chair: Bill Woodward

- AS-1 Aircraft Systems & Systems Integration
- AS-1A Avionics Networks
- AS-1B Aircraft Store Integration
- AS-1C Avionics Subsystems
- AS-2 Embedded Computing Systems
- AS-2C Architecture Analysis & Design Language TG
- AS-2D Time Triggered Systems & Networking
- AS-2D1 Time Triggered Flightbus
- AS-2D2 Deterministic Ethernet & Unified Networking
- AS-3 Fiber Optics and Applied Photonics
- AS-3A Fiber Optic Applications TG
- AS-3B Fiber Optic Components TG
- AS-3C Architecture Analysis & Design Language TG
- AS-3D Fiber Optic Process Definition TG
- AS-4 Unmanned Systems Steering Group
- AS-4JAUS Joint Architecture for Unmanned Systems
- AS-4ALPUS Unmanned Systems Performance Measures
- AS-4UCS Control Segment
- AS-5 Position, Navigation and Timing

**AEROSPACE PROPULSION SYSTEMS GROUP COMMITTEES**  
Chair: Ian James

- AE-1 Engine Accessory Installations
- AE-6 Starting Systems & Auxiliary Power
- E-25 General Struts for Aerospace & Propulsion Systems
- E-25B Bolt/Stud/Screws TG
- E-25C Lubrication Couplings Misc. TG
- E-30 Propulsion Ignition Systems
- E-31 Aircraft Engine Gas & Particulate Emissions Measurement
- E-3B Bleed Air
- E-3F Particulate Matter
- E-33 In-Flight Propulsion Measurement
- E-34 Propulsion Lubricants
- E-36 Electronic Engine Controls
- E-38 Aviation Piston Engine Fuels and Lubricants
- EG-1 Aerospace Propulsion Sys Support Equip
- EG-1A Blending
- EG-1B Ground Tools
- EG-1C Economics and Safety
- EG-1E Gas Turbine Engine Test Facilities & Equipment
- S-12 Helicopter Powerplant
- S-15 Gas Turbine Performance Simulation
- S-16 Nomenclature and Interfaces
- S-16 Turbine Engine Inlet Flow Distortion

**AEROSPACE MATERIALS SYSTEMS GROUP COMMITTEES**  
Chair: Alan Fletcher

- AMS Aerospace Materials Advisory Group
- AMS-AM Additive Manufacturing
- AMS-B Finishes, Processes & Fluids
- AMS-D Nonferrous Alloys
- AMS-E Carbon & Low Alloy Steels & Specialty Steels & Alloys
- AMS-F Corrosion & Heat Resistant Alloys
- AMS-G Titanium, Beryllium & Refractory Materials
- AMEC Aerospace Metals Engineering
- ASEC Aerospace Surface Enhancement
- AMS-CE Elastomers
- AMS-P Polymeric Materials
- AMS-F-17 Polymer Matrix Composites
- AMS-CACRC AT/ATA/SAE Commercial Aircraft Composite Repair Committee
- AMS-J Repair Materials TG
- AMS-K Repair Techniques TG
- AMS-L Design TG
- AMS-M Analytical Repair Techniques TG
- AMS-G-8 Organic Coatings
- AMS-G-9 Corrosion & General Test Methods TG
- AMS-G-9 Surface Preparation & Cleaning TG
- AMS-G-9 Appearance & Durability TG
- AMS-G-9 Aerospace Sealing
- AMS-G-9 New Sealant Specifications Rqms TG
- AMS-G-9 Sealant Removal Techniques TG
- AMS-G-9 Surface Preparation for Sealing & Finishing TG
- AMS-G-9 Fuel Cell TG
- AMS-J Aircraft Maint Chemicals & Materials
- AMS-M Aerospace Greases
- AMS-K NON-DESTRUCTIVE EVALUATION
- AMS-K Non-destructive Methods & Processes
- AMS-K Magnetic Particle & Penetrant Methods TG

**RELIABILITY MAINTAINABILITY AND HEALTH MANAGEMENT SYSTEMS GROUP COMMITTEES**  
Chair: Rhonda Vaitahl

- G-11 Maintainability Supportability & Logistics
- G-11PM Probabilistic Methods
- G-11R Technology Reliability
- AIRCSDM Aerospace Industry Steering Committee on Structural Health Monitoring
- E-32 Aerospace Program Management
- HM-1 Integrated Vehicle Health Management (IVHM)

**AIRCRAFT GROUND OPERATIONS AND EQUIPMENT SYSTEMS GROUP COMMITTEES**  
Chair: Jeffrey Walsh

- AGE-2 Air Cargo & Aircraft Ground Equipment & Systems Steering Group
- AGE-2A Cargo Handling
- AGE-2B Packaging, Handling and Transportability
- AGE-3 Vehicle Maint & Aircraft Servicing
- G-12 Aircraft Ground Deicing Steering Group
- G-12P Aircraft Fueling Hubs
- G-12Q Aircraft Fueling
- G-12R Hold-over Testing
- G-12M Methods
- G-12E Equipment
- G-12D Ice Detection
- G-12RF Runway Deicing Fluids
- G-12T Training & Quality Program
- G-12G Future Deicing
- G-15 Airport Snow & Ice Control Equipment

**SYSTEMS STANDARDS AND STANDARDS COUNCIL**  
Chair: Dave Presuhn

- SSTC G-11 Component Parts
- SSTC G-12 Solid State Devices
- G-33 Configuration Mgmt.
- G-45 Human Systems Integration
- EWEMC
- G-47 Systems Engineering
- G-48 System Safety
- G-41 Reliability
- EIDM Enterprise Information and Data Management
- APMC Avionics Process Management
- LCIS Life Cycle Logistics Supportability

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