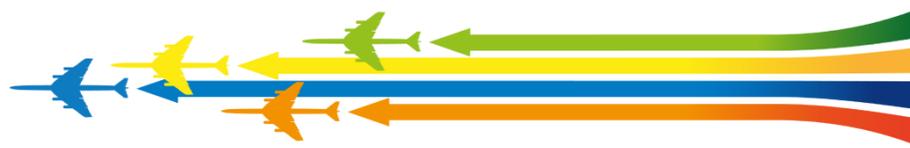




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E-GAP



ICAO Global Aviation Partnerships on Emissions Reductions (E-GAP) Multiplying Environmental Action



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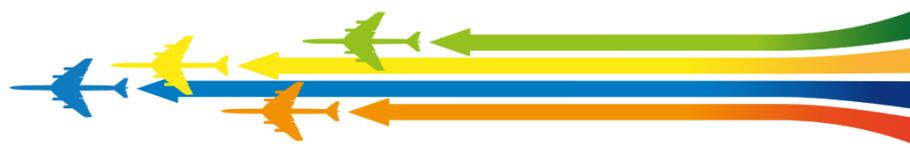
E-GAP



Aircraft Fleet Recycling Association

Promoting Sound Practices for Aviation Disassembly and Recycling



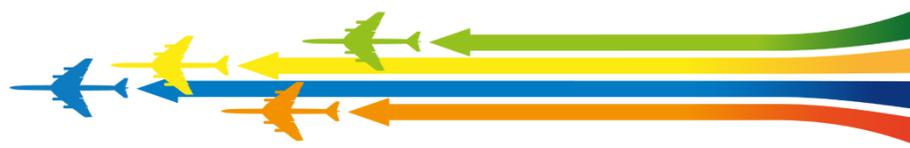


What is AFRA?



Founded in 2006, a membership-based global collaboration to elevate industry performance & increase commercial value for end-of-service aircraft through:

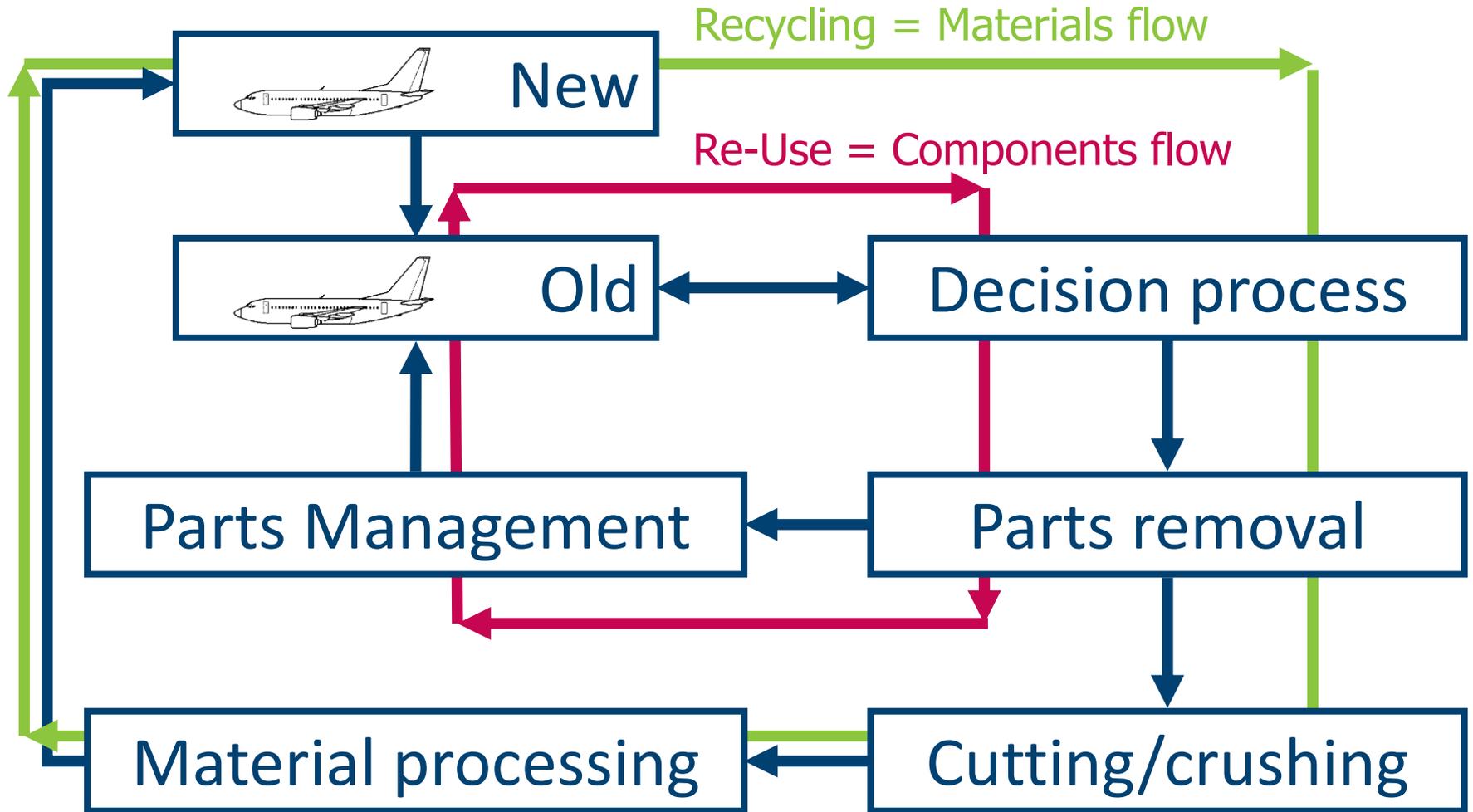
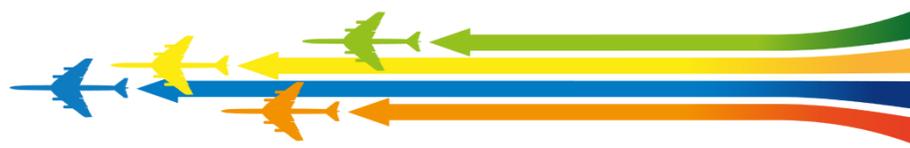
- Safety (aviation and labor)
- Environmental Responsibility
- Business Practices
- Technology Advancements
- Regulatory Engagement



