VOLUME 40 NUMBER 2 SPRING 2003



HIGH-PERFORMANCE COMPOSITE PRODUCTS SINCE 1945



Supporting Operators Around the World

M.C. Gill Supports 737 Operators with a Full Line of Floor Panels and Cargo Liners

Way back in 1958, Boeing began to consider producing a small twin-engine feeder aircraft to complement its family of passenger jets. Actual design work on what would become the 737 started in November 1964. The first order was placed and the project got the go-ahead in February 1965.

The 737 has been evolving ever since, as it adjusts to customer requirements and technical innovations, one of the most important of which have been innovations in engine design. The most recent 737 models, which include the 737-600, -700, -800 and -900, build on the strengths that have made the 737 the world's most successful commercial airliners, while incorporating improvements designed for the 21st century. The 737 continues to prove itself highly adaptable to a variety of customized uses including military applications and their use as business jets.

Since it first took to the skies, M.C. Gill Corporation has supported 737 operators with replacement parts, usually used during maintenance checks. Over the years we've learned that no 737 operators are alike. Because of their varying needs, each requires a different product mix. At M.C. Gill we are proud of our ability to respond to – and understand – the needs of each customer and give them what they want.





M.C. Gill Is Qualified to Virtually Everyones' 737 OEM Floor Panel, Cargo Liner and Honeycomb Specifications

We can rapidly ship to you practically any of our products to fulfill your 737 needs.

M.C. Gill has been supporting the 737 operators since the first airplane took to the skies. Over the years we've learned that no 737 operators are alike. Because of their varying needs, each requires a different product mix. At M.C. Gill we are proud of our ability to respond to – and understand – the needs of each customer and give them what they want.

Product Highlights

737 Operators have found the following products to be a few of their favorites. Some were created to address specific challenges, with one a reformulation of a popular cargo liner that reduces costs.

High-Abrasion **Gilliner**[™] **1076B** Cargo Liner Reformulated to Cut Costs

Gilliner 1076B (BMS, 8-2, Class 3, Grade A) is a high-wear-resistant fiberglass clothreinforced polyester laminate. It was created to address the problems of wear-through over frame sections, impact damage and fastener hole tear-out at attach points.

A new version of this qualified product saves the customer money.

Features:

- High abrasion and wear resistance.
- Outstanding mechanical strength, including

high edge-bearing strength for reduced hole elongation and tear-out at the attach points.

- Superior impact resistance typical values exceed Specification requirements by 65–70%.
- Corrosion resistant.

High-Performance **Gillfloor**[™] **5424** Panels Save Money with Aluminum Honeycomb

Gillfloor 5424 (BMS 4-23, Types I and II) is an aircraft-grade sandwich panel made from highimpact fiberglass epoxy facings bonded to aluminum honeycomb core. It is used for passenger compartment flooring.

Features:

- High puncture-resistant facings.
- High strength-to-weight ratio.
- Aluminum honeycomb is lower in cost than aramid honeycomb.

On the average about 1,200 737s are in the air at all times; one takes off every 5.3 seconds. The 737 is the best-selling aircraft in aviation history, with well over 5,200 delivered and more than 4,000 currently flying.

Find Weight Savings over Aluminum with **Gillfab[™] 5433E** Cargo Compartment Flooring

Gillfab 5433E (BMS 7-326, Type VII, Class 2/1) is a sandwich panel made from aluminum facings bonded to a woven fiberglass-reinforced epoxy core. It is an enhancement over Gillfab[™] 5433C because of a more cost-effective treatment of the aluminum facings. This reliable panel is used as a cargo compartment flooring panel in areas of much use high abuse, such as those just inside the cargo compartment door and in bulk cargo areas.

Features:

- Dent-, puncture-, and abrasion-resistant.
- High-strength construction higher tensile and flexural strength properties than aluminum, and lower in weight.
- Features 13% lower density with improved mechanical properties across the board, compared to 2024T3 aluminum.

Very Rigid Characteristics Make Gilliner[™] 1166/1266 Panels Perfect for Contoured Aft Areas

Gilliner 1266 (DMS 1961) is a fiberglass cloth laminate with an abrasion resistant glossy white .004" thick resin gel coat on the face side. It is used as aircraft cargo compartment liner as follows: Lower sidewalls and flooring – Gilliner 1266. *Features:*

- Glossy white surface.
- High puncture resistance, rigid.
- Corrosion- and abrasion-resistant Gillcoat surface.

