

NDT at SAE: Inspecting the Future

Robert Ireland
President

A4A NDT Forum | September 22-25, 2025



NDT & SAE

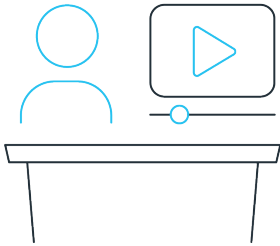
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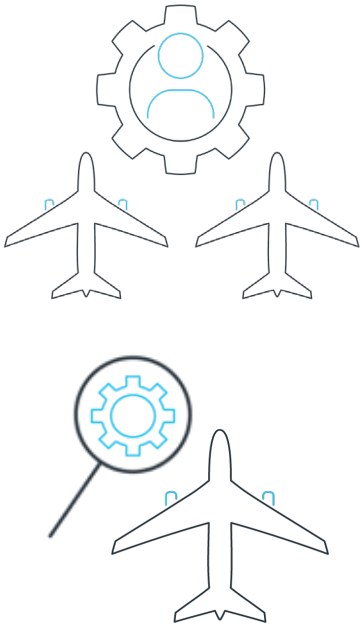
Standards



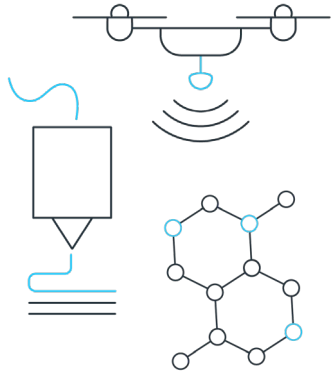
Audits,
Accreditation



Training



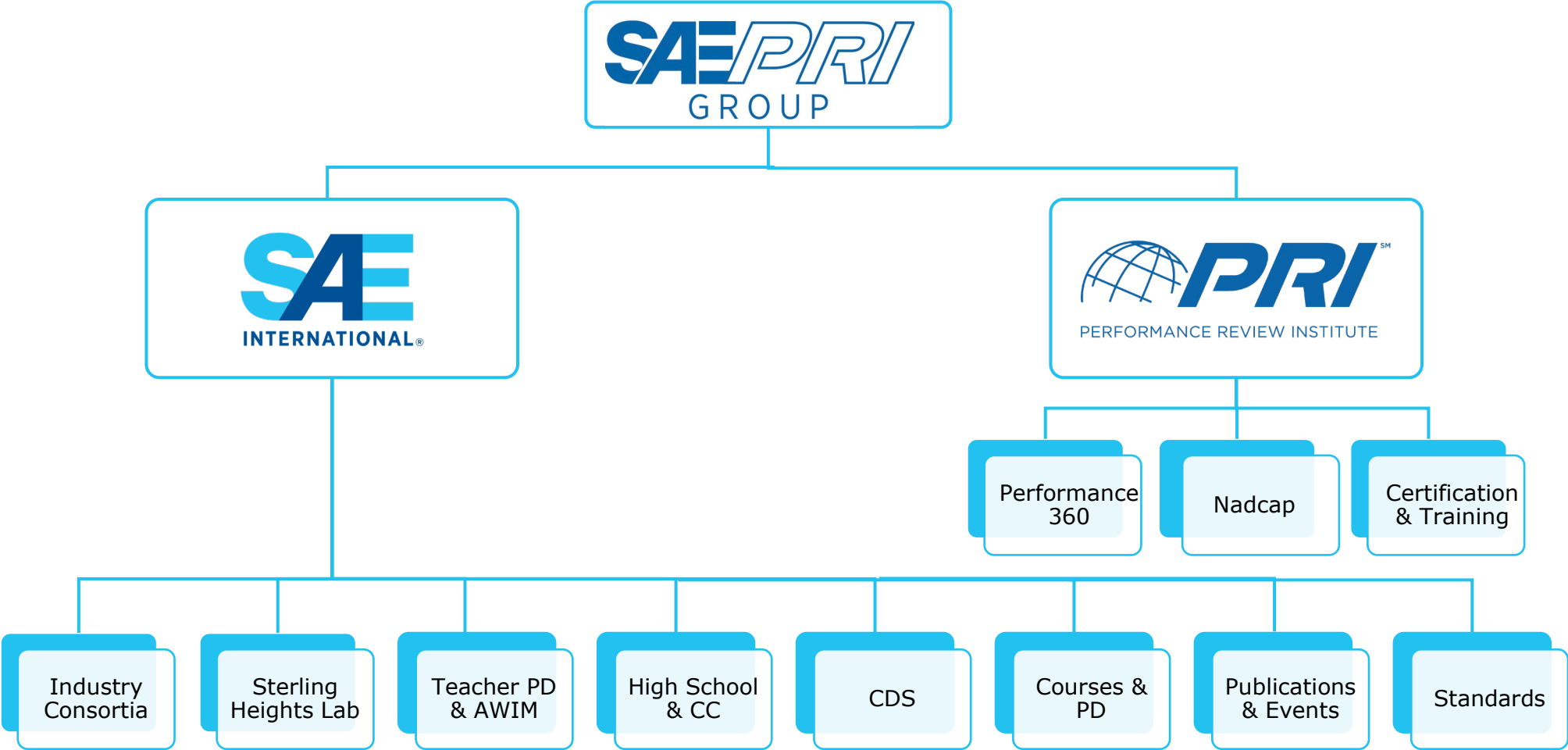
Manufacturing,
MRO



New
Technologies

SAE-PRI Group Organization

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A large commercial airplane is shown from a low-angle, front-facing perspective on a runway at night. The runway is illuminated by a central line of lights and side lights, leading towards the plane. The sky is dark with some clouds. The text "SAE Standards" is overlaid in white, centered on the image.

SAE Standards

SAE Aerospace Council

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Global Custodians

AIRBUS



GE Aviation



Pratt & Whitney

A United Technologies Company



Airlines for America®
We Connect the World



IHI

American Airlines



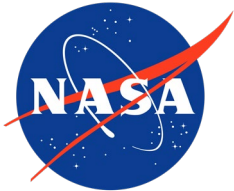
Honeywell
Aerospace



SAFRAN



Rolls-Royce®



Lufthansa Technik



DELTA

BAE SYSTEMS



WICHITA STATE
UNIVERSITY

senior
Aerospace

Gulfstream



**NORTHROP
GRUMMAN**

AMS K Non-Destructive Methods and Processes Committee

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- SAE AMS K Committee published 51 standards, 11 are Work In Progress (WIP)
- The Magnetic Particle and Penetrant Methods Task Force focuses on technology strategy

Standard	Title	Publication Date