What is AFRA?

- 70 companies from 18 countries
 - Aircraft disassembly companies
 - Material recycling companies
 - Air centers
 - OEMs
 - Lessors/Airlines
 - Research institutes







The Market



- Between 40% and 50% of the weight of all dismantled aircraft is returned to the parts distribution pipeline
- AFRA members estimate disassembly at 400-600 aircraft per year through 2017 (AFRA report)
- Remaining unserviceable material is either recycled and returned to the supply chain as raw materials or disposed of
- AFRA is the organization focused on mitigating the environmental risk of aircraft at end-of-life



The Market



- Average parts value per aircraft estimated between \$1-3 million
 - Engines have most value
 - Can have no value if records of aircraft are not available
- Total tear-down/ dismantling market is estimated to be \$80 million
- Recycling / dismantling cost for certain aircraft may exceed parts value
 - Customers likely to seek low-cost providers
- To manage and reduce the overall environmental impact at the disassembly phase
 - Better performance = higher cost



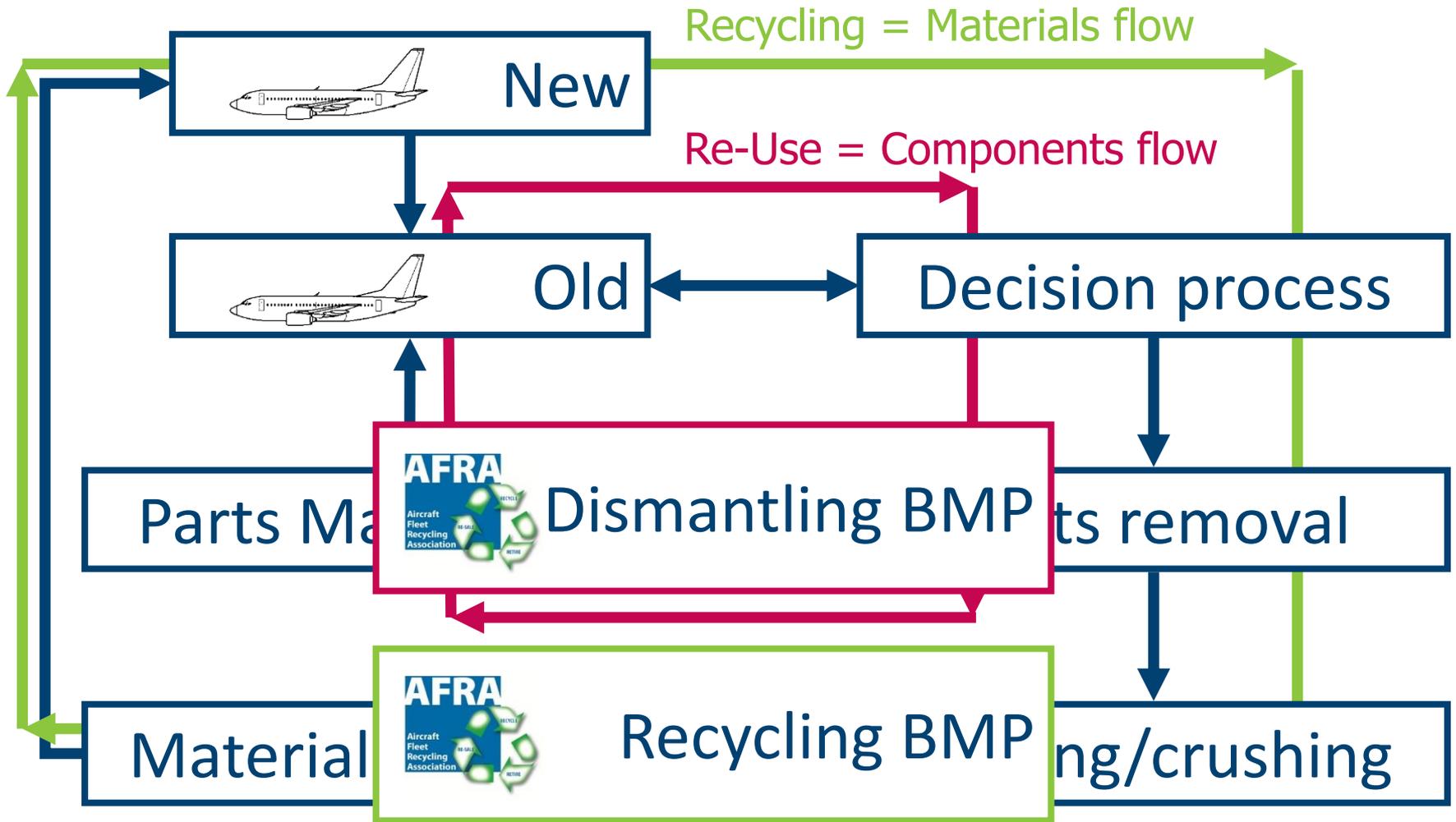
What is the BMP?

THE global standard for environmentally responsible aircraft disassembly & recycling

- Best Management Practices for improving industry safety, environmental responsibility, and sustainability

Where is the BMP going?

- Growing BMP awareness and number of aircraft dismantled and recycled according to BMP
- Goal of improving recycling rate of current fleet

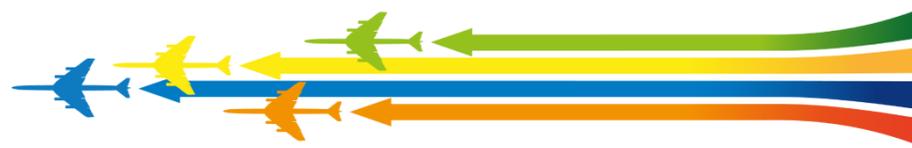




Dismantling

- Trained Mechanics
- Valuable Parts Removal
- Tagging





Recycling

- Hazardous materials
- Technology development, CFRP
- Environmental risk





AFRA Progress

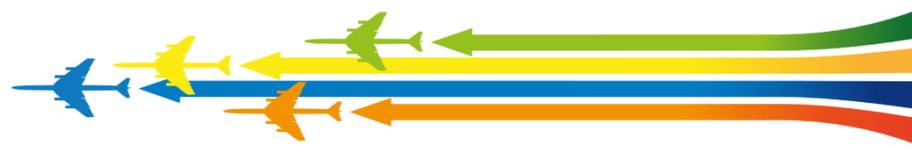
➤ Users are recognizing AFRA standards

- Airlines such as **Delta**, **Cathay Pacific** and **ANA** are referencing the AFRA standards in RFPs or using the AFRA BMP.
- FAA, SFO Airport and US DOD have referenced AFRA standards in RFPs.

