



# Composite Training Overview and Challenges

Michael J. Hoke, Owner  
Abaris Training Resources Inc.  
Reno, Nevada, USA

# Company Background

- Founded in 1983 -
  - Spin-off from Bill Lear's LearFan program.
  - We have 27 different courses. Nine are designed for degreed engineers; most of the rest are for hands-on technicians.
  - We have a contract with the FAA to train 160 inspectors per year.
  - We also have signed a recent agreement with Flight Safety International to provide composite repair training on their behalf.



# Training Locations

- Main office and training center located in Reno, Nevada.
- U.S. East Coast site located in Griffin, Georgia (Atlanta suburb.)
- Brazilian site in Sao Paulo

# On-Site Classes

- Abaris conducts a number of “on-site” classes at locations around the world.
- For example, we have conducted classes on-site for FedEx, NASA, Disney, U.S. Navy, U.S. Air Force, Air New Zealand, South African Airways, Qantas, Airbus, Boeing, Emirates, Delta, the U.K. CAA, EASA, HondaJet, and many, many others.

# Training Categories

- Repair (most popular courses)
- Bonding/surface prep, for both metals and composites
- Manufacturing, including Infusion
- Mold-Making (Tooling)
- NDI
- Engineering design and analysis, including repair design
- Wind Turbine Blade Repair
- Regulatory Agency Training (FAA, EASA, NTSB, U.K. CAA, etc.)

# Training Breakdown

- Airlines/MRO's ~ 20%
- Airframe/Materials Manufacturers ~ 20%
- Military Manned Aircraft/Helicopters ~ 15%
- Gov't Agencies (i.e. FAA, NASA, NTSB, CAA, EASA, etc.) ~ 15%
- Military Unmanned Aircraft ~ 10%
- Commercial Space (SpaceX, Virgin Galactic, Blue Origin, Sierra Nevada Corp, etc.) ~ 5%
- Corporate Jet/Civil Helicopters/G.A. Repair Stations ~ 5%
- Others (Auto, Marine, Wind, etc.) ~ 10%



# All composite training organizations face challenges:

- Very limited regulatory guidance – from either EASA or the FAA. The FAA is working on a major update to Part 147.
- However, there are a number of FAA Advisory Circulars and other documents, such as those from the Training Task Group of the CACRC, which are very helpful.

# FAA AC's which help guide composite training organizations

- AC 65-33: Development of Training/Qualification Programs for Composite Maintenance Technicians
- AC 43-214A: Repairs and Alterations to Composite and Bonded Structure
- AC 20-107B: Composite Aircraft Structure
- PS-AIR-20-130-01: FAA Policy Statement: “Bonded Repair Size Limits”



# EASA documents helpful to composite training organizations

- EASA Certification Memorandum: “Bonded Repair Size Limits”: CM-S-005 Issue 01; harmonized with the FAA policy.
- EASA Part 66: on page 111, has a short section defining desired teaching levels for students in Category A, B1, B2, and B3 training. Subjects covered include Characteristics, Properties, and ID of common composite materials, Sealing and Bonding agents, and Detection of Defects.

# FAA is working on a new Part 147:

- The FAA will likely include an abbreviated version of **AIR 5719A**: “Teaching Points for an Awareness Class on Critical Issues in Composite Maintenance and Repair” in the new proposals for Part 147 training organizations.

# CACRC Training Documents

- There are a number, but the main one of interest at this time is the:
- ***Composite and Bonded Structure Technician/Specialist Training Document: AIR 4938B***
  - Four parts to this document:
    - **Part 1**: General Composite Structure Bonded Repair Curriculum; entry level training; applicable to any type of basic composite repair.
    - **Part 2**: Commercial Aircraft Composite Structure Bonded Repair Curriculum; specifically for SRM level composite bonded repairs.

# AIR 4938B (continued)

- Part 3: Commercial Aircraft Composite Structure Bolted Repair Curriculum; under development.
- Part 4: Commercial Aircraft Metalbond Repair Curriculum; under development.

# SAE's "PRI"

- The "Performance Review Institute" is the auditing and accreditation organization founded by the SAE in 1990.
- The PRI conducts over 5,500 audits per year, of which over 500 are composite-related.
- They have a process in place to approve training organizations who plan on teaching classes developed from AIR 4938B; Abaris Training is the first school to be so approved.



Michael J. Hoke, Owner

775 827 6568

[www.abaris.com](http://www.abaris.com)

[mjh@abaris.com](mailto:mjh@abaris.com)