Gillfloor[™] 4417 Panels Hold up Well in Wet Areas

Gillfloor 4417 (BMS 4-17) is a lightweight aircraft flooring panel made from unidirectional fiberglass-reinforced epoxy facings bonded to aramid honeycomb core. Aircraft flooring suitable for passenger compartment underseat, aisles, entries, and galleys, and cargo compartment, depending upon type construction. It is widely used in wet areas, such as galleys and lavatories where corrosion resistance is paramount.

Features:

- Fatigue- and corrosion-resistant.
- Very high-puncture facings.
- High strength-to-weight ratio.

A complete list of our products is available online. Click the Products button to learn more: www.mcgillcorp.com

We can also send you a CD of our products. Just ask: info@mcgillcorp.com













Southwest Airlines Selects Gillfloor™ 5424 Floor Panels

Southwest displays innovative paint schemes.

Texas-based Southwest Airlines serves 58 cities in 30 states while providing some 90 percent of all discount air travel in America. A major achievement continues to be its ability to sustain profitability during 30 of 32 years of operation. The carrier attributes this success to spotlighting customer needs and competitive pricing. Southwest's profitability has even continued despite the current airline industry challenges.

Southwest Airlines has grown into the fourthlargest major airline in America. They fly more than 64 million passengers with more than 2,700 scheduled departures a day.

M.C. Gill Corporation has been awarded a longterm contract to supply Southwest with Gillfloor 5424 cabin floor panels for use during scheduled maintenance checks. Gillfloor 5424 panels are an aircraft-grade sandwich panel made from high-impact fiberglass epoxy facings bonded to aluminum honeycomb core. They are well-suited for use in Southwest's 737 fleet. For more information about this product, visit our website: www.mcgillcorp.com Southwest prides itself on its character and this simple notion: *If you get your passengers to their destinations when they want to get there, on time, at the lowest possible fares, and make darn sure they have a good time doing it, people will fly your airline.*

They have more than 375 of the newest 737 jets in the world. The carrier's paint schemes include three flying killer whales, Shamu One, Two and Three; Lone Star One, painted like the Texas flag, to celebrate Southwest Airlines' 20th Anniversary; Arizona One, a symbol of the importance of the state of Arizona to Southwest Airlines; California One, a high-flying tribute to the state of California; Silver One, a 25th Anniversary plane; Triple Crown One, dedicated to the Employees of Southwest Airlines; Nevada One, a tribute to the state of Nevada; and New Mexico One, also known as Zia, painted in the bright yellow of the New Mexico flag.

Southwest is undertaking a change in its color scheme. Boeing 737 deliveries are arriving with the new "Canyon Blue" exterior color scheme with an all-leather seating configuration. The existing fleet will be retrofitted over time into the new livery.



P R I Z E[®]

Canyon Space Team Pursues X PRIZE[®] Space Flight Competition

Ten-Million-Dollar Prize to Spur Breakthrough in Economy Space Travel

The intent of the X PRIZE, which will award the winner \$10,000,000, is to focus on the leap to a low-cost space travel system through competition among numerous entrepreneurs and private space transportation teams around the world.

The prize will be awarded to the first team achieving the following:

- Put three civilian passengers in space, which is defined as at least 100 km (about 62 miles) above the earth.
- Return those three successfully to the earth. However, the craft will be required to fly with only a pilot and the weight of two additional passengers to meet this condition.
- Repeat the procedure within 14 days with the same vehicle.
- Accomplish this all with less than 10% government funding in their entire program.
- Have their vehicle be 90% reusable, as determined by dry weight.



The First 2 Minutes:

The Canyon Space Team ship will take off like a conventional aircraft from an airfield. After flying a short distance at a relatively shallow angle, it will rotate into a position pointing straight up with its rocket firing at full thrust. Two minutes after it takes off, the ship will have reached 50 kilometers in altitude. The fuel expended, it will glide through the top arc of its sub-orbital trajectory.

-

A 10-Minute Tour of Space

100 KILOMETERS



Next 4 Minutes:

At this point, a parachute will be deployed to help stabilize the craft as it enters a microgravity environment. The pilot will experience weightlessness for about four minutes as the ship continues to climb, then begins falling back to earth, allowing for an extraordinary view during this brief visit to space.



