

The Doorway

M.C. Gill Corporation Group of Companies

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TRENDING NOW...

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TRENDING

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In the classic words
of Charles Dickens,

*‘It was the
best of times.
It was the
worst of times.’¹*

Dickens’ prose from *A Tale of Two Cities* is especially appropriate today in light of recent global social and economic events.

Worldwide financial markets have fluctuated wildly. Nations rise and fall, many seemingly timeless institutions have disappeared before our very eyes and yet the aerospace industry is realizing some of its best years ever. The Boeing Company reports:

NOW



“Commercial Aviation has weathered many downturns in the past. Yet recovery has followed quickly as the industry reliably returned to its long-term growth rate of approximately 5 percent per year. Despite uncertainties, 2012 passenger traffic rose 5.3 percent from 2011 levels. We expect this trend to continue over the next 20 years with world passenger traffic growing 5.0 percent annually. Despite a challenging economy, 2012 was one of the best years the airline industry has had since the Great Recession.”^{2a}

¹ Charles Dickens, *A Tale of Two Cities*, London, 1859

² 2013-2032 Current Market Outlook, The Boeing Corporation 2014, pg. 4



Fortunately, the positive revenue growth trend continued into 2013. A number of factors have aligned to foster this unexpected success: rising fuel costs, increased design requirements, environmental regulations and evolving business models, to name just a few.

Rising fuel costs are perhaps the most significant driving factor in the increased demand for advanced composite materials by the commercial aerospace industry.

Aircraft manufacturers began designing more efficient aircraft decades ago, mostly through the slowly escalating use of advanced composite materials. Lighter planes meant less fuel and less fuel meant the airlines could continue to fly profitably.

“Fuel is now the largest component of an airline’s cost structure. This has driven manufacturers to produce more efficient airplanes, such as the 787 and 737 MAX, while encouraging airlines to pursue cost reductions and revenue enhancements in other areas in order to maintain profitability, even with the higher fuel costs. Fuel costs have surpassed labor as the largest segment of airline operating cost. Fuel costs, approximately 13% in 2002, are closer to 34% today.”³



2002
Fuel Costs



TODAY'S
Fuel Costs

The commercial airline landscape changed dramatically with the introduction of the B787, the A380 and the A350.



80% COMPOSITE
BOEING 787



25% COMPOSITE
AIRBUS 380



50% COMPOSITE
AIRBUS 350

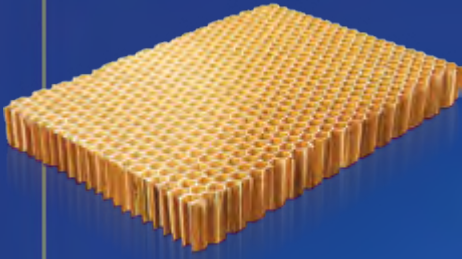
With oil topping over \$100 a barrel, commercial airlines continue to challenge their manufacturing partners to formulate products that will help offset rising fuel costs. Exciting new aircraft like the 777X, 737MAX and 787-10 will utilize the most advanced technologies on the market today. For example, the B787 attributes much of the structural airframe weight savings to composite materials so the aircraft burns 20% less fuel than existing jets of a similar size. These fuel savings translate into a major reduction in operating costs and an improvement in airline profits.

As older, less fuel-efficient aircraft are replaced by these newer, lighter aircraft, build rates are projected to skyrocket. These increased build rates offer a unique opportunity to the manufacturer who can answer the call to action and M.C. Gill Corporation is poised to take that call.

Readiness to meet this challenge relies on several factors. Chief among those factors are:

- Does the manufacturer offer products that satisfy requirements for superior mechanical properties combined with significant weight reduction?
- Is the manufacturer skilled at capacity management?

M.C. Gill Corporation offers a wide selection of lightweight, high performance honeycomb core, floor panels, cargo compartment liners, and original equipment for passenger and freighter aircraft. A review of several “stand-out” products is proof the corporation can satisfy product requirements.