➤ Outreach and Engagement with Key Industry Stakeholders to educate and inform about AFRA, Aircraft Disassembly & Recycling, and the AFRA BMP.

- | | |
|---------|--------|
| ▪ UKEA | ▪ ASA |
| ▪ EASA | ▪ AEA |
| ▪ ISTAT | ▪ EEA |
| ▪ ATAG | ▪ ICAO |





Our challenges



- Not all end-of-service aircraft owners are considering environmental performance when looking for a provider.
- Not all customers are aware of the risks of end-of-service aircraft in the field of aviation safety and environmental
- AFRA is looking for awareness and endorsement of the AFRA BMP. The market should demand quality!



AFRA Partners from Across the Industry

AFRA
Aircraft Fleet Recycling Association

RECYCLE
RE-SALE
RETIRE

Partners:

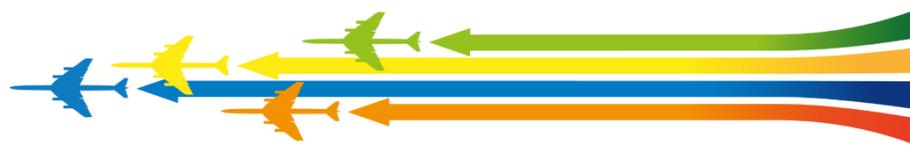
- AELS Aircraft End-of-Life Solutions
- AerSale
- MARANA AEROSPACE SOLUTIONS
- ASI
- The University of Nottingham (UNITED KINGDOM - CHINA - MALAYSIA)
- BOEING
- PastoorAero
- Bartini GROUP (RECYCLING)
- JALFRA aerospace
- Bonus Tech, Inc.
- CAVU Aerospace (The Vision Is Clear)
- KESKE
- Rolls-Royce
- MTW 南通曼特威金属材料有限公司 (Nantong Metalwell Co., Ltd)
- MAGELLAN AVIATION SERVICES LTD.
- UNITED RECOVERY AND RECYCLING
- ALCOA
- MAGMA GESTION MEDICAMBIENTAL
- MD TURBINES
- Orange Aero
- SCA
- Stewart industries
- Maryland Metal Group
- MARSHALL AEROSPACE CANADA INC.
- SYCAMORE AVIATION
- UNIVERSAL RECYCLING COMPANY
- VALLIERE AVIATION GROUP
- JMV AVIATION
- ARC Aerospace INDUSTRIES
- Stalwerk METAAL B.V.
- UNIVERSAL ASSET MANAGEMENT
- AERO LIQUIDATION, LLC. (Tel: 770.932.9935 Fax: 770.932.9975 450 Satellite Blvd, Suite 2, Suwanee, GA 30024)
- Adherent Technologies, Inc.
- Aircraft DEMOLITION
- APPLE AVIATION
- GOAL operating aircraft leasing
- KLM UK Engineering
- Bell Helicopter A Textron Company
- env solutions
- Oxford University Begbroke Science Park
- Sawyer INTERNATIONAL AIRPORT
- BOMBARDIER
- Honeywell
- EMBRAER
- elg
- GE Capital Aviation Services
- HONDA AEROSPACE
- VAS AERO SERVICES
- Zenith Aviation
- GE
- PACIFIC AEROSPACE RESOURCES & TECHNOLOGIES LLC
- HONEYWELL
- Pratt & Whitney A United Technologies Company
- Rotable SOLUTIONS
- TOYOTOMI SANGYO GROUP
- PACIFIC AEROSPACE RESOURCES & TECHNOLOGIES LLC
- The Robert Gibbs (Contracting) Company Ltd
- MASTERMELT LTD Precious Metal Reclamation Services



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Next Steps:

Contact AFRA as your primary resource for information on:

- Aircraft Dismantling & Recycling
- Industry Best Management Practices
- Audit and Accreditation Services
- Industry Contacts/Networking



Aircraft Fleet Recycling Association (AFRA)

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Thank you!

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