The Last 2 Minutes:

As the ship heads back into the atmosphere, it will encounter only minor heating. The skin temperatures will be less than 400°, nothing like the 4000° which the Space Shuttle endures when it descends from a higher altitude with considerably more speed. In this phase, the Canyon Space Team ship's speed is slowed by the drag of the parachute,

which is then jettisoned at a lower altitude. The ship lands at the same airfield it left, having traveled to space and back in 10 minutes while only covering in the neighborhood of 10 miles in horizontal distance.



Then Do It Again:

To win the prize, the team must now replace less than 10% of the ship, based on dry weight, and repeat the flight within two weeks. This would, for example, include installing a new parachute which would be included in the weight tally.

Affordable Space Flight

The X PRIZE summons up memories of the Orteig Prize from the 1920s that spurred aviators to take on the challenge of making the first nonstop flight from New York to Paris. The X PRIZE Foundation is even located on Spirit of St. Louis Boulevard in St. Louis, which further harkens back to the celebrated flight of Charles Lindbergh.

Dozens of aviation prizes have been offered over the years, helping build what has grown into today's multi-billion dollar aerospace industry. These include challenges like the lesser-known 1910 Hearst Prize for making a transcontinental flight in less than 30 days, and the more recent

continued on next page

1979 human-powered flight of the Gossamer Albatross across the English Channel to win the \$200,000 Kremer Award.

The history of developing experimental aircraft to fulfill different roles and to take on varied competitions is an astonishing display of ingenuity. Often, a great deal of money must be invested to create an X-plane, as was the case for projects like the X-32 and X-35 craft, as well as the Joint Strike Fighter which is a \$200-billion development program. (Currently, it is a \$20B development, which may become a \$200B procurement some day.) The many benefits expected from the X PRIZE contest include inspiring and educating students and the public to space travel and, in particular, developing space tourism. The overarching result is intended to dramatically lower the cost of space flight.



Billy Roeseler – Technical Director of the Canyon Space Team



Some two dozen teams have developed concepts for creation of an X PRIZE spacecraft, with perhaps six or so teams with a design and the logistical acumen capable of winning. Some concepts involve having the ship carried or towed high up into the atmosphere, then released. From there they would ignite a rocket to propel it into space. At least one is planned to be water-launched, with others earth-launched with parachute landings on water. Some systems use the space shuttle technique of taking off from the ground and landing like a glider.

Canyon Space Team: Commercially Available Components Drastically Cut Costs

The Canyon Space Team (CST) took its name from Canyon Park Junior High, the school that three of the initial team members attended at the time. One student has gone on to become an Air Force Academy cadet. The current team consists of 30 to 40 people helping on the project with about eight core team members. It is an international undertaking with members who are American, Russian, Czech and Polish.

CST is taking the approach Lindbergh took to his fight. That is to have the barest essentials to make the design work and the right vehicle to accomplish the task. The goal is to "defy the laws of economics" which have said up to this point

Billy unconventionally tests his theories with water-rocket-powered carts. Levi and Lysle ride while Alia patiently observes.







that space flight must be expensive. At the same time, the team realistically emphasizes that they "cannot defy the laws of physics" in their pursuit of the prize.

The major method of keeping costs down is to use commercially available parts in construction. Nothing designed into their spacecraft is classified, with everything relatively easily available. For example, the cockpit will be adapted from a Ron Jones Hydroplane Survival Capsule, created for famous record-breaking ultra-fast boats. These capsules must protect the crew during a highspeed boat race incident, providing a safe environment while submerged and withstanding a great amount of force. However, money is always a hurdle. Even with the availability of off-the-shelf parts, it still takes a substantial investment, with the team seeking \$3 to \$4 million in sponsorship to build the ship.

Billy Roeseler ("race-ler"), Technical Director of the Canyon Space Team, has seen big changes in aviation in his long career. "There continue to be huge changes in aviation that have really altered the way we relate to other people around the globe and experience long-distance travel. Large, long-range aircraft like the 747 have made the world a lot smaller over the past few decades. Advances in the space tourism industry spurred on by the X PRIZE and groups like the Canyon Space Team will expand the possibility of experiencing the adventure of space flight from a few hundred government astronauts, to virtually any who would like to give it a try," Roeseler passionately explains.