AIR4964A	Exposure Levels of UV Radiation in Nondestructive Inspection Processes	WIP
AMS2634D	Ultrasonic Inspection, Thin Wall Metal Tubing	WIP
AMS2641E	Vehicle, Magnetic Particle Inspection Petroleum Base	WIP
AMS2647H	Fluorescent Penetrant Inspection Aircraft Structures and Engine Component Maintenance	WIP
AMS3046J	Magnetic Particles, Fluorescent, Wet Method, Oil Vehicle, Aerosol Packaged	December 5, 2024
AMSSTD2154F	Inspection, Ultrasonic, Wrought Metals, Process for	WIP
ARP4402A	Eddy Current Inspection of Open Fastener Holes in Aluminum Aircraft Structure	September 17, 2024
AS4787A	Eddy Current Inspection of Circular Holes in Nonferrous Metallic Aircraft Engine Hardware	May 2, 2025

Commercial Aircraft Composite Repair Committee (CACRC)

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- Chartered by ATA, IATA, and SAE AMS Committees in 1991



ARP5089A	Composite NDT/NDI Handbook for Honeycomb Structure
ARP7532	Composite NDT/NDI Handbook for Solid Laminate Structures

- Repair Techniques Task Group
- Repair Materials Task Group
- Procedures Task Group
- Inspection Task Group
- Training Task Group
- Design Task Group
- Mods Task Group

Source: SAE Standards Works



Nadcap

Nadcap – About The Process

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Industry-managed program for accreditation and auditing of aerospace products



Source: <https://suppliers.eauditnet.com/resources>

Nadcap Subscribers

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60+ Aviation, Space & Defense OEMS and Government Agencies with design authority focused on special processor quality assurance



