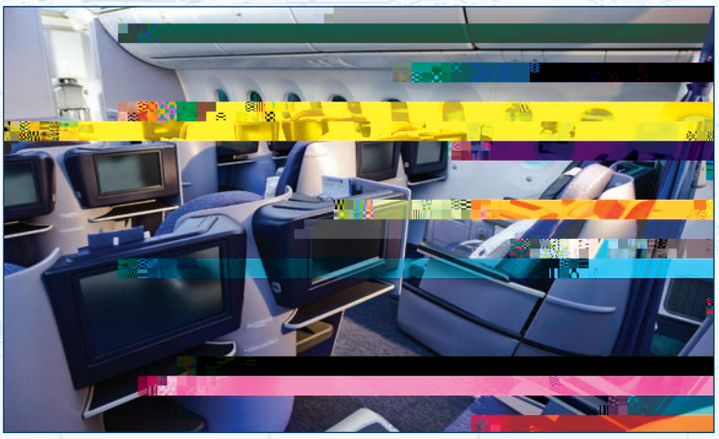
787 DREAMLINER

The Gill Corporation – High Performance Composites Innovation Supporting Cutting-Edge Design

The Boeing 787 Dreamliner is the ýrst commercial jet to have a majority of the primary structure ï including the wing and fuselage ï made of advanced composite materials. Designed to achieve 20% greater fuel efýciency than its predecessor, the B787 relies in part on the weight savings of composite materials to realize this objective. From the early B787 design phase, Boeing challenged their suppliers to keep pace with advancing technologies to deliver products meeting their stringent strength and weight requirements. They found a viable partner in The Gill Corporation (TGC).

As a pioneer in the design and manufacture of high performance composites, TGC's vertically integrated manufacturing environment, which spans from new product innovation to fabricated assemblies, proved fundamental to its success in supporting the B787 program. By producing not only finished products but also constituent materials, TGC capitalized on its ability to tailor the aerial fiber weight and resin content of prepregs, develop a lighter weight film adhesive, and commercialize new configurations of para-aramid honeycomb to meet Boeing's exacting requirements.

The resultant portfolio of products, which includes honeycomb core, floor panels, interior panels and cargo liner, offers unprecedented weight and performance characteristics.

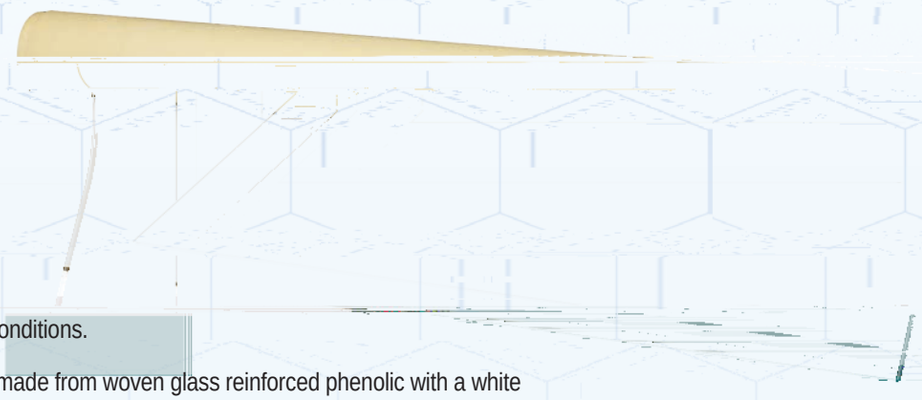


B787 INTERIOR

Aramid honeycomb core is used extensively in aircraft interior structures due to its light weight, high strength-to-weight ratio and compliance to the þammability requirements of FAR 25.853. When integrated into a sandwich structure, the combination of honeycomb and face sheets function as an I-beam to achieve

Because most densities of Gillcore® HK can be manufactured using different thicknesses of para-aral Gilara- n , ‘ ‘ ‘

