

the leading edge

Newsletter takes off

We are delighted to bring you the first newsletter that E-A-R Specialty Composites has published exclusively for those interested in aircraft and with controlling their noise and vibration. From our conversations with many in *your business*, we detected a need for a better understanding of *our business*—the kind of knowledge that will help you make more-informed decisions when it comes to noise and vibration and the role they play in cabin comfort.

Many of you know that E-A-R pioneered the technique of incorporating noise control materials into an aircraft's existing structural and decorative components. Because of that, we felt that *The Leading Edge* was an appropriate title for this publication. Through it, we will keep you apprised of advances in soundproofing technology, developments in our business, information about our materials and the basics of controlling unwanted acoustical energy.

Please let us know if there is a topic you would like us to cover. We'd love to hear from you.

Raytheon chooses E-A-R for BBJ soundproofing

When Raytheon's Aircraft Integration Systems (AIS) delivered its first four Boeing Business Jets (BBJs), they included E-A-R's high performance Aircraft Damping Composites (ADCs) as part of the engineered system for noise and vibration control. AIS is under contract for 26 B-737-700 BBJs.

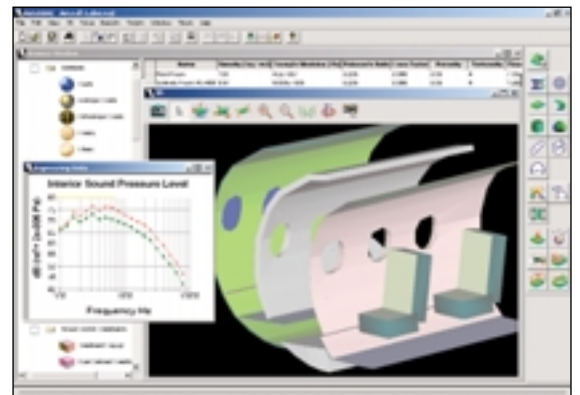
Our ADCs are designed to meet rigorous noise and weight requirements, such as those of the BBJ. They are temperature- and performance-tuned to meet the energy needs of specific areas of the aircraft. And, because they combine two or more high

performance noise control materials into a single, easily installed unit, they are highly weight-efficient.

Some of the other manufacturers and outfit-fitters utilizing our ADCs include Cessna, Gulfstream, Learjet, Canadair, Airbus, Embraer, Dassault and Raytheon Aircraft.

'Predictive' software aids with noise control

E-A-R recently added statistical energy analysis (SEA) software to our engineering and acoustical consulting services. Because it provides computer modeling, our new predictive software can reduce or eliminate the need for onsite analysis and test flights, cutting both the length and cost of the problem-solving process.



AutoSEA2 software yields three-dimensional on-screen models that enable virtual, predictive testing.

Called AutoSEA2® and created by Vibro-Acoustic Sciences Inc., the software allows our engineers to input data about an aircraft's components, create a virtual model and subject various noise and vibration control treatments to a virtual test-flight. All interior components, such as seats, side walls and luggage racks, can be modeled, allowing a complete system analysis and yielding an optimized treatment configuration for both noise and weight.

Aeero **E-A-R** Specialty Composites™

**Aircraft Interior News
from E-A-R Specialty
Composites**

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Come see us at NBAA

E-A-R will exhibit in Booth #6514 at the NBAA show in New Orleans, Oct. 10-12, and we'd welcome the chance to talk with you about our soundproofing materials and technology. We can discuss how you can reduce cockpit and cabin noise to significantly increase passenger comfort. So that we can set aside adequate time to talk, we're asking folks to let us know in advance when they'd like to meet. Just give us a call, (317) 692-3148, or send us an e-mail, nbaa@earsc.com, to get on the schedule.

One more thing. Be sure to put your name in our daily drawing for a Peltor® noise-attenuating headset. (Peltor is a sister company of ours.) Just drop by the booth. See you in the Big Easy!

Tap into our resources

Twenty years of solving aircraft interior noise control problems have provided us with valuable insight on what can and can not be done within the weight and volume constraints of an aircraft. This knowledge base has been built over the years through our commitment to be far more than a materials manufacturer for our customers.

Early in our involvement with aircraft soundproofing, we decided not simply to supply noise control materials, but instead to engineer system-wide solutions for OEMs, MROs and owners. Our acoustic engineering expertise is unique in the industry. We maintain a high level of expertise by adding the latest computer and analytical equipment. We also participate in all of the major engineering societies: AIAA, ASME, ASA and SAE. And we constantly work with our customers to further refine our system designs, improve performance and reduce weight.

If you haven't already received it, why not e-mail or phone us to request our Aircraft Literature Package. E-mail us at www.solutions@earsc.com, or phone our aircraft hotline at (317) 692-3148.

E-A-R brings automotive supply concepts to the aircraft industry

The aircraft industry is currently experiencing unprecedented growth, which is taxing the traditional supply chain network that has always supported it. Aircraft manufacturers and modification centers are scrambling to find suppliers that do more than just "ship a box of stuff." They seek suppliers who can engineer, manufacture, deliver and integrate systems.

E-A-R is stepping in to fill this role for Integrated Thermal/Acoustic Systems. Our expertise as a Tier 1 and 2 supplier in the heavy truck and automotive industry has allowed us to apply automotive-style engineering and logistical support concepts to our dealings with aircraft customers.

We'll talk more about this approach to supplier-customer relationships in future issues.

Engineering tips—Acoustics 101

When designing systems that reduce aircraft interior noise, it is essential to remember the basics taught in Acoustics 101. There are four principal methods of controlling noise within an aircraft (or car, building or boat). They consist of:

- Barriers, which redirect acoustic energy—walls, bulkheads and over-frame barriers.
- Absorbers, which dissipate acoustic energy—fiberglass, Nomex felt and carpet.
- Vibration isolation, which redirects vibration energy—trim isolators and engine isolators.
- Structural damping, which dissipates vibrational energy—skin damping and trim damping.

Each of these control methods must be employed to achieve the lowest noise level per pound of installed weight. Refer to E-A-R's Aircraft Interior Acoustics brochure for more details.



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