Source: <https://suppliers.eauditnet.com/resources>

Nadcap NDT Task Groups

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Utilizing industry experts to ensure subscribers receive high-quality products

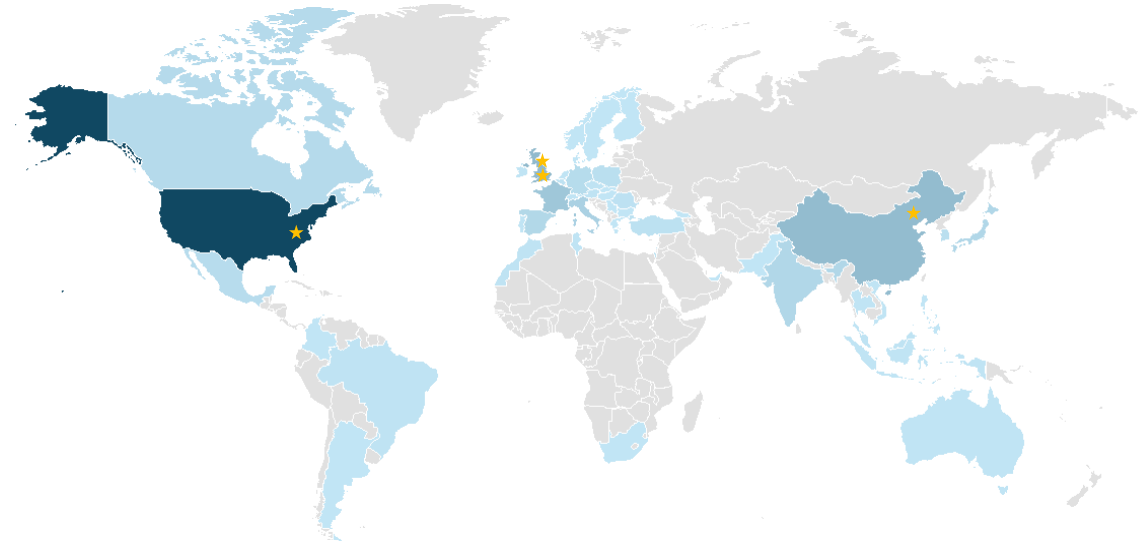
Method	Audit Criteria	Method Group Chair (Company)
Qualifications (NAS410) / National Aerospace NDT Boards / Outside Agencies	AC7114 AC7114/11 AC7114/12	Boeing
Penetrant Testing	AC7114/1	Airbus
Magnetic Testing	AC7114/2	Airbus
Ultrasonic Testing	AC7114/3	Lockheed Martin
Radiographic Testing / CR / DDA / Remote Viewing	AC7114/4 AC7114/6 AC7114/8 AC7114/9	Pratt & Whitney Canada
Eddy Current testing	AC7114/5	MTU (Motoren- und Turbinen-Union GmbH)
Etch Inspection	AC7108/2	Pratt & Whitney Canada

Nadcap NDT By The Numbers

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Promoting quality and safety across the global

- 1,417 Audits in 2024, expecting 1,404 Audits for 2025
 - Conducted audits in 49 Countries
 - 2,034 Accredited Suppliers and Facilities
- Accredited NDT Suppliers By Sectors:
 - 617 Americas
 - 314 Asia
 - 486 Europe
- NDT Task Group Makeup
 - 75 Subscriber Members
 - 72 Supplier Members
 - 79 Auditors



A large commercial airplane is shown from a front-on perspective, positioned on a runway at night. The runway is illuminated by a central line of lights and side lights, leading towards the plane. The sky is dark with some clouds. The text "New Technologies" is overlaid in white, centered on the image.