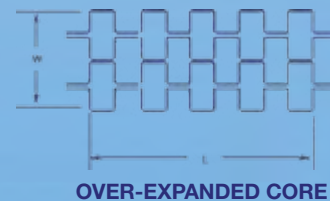
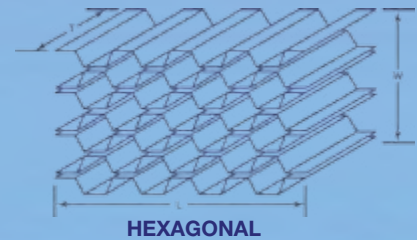
Gillcore HK™

*Honeycomb Core Offers
Weight Reduction and
Design Flexibility*

Gillcore HK is a high-performance honeycomb manufactured using DuPont Kevlar® N636 paper with phenolic resin. This material offers exceptional shear strength and modulus, stiffness, durability, fatigue and hot/wet properties but, most important, Gillcore HK can offer significant weight savings for applications currently utilizing Nomex®-based Gillcore™ HD.

Because most densities of Gillcore HK can be manufactured using different thicknesses of N636 paper, this product offers a broad range of latitude in design. Within certain parameters, paper thickness can be increased or decreased to achieve the required shear, modulus and compression properties. Plus, like other aramid honeycombs, N636 can be shaped, cut and bonded using standard industry methods or heat-formed to achieve more complex shapes.

Gillcore HK has been developed and commercialized in both hexagonal and over-expanded cell configurations. It is available in cell sizes ranging from 1/8" (3.2mm) to 3/16" (4.8mm) and densities ranging from 2.0 to 10.0 pcf (32kg/m³ to 160kg/m³). With typical weight savings potential of 20-40%, Gillcore HK is positioned to become the new standard for composite sandwich structures.



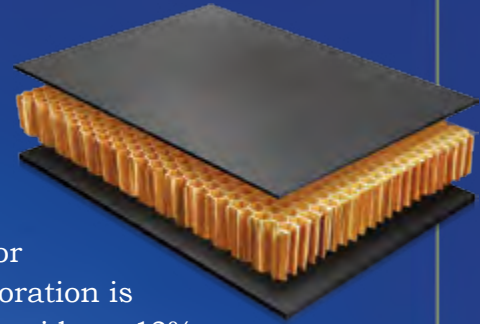


Gillfloor™ 4809

Weight-saving Floor Panel Translates into Fuel Savings

An important weight-saving floor panel offered by M.C. Gill Corporation is Gillfloor™ 4809. This product provides a 13% to 21% (depending on specification type) weight reduction over its predecessor Gillfloor 4709.

Gillfloor 4809 is a lightweight floor panel made from unidirectional carbon fiber-reinforced epoxy facings bonded to Kevlar® aramid honeycomb core. It offers high impact-resistant facings covered with a thin fiberglass layer to prevent galvanic corrosion. It is a panel with a high strength-to-weight ratio and is qualified to Boeing BMS-4-20, type VI, VII, VIII and IX.



Gillfab™ 1367G

New Cargo Liner Saves Weight

Gillfab 1367G is a low weight, high impact, low smoke, flammability and toxicity, fiberglass-reinforced phenolic laminate. Designed as an aircraft cargo compartment liner, it features high mechanical strength, puncture and corrosion resistance with a white Tedlar overlay on the face side for reflectivity. Gillfab 1367G is qualified to Boeing BMS 8-223, Cl 5, Gr B and meets FAR Pt. 25, appendix F Parts I & III (burn through). This laminate uses lower weight fabrics that consequently reduce the weight and thickness of the liner while maintaining the properties of thicker, heavier products.

This feature-rich product is ideally suited for today's state-of-the-art aircraft. Consequently, Gillfab 1367G is the preferred cargo compartment liner for Boeing's 787 Dreamliner.

Clearly, M.C. Gill Corporation has addressed the issue of weight-saving, high-performance products, but capacity management is just as important.



Capacity Management

The management of the limits of an organization's resources, such as its labor force, manufacturing and office space, technology and equipment, raw materials, and inventory.

Capacity management also deals with the capacity of an organization's processes – for example, new product development

or marketing – as well as with capacity constraints that arise when various resources are combined.

Since capacity constraints in any process or resource can be a major bottleneck for a company, capacity management is of critical importance in ensuring that an organization operates smoothly.⁴

⁴ www.investopedia.com/terms/c/capacity-management.asp.



