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Aircraft Recycling

The Boeing Company builds some of the most modern and environmentally progressive airplanes in the world. As part of being a responsible corporate citizen, aircraft life cycle considerations have been part of the company's strategic approach to the environment for more than 50 years. Several years ago Boeing conducted a field survey of approximately 50 companies involved in older fleet management and aircraft scrapping. A realization from that process was that a group of companies quickly distinguished themselves in terms of experience, capabilities and technologies, and Boeing began to focus its attention in that direction. For the past several years, Boeing has helped facilitate discussion amongst those companies, sharing its industry commitment to the environment and safety. Since that time, agreements have been established and commitments finalized that have brought 19 companies into a common industry working group – AFRA – with a mutually shared commitment to improving older fleet asset management and fostering the recovery and the safe and environmentally progressive reuse of aerospace materials.

- The Boeing objectives for aircraft recycling are as follows:
 - Promote Boeing's industry leadership and endorsement of AFRA's recycling initiatives
 - Demonstrate through its participation in AFRA that the organization has a long-term commitment to build and expand its offering to industry
 - Offer airline customers end-of-life and maintenance options that will:
 - Re-sell planes that are fit to return to service
 - Offer safe parts recovery, scrapping and recycling of planes that are not fit for service
 - Greatly improve materials recovery from retired planes and manufacturing scrap.

Key messages

- Environmental considerations are part of Boeing's lifecycle management approach to aircraft design, manufacturing and recycling
- The AFRA network provides the most complete set of tools for aircraft owners to deal with the end-of-life of their equipment – now and in the future
- AFRA members currently employ technologically advanced processes for manufacturing and end-of-life composite recycling for the Boeing 787 and composite parts on other airplane models.

Q&A

Q: What does AFRA stand for?

AFRA stands for the Aircraft Fleet Recycling Association.

Q: When was AFRA formed and who are the founding members?

AFRA was officially announced on April 17, 2006. The original European and North American members include the following:

- Adherent Technologies - Affiliate Member (Albuquerque NM)
- Air Salvage International (Alton UK)
- Bartin Recycling Group (Châteauroux, France)
- Châteauroux Air Center (Châteauroux, France)
- Evergreen Air Center, (Marana AZ)
- Europe Aviation (Châteauroux, France)
- Huron Valley Fritz West (Tucson, AZ)
- Milled Carbon Ltd (Warwickshire, UK)
- The Boeing Company – Affiliate Member (Chicago, IL)
- WINGNet – Affiliate Member (Oxford, UK)

Q: What is Boeing's role in AFRA?

Boeing is an affiliate member and strategic partner to AFRA, recognizing the benefit of working with an expansive group of experienced companies that do business outside the core business of airplane manufacturing. This includes companies that do an excellent job in older aircraft management, and others that have developed highly innovative methods for recycling and reclaiming materials from retired aircraft, including some of the more exotic new materials used to manufacture today's aircraft. Boeing's strategic decision is to affiliate itself with and support these experts as they develop the best solutions for our airline customers.

Q: Does AFRA have a charter? If so, what is it?

Yes. The initial ten member companies agreed in principle to the following charter:

- To develop a code of conduct for retired aircraft management
- To establish next-generation standards and industry best practices for aircraft recycling and reclaimed materials management
- To work to promulgate these practices through broader industry associations.

- Continued cooperation between all AFRA members in technical and commercial matters

Q: Is AFRA Boeing's response to Airbus's PAMELA organization?

PAMELA is one approach to this important industry issue. Boeing believes that AFRA members -- who are established companies in the field -- have the best expertise and capability to provide leadership. AFRA is expected to be open to other interested stakeholders in the aviation industry. While Boeing identified the need for promoting a unified voice for the aircraft recycling industry, AFRA's members are expected to take the lead in promoting industry oversight and best practices.

Q: Can Airbus participate in AFRA?

There are two types of members in AFRA; those that are directly involved in processing materials and those that provide strategic support to the first group. Boeing is part of the second group and Airbus would be eligible to join. As with any other affiliate member they would have to agree to adhere to the commitments outlined in the charter.

Q: How does a company join AFRA?

The criteria for membership in AFRA are defined in the framework document and are subject to approval by the AFRA Board of Directors.

Q: Who is funding AFRA?

AFRA is supported by its members.

Q: How many aircraft will be retired in the years to come?

Boeing expects approximately 7,200 planes to be retired from active service in the next 20 years and those airplanes are all eligible for recycling purposes. Recycling is good for business and for the environment, and Boeing supports efforts that will develop environmentally sound guidance and practices for aircraft recycling that is based on years of industry experience.

Q: Are recycled parts being used on the Boeing 787?

Boeing is actively working with its global partners to find the best applications for the 787 program. As the newest member of the Boeing family of airliners, the 787 is an all-new, mid-sized airplane with long range capabilities that will primarily be made of carbon-fiber composite material, representing a breakthrough from today's airliners that are primarily composed of aluminum.

Looking forward, one thing we are doing is working with companies around the world to ensure that materials used in the design of the 787 are able to be recycled when the aircraft are ready for retirement. Although those retirements are 30-40 years away, it's important that the foundation of that recycling activity begin today.

Q: Are there any other Boeing programs benefiting from recycling?

Boeing is finalizing details with AFRA-affiliated companies to recycle all 787, 777, F-22, and Sea Launch composite manufacturing scrap from our plants in Frederickson, Washington and Seattle, Washington, as well as our other commercial, military and space programs as part of our commitment to continually improving environmental performance and finding solutions for our global partners and customers.

Q: What is involved in recycling composite materials?

The recycling of composites is a two-step process that involves, first, a mechanical process that separates composites from other aircraft materials during an airliner's retirement. Secondly, there is a recycling process that recovers fibers of sufficient quality that they can be re-introduced as a materials source in aerospace manufacturing.

Q: What else is involved in the aircraft recycling process?

Other considerations include aluminum sorting by alloy, aircraft electronics recycling, the effective disposal of other aircraft components including hazardous waste, solid waste, airplane fluids, and the conservative use of labor and energy to accomplish the overall objective of reducing the impact of a retired airliner on the environment.

Q: What else should the industry know about the AFRA organizational objectives?

AFRA is proof positive that there is a strong, healthy segment of companies that perform fleet reclamation services conscientiously and responsibly and have consistently provided aircraft owners with a valuable suite of older aircraft services. Through the AFRA network, we can provide the most complete set of tools for aircraft owners to deal with the end-of-life of their equipment – now and into the future.

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