Billy's enthusiasm for this project is contagious, making it impossible not to wonder when a casual trip into Earth orbit will be an everyday occurrence. He even helps his grandchildren experience the dream of space travel by hooking their toy rocket cars into a "rocket ship" configuration, and creating a kid-size water-rocket wagon they can ride on. Billy Roeseler takes a practical approach to building a competitive entry. "What is going to truly change the way we utilize space is using off-theshelf commercial products as components in constructing spacecraft. For example, the cockpit module of the Canyon Space Team craft comes from a high-powered hydroplane racing boat. It is well-adapted to the task as it must protect boat operators from drowning and survive rigorous conditions, including high-speed impacts. This is the type of innovation and use of available resources that will make the project work."

Pioneers like Billy Roeseler and the Canyon Space Team will help bring about a new era of affordable space flights. This will allow everyday amateur astronauts to get a look at Earth from space while truly revolutionizing the way we access space.

M.C. Gill Panels on CST Prototypes

M.C. Gill Corporation composite panels are being used in wing structures, the tail, interior constructions and elsewhere in the Canyon Space Team prototypes. These panels were selected for their characteristics, which include stiffness, strength and low cost, a winning combination. A long-time dedication to research means that M.C. Gill is continually improving its products, adapting to customer requirements that at times include out-of-the-ordinary challenges like this.

This isn't the first time M.C. Gill products have experienced space flight. Our products have been used in NASA spacecraft, the quark project and other experimental designs. Today there are still some on the moon that were part of the Apollo missions.

For more information:

About the X Prize: www.xprize.org

About the Canyon Space Team: www.canyonspaceteam.org

Canyon Space Team X. Prize Vehicle 2002

About M.C. Gill Corporation: www.mcgillcorp.com

Let us know about your imaginative uses of M.C. Gill products: info@mcgillcorp.com

Alcore Moves PAA Priming In-House to Reduce Lead Times

Edgewood, Maryland – In a move designed to shorten lead times and enhance product quality, Alcore has moved the priming line for their industry-leading PAA-CORE[®] aluminum honeycomb into their Edgewood, Maryland facility.

Since Alcore pioneered aluminum honeycomb using PAA-primed foil more than 15 years ago, the company has chosen to anodize the foil in-house, but apply the primer at an outside facility. After a recent facility consolidation opened up some additional floor space, the opportunity presented itself to put the priming line right alongside the anodizing line.

"We always had plans to put the two lines under one roof," said Alan Baldwin, President of Alcore. "By bringing the entire process into our facility, we're going to have even more flexibility in product mix, as well as quicker turnaround times for delivery." Alcore's PAA-CORE aluminum honeycomb has an enviable track record and flight vehicle-proven performance in harsh environments. With unequaled skin-to-core bond durability in hot/wet environments, PAA-CORE also has very high corrosion resistance, even in acidified salt spray.

Alcore, Inc., part of the M.C. Gill Corporation Group of Companies, produces a full line of aluminum honeycomb, as well as metallic and non-metallic drop-in core details. These products are used for fabricating lightweight, high-strength structures for the aerospace, marine, rail, construction, recreation, architectural and industrial markets.

Contact Alcore:

410 767-7100 • 410 676-7050 Fax Email: sales@alcore.com www.alcore.com Monaco's Grimaldi Forum Fitted with Alcore Brigantine Composite Sun Shades Principality of Monaco – A large adjustable set of sun shades, designed and fabricated by Alcore Brigantine, have been installed in the Grimaldi Forum in Monaco. Billed as "a state-of-the-art conference center for the 3rd millennium," this facility is partly owned by the Prince of Monaco.

Alcore Brigantine's participation began with the idea of constructing huge, curved sun shades. These would be positioned on the outside of the building, providing artistic and practical characteristics. They needed to be light and artistic, while having the strong and practical traits required for a rough environment with exposure to the sea and wind.

The overall length of the slats is 10 meters (about 33 feet). They are made of aluminum honeycomb with glass epoxy laminate facings, and then covered with copper that is pretreated to have an aged green appearance that helps protect the metal and adds to its beauty.

Alcore Brigantine is part of the M.C. Gill Corporation Group of Companies.



Le Forum Grimaldi à Monaco est équipé de brises vues en composites.

Principauté de Monaco – D'immenses brises vues réglables ont été installés au Forum Grimaldi à Monaco. La conception et la fabrication en revient à la société Alcore Brigantine. Le Prince de Monaco est en partie propriétaire de ce centre de conférence du troisième millénaire.