B787 Cargo Sidewall and Ceiling Liner - Gillfab® 1367G/1368G

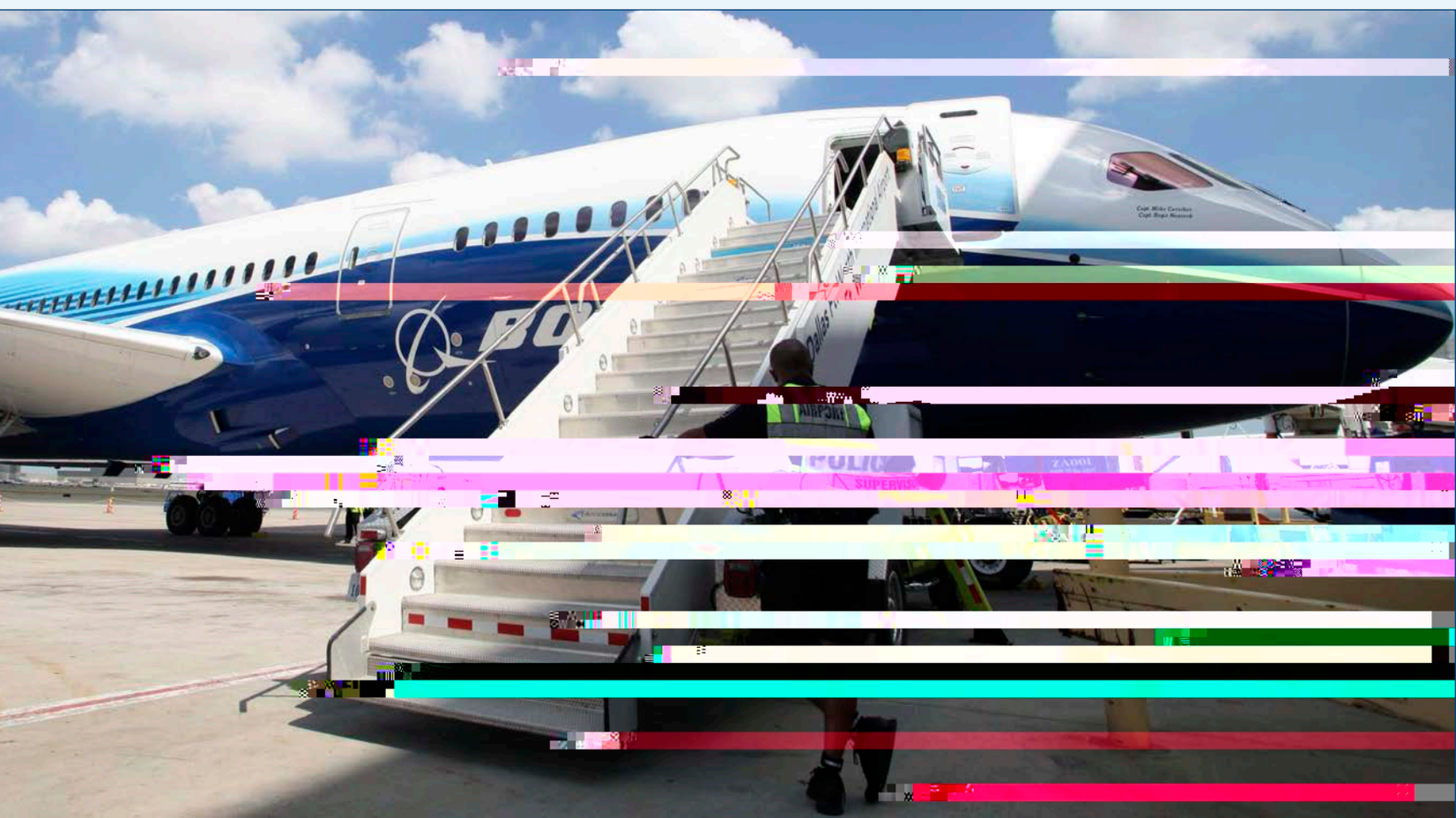


Cargo liner is an important design feature of a baggage compartment, serving as both a passive ýre protection and a safeguard to prevent damage from the loading, unloading or shifting of cargo. While the þammability characteristics of a cargo liner are of primary importance, it is equally essential that the mechanical strength be commensurate to the in-service conditions.