New Technologies

Aerospace Industry Steering Committee on Structural Health (AISC-SHM)

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Developing guidance for structural health monitoring and management systems

AISC-SHM Working Groups

- Commercial Aircraft
- Military Aircraft
- Rotorcraft
- SHM Damage Detection
- Gap Analysis
- Statistical Equivalent POD
- Qualification
- Training
- Reliability of SHM

Standards

- **ARP6821** - Guidance for Assessing the Damage Detection Capability of Structural Health Monitoring Systems (Published 2/7/2025)
- **AIR8621** - Perspectives on Qualification of SHM Systems for Detection of Damage in Structure (WIP status)
- **AIR8949** - Guidance for Training Personnel Associated with the Installation and Usage of SHM Systems (WIP status)
- **ARP6461A** - Guidelines for Implementation of Structural Health Monitoring on Fixed Wing Aircraft (Published 8/24/2021)

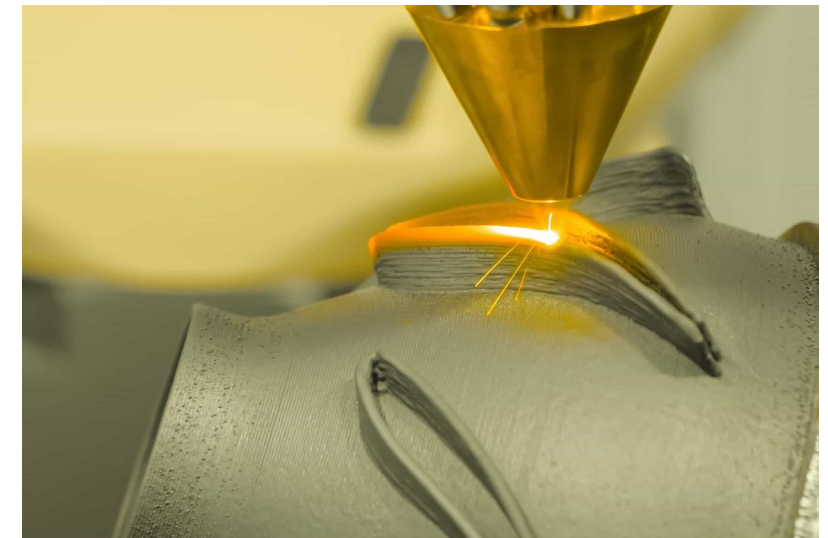
Additive Manufacturing and ISPM

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SAE AMS-AM Committee has:

- Almost 40 published standards for metallic and non-metallic AM
- Over 35 new material standards (AMS) in development
- Recent focus is on enabling maturity such as machine qualification, powder reuse, repair facilities and in-situ process monitoring (ISPM)

Standard	Title
ARP7065	Taxonomy and Definitions for Terms Related to In Situ Process Monitoring Modality-Capability Index
ARP7068	In-Situ Process Monitoring Considerations for Metal Fusion Additive Manufacturing
AMS6071	Additive Manufacturing (AM) Repair Facility Quality Requirements For Aerospace Applications



Picture: <https://www.p-r-i.org/>

New Audit Criteria in Nadcap

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Continuing to improve the quality and safety of aircraft products

- **Maintenance, Overhaul, Repair (MRO)**
 - ***Gauging interest!*** New NDT Audit Criteria - a distinct set of Audit Criteria tailored specifically for MRO facilities and/or companies that operate remotely from their primary headquarters.
- **AC7114/XX Computed Tomography**
 - ***Under development!*** Computed Tomography (CT) in response to interest from stakeholders seeking to apply this inspection method to Additive Manufactured components
- **AC7131 Metallic Additive Manufacturing**
 - **AC7131/1:** For Laser and Electron Beam Metallic Powder Bed Additive Manufacturing
 - **AC7131/2:** For Directed Energy Deposition (DED) Additive Manufacturing Processes

Automated Inspection

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New SAE Committee paves innovation

SAE G-38 Automation of Aircraft Inspection

Committee met March 2025 in Warrendale, PA, USA at the SAE International Headquarters

- 73 attendees from 16 countries – 54 in-person
- Airlines, OEMs, technology providers, regulatory authorities
- New technology (UAS) + key area (MRO) + global representation + basis in key market (digital/data)
- Developing **ARP8644** Automation of Aircraft Inspection

Committee will meet again in November 2025 at Warrendale



How To Get Involved

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Support the development of aerospace technology!

- **Join an SAE Standards Committee**
- **Join a Nadcap Task Group**
- **Submit technical papers**
 - SAE AeroTech
 - SAE Journal of Aerospace
- **Become a Professional Member**





North America

Pittsburgh
Detroit
Washington, DC
Silicon Valley

Europe

Amsterdam
London

Asia

Shanghai