Le Forum Grimaldi est un espace extrêmement souple, utilisable pour une grande variété d'évènements et pouvant accueillir plus de 3000 personnes. L'installation est conçue pour permettre les relations business to business (lancement de produits ou salons professionnels) ainsi que les dîners de gala ou tout autre évènement culturel majeur.

Alcore Brigantine fût présent très en amont sur ce projet, alors qu'il n'en était encore qu'au stade de l'idée. Le challenge était de taille... L'idée de l'architecte était de construire des brises vues immenses et incurvés avec une esthétique très avant-gardiste. Qui plus est, ils devaient être installés en extérieur, face à la mer et aux intempéries donc dans un environnement très agressif.

La dimension hors tout de chaque pièce est de 10 mètres (environ 33 pieds). L'âme de ces brises vues est en nid d'abeilles aluminium. Les peaux intermédiaires sont des pré-imprégnés verre époxy. Les peaux extérieures esthétiques sont en cuivre.

L'aspect vert vieilli du plus bel effet est obtenu par un pré traitement chimique qui protége le métal.

Alcore Brigantine fait partie de M.C. Gill Corporation Group of Companies.

> Contact Alcore Brigantine: Téléphone +33 (0)5 59 41 25 25 Fax +33 (0)5 59 41 25 00 email: sales@alcorebrigantine.fr



Joe Marks from Timco-Macon in Georgia.

Gillshow

M.C. Gill Corporation enjoys visitors from all over the world.



A new incinerator has been installed to cleanly and efficiently dispose of by-products from the production operation. This equipment will save significantly on natural gas costs, as it uses the solvent from the process as its fuel. This helps us keep costs down and deliver value to our customers while addressing all environmental concerns.



Left to right: S.M. Suh, Byeong Ho Gong, M.C. Gill and Y.S. Kang discuss Korean Airlines projects.



Phil Giffin – Director of Quality, works on a Quality Audit with Luciane Matsura and Ernesto Tiaki Kuroda from Embraer in Brazil

New graphics on our Gilliner[™] boxes make it easier to determine contents and get company contact information.



The M.C. Gill Group of Companies



M.C. Gill Corporation

4056 Easy Street, El Monte, California 91731 phone: 626 443-4022 fax: 626 350-5880 email: info@mcgillcorp.com The M.C. Gill Corporation is the world's largest manufacturer of original equipment and replacement baggage compartment liners for passenger and freighter aircraft. We are one of the largest producers of composite sandwich panels used for aircraft flooring in these markets.

The company also excels in most other types of fiber-reinforced plastics including flat panel composites, bullet-resistant ballistic laminates, interior panels for creating structures such as aircraft galleys and bulkheads, honeycomb core and related products.



Manufactures a variety of metallic honeycomb cores for aerospace and other applications. Offers extensive special processing capabilities on metallic and non-metallic cores, from simple operations like chamfering to complex processes including roll-forming, 5-axis machining and splicing of different densities into core blankets.

Alcore

Lakeside Business Park, 1502 Quarry Drive Edgewood, Maryland 21040 USA phone: 410 676-7100 fax: 410 676-7050 email: sales@alcore.com

Alcore Overnight[™] Expedited Delivery email: overnight@alcore.com

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



Specializes in aircraft-quality metal parts fabrication, engineering and design. If a piece of metal can be bent, pressed, punched, routed, shaped, molded, welded, profiled or fabricated into a high-performance part, Castle has the equipment and experience to do it.

Castle Industries of California, Inc. 601 South Dupont Avenue Ontario, CA 91761-1502 USA phone: 909 390-0899 fax: 909 390-0898 email: info@castleindustries.net



Offers broad capabilities in structural core materials technology in Europe, including: Aluminum honeycomb, with special processing expertise and an in-house design office. Manufacture of sandwich panels from simple shapes to extremely complex parts. Advanced aluminum honeycomb shock absorption materials used as a kinetic energy absorber in everything from high-speed trains to automotive safety.

Brigantine propose une offre de compétences très large sur les technologies des matériaux d'âme structuraux en Europe. Fabrication de nid d'abeilles aluminium, expérience de l'usinage de précision de ce matériau, bureau d'études intégré. Fabrication de panneaux sandwich, des grandes séries aux