Gillfab® 1367G/1368G are light weight, high strength cargo liners made from woven glass reinforced phenolic with a white Tedlar®

TABLE IV

Gillfab® 1367G/1368G	Weight, psf. (Maximum)	Replacement for	Weight, psf. (Maximum)	Weight Savings
Type 7 (.007)	.074	1367A/1368A Type 13 (BMS 8-223 Class 2)	.130	43%
		1367B/1368B Type 13 (BMS 8-223 Class 4)	.106	30%
Type 27 (.027)	.275	1367A/1368A Type 40 (BMS 8-223 Class 2)	.420	35%
		1367B/1368B Type 40 (BMS 8-223 Class 4)	.330	17%

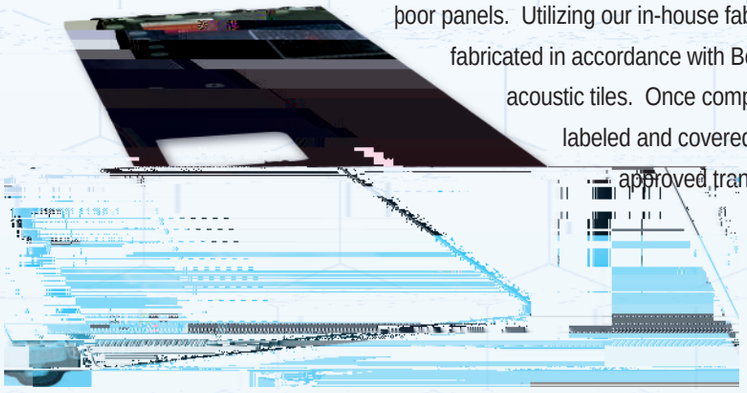


VALUE-ADDED SOLUTIONS

As manufacturers around the globe work to reduce their supply chain, there is a growing necessity to partner with suppliers who offer expanded capabilities to support a wide range of value-added services. TGC, TGC - Maryland and TGC - France offer customers a complete design solution and have become the corporationís centers of excellence for the machining, proýling and heat forming of honeycombs. These facilities currently support major OEM programs with aircraft structure sub-assemblies such as þaps, slats, spoilers, rudders, ailerons and engine nacelles.

B787 Fabricated Floor Panel Kits

TGCís support of the B787 program extends beyond the manufacture of advanced composite materials to include the fabrication and kitting of cabin and cargo þoor panels. Utilizing our in-house fabrication capabilities, Gillþoor® 4809 panels are precision cut using CNC routers and fabricated in accordance with Boeing drawings to include features such as hardware, edge-ýll, insulation blankets and acoustic tiles. Once completed, each þoor panel assembly is inspected using coordinate-measuring machine, labeled and covered with a protective overlay. The ýnished panels are then kitted by shipset in Boeing approved transport carts and readied for transport to Boeing facilities in Charleston, South Carolina.



B787 Exterior & Engine Nacelles

Structures – Gillcore® HD

TGC manufactures and then machines honeycomb for engine nacelles, thrust reversers, ýxed leading edges of wings, slats, þaps, winglets and continues to fabricate Gillcore® HD meta-aramid ýber reinforced honeycomb core for B787 spoilers and stabilizers. TGC utilizes state of the art 5-axis machines adjacent to the Controlled Contamination Area (CCA) used for processing honeycomb.

Engines – PAA-CORE®

TGC - France serves the European markets with a broad array of core competencies in aerospace-grade structural core materials technology with in-house design and special processing expertise including core details for nacelles. TGC - France currently supplies PAA Core® details for the Thrust Reverse Translating Sleeve.

The Boeing 787 Dreamliner entered commercial service on October 26, 2011. TGC and its subsidiaries are proud participants in the B787 program.

For more information about The Gill Corporation products and services, please visit **www.thegillcorp.com.**