Since 2005, the corporation has experienced exponential growth in facility upgrades, new equipment, personnel and process improvements. The vast capital investments by the shareholders works in tandem with a well-researched strategic plan that will satisfy even the most cautious airline. The extensive list includes:

- Heat-set ovens
- Large-capacity bake ovens
- Large-capacity dip tanks
- Prepreggers
- Environmentally efficient thermal oxidizer units
- State-of-the-art hydraulic presses
- New sheeter/stackers using Visual software interface
- Dedicated panel saws
- Dedicated facility for detailed floor panel fabrication
- AS9100 Rev C
- ITAR compliant
- Extensive in-house R&D department with diverse testing capabilities, fixtures and state-of-the-art measurement tools
- Fully staffed customer service, quality, production and sales departments with global reach
- Expansion/build-out at existing manufacturing plants



The list is impressive, but without proper implementation it's merely frosting on a cake. This is where M.C. Gill Corporation takes its business to the next level.



As airlines around the globe work to better manage their businesses, there is a growing necessity to partner with suppliers who offer expanded capabilities to support a wide range of innovative products and value-added services. The combined resources of M.C. Gill Corporation, M.C. Gill Europe, Alcore, Inc. (USA), Alcore Brigantine (France) and Castle Industries of California offer customers a complete design, manufacturing, fabrication solution.

An example is the latest contract award with Boeing for the 787 fabricated floor panel business. In anticipation of rate readiness, management from M.C. Gill Corporation and Boeing are conducting an ongoing series of Readiness Reviews with critical analysis of processes and facilities. Concerns are addressed as they arise in an environment of willingness to tackle and improve any area of the business that might pose an issue. It's a learning process for all, and one we embrace as an opportunity to continually improve the way we do business. As our CEO Stephen Gill reminds us in the corporate Quality Policy:



“M.C. Gill Corporation’s top priorities are to provide products and customer service that always meet or exceed customer requirements and continually improve the effectiveness of the quality management system.”

These are more than just words, they are words we live by.

To learn more about the many products, capabilities and services offered by M.C. Gill Corporation visit our website at www.mcgillcorp.com.



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Alcore does not sell sandwich panels. Contact M.C. Gill for these products.



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Trivia



- ! There are approximately ten million bricks in the Empire State Building. (A&E Top 10 Architectural Wonders)
- ! The lightning that we see actually goes from the ground to the sky in what is known as the “return stroke” at $\frac{1}{3}$ the speed of light. We can’t see the initial “stepped leader” that passes from the sky to the ground. (*USA Today Weather Book*)
- ! The most common invention of the 19th century was the washing machine. Between 1804 and 1873, at least 1,676 patents were issued by the United States Patent Office for various forms of this device. (*Household Wonders*, The History Channel)
- ! It’s widely known that Alexander Graham Bell beat Elisha Gray to the patent office by a mere two hours with his application to patent the telephone. However, ten years after Bell’s patent was issued, patent examiner Zenas Wilber admitted in a sworn affidavit that he had taken a \$100 bribe from Bell, had taken a loan from Bell’s patent attorney, and had given Bell the complete details of Gray’s device (*Inventor’s Digest*, July/August).
- ! On four separate occasions between October 1987 and February 1988, small pink frogs rained down from the sky onto various parts of Great Britain. Scientists are still uncertain as to where these frogs originated, although some have traced them back to the Sahara desert. (*The World’s Most Incredible Stories*, 1998).
- ! Charles Lindbergh achieved great fame for being the first man to fly nonstop across the Atlantic Ocean. However, two men had achieved the same goal eight years earlier flying for sixteen and a half hours from June 14 to June 15, 1919, Captain John Alcock and Lieutenant Arthur Whitten-Brown had copiled a Vickers-Vimy twin-engine plane nonstop from Newfoundland across the Atlantic to Ireland. Lindbergh was the first person to do it *alone*. (*Fabulous Fallacies* by Tad Tuleja 1982, The Stonesong Press)
- ! The Bank of Vernal, in Vernal, Utah is the only bank in the world that was built from bricks sent through the mail. In 1919 the builders realized that it was cheaper to send the bricks through the United States Postal System (seven to a package) than to have them shipped commercially from Salt Lake City.
- ! Everyone knows that spinach is loaded in iron and makes you stronger – or so says Popeye. Well, Popeye was wrong. In reality, spinach has no more iron in it than any other vegetable. This spinach misconception dates back to the 1950s when a food analyst made an error while calculating the iron in spinach. His decimal place was off by one place, suggesting that spinach had ten times as much iron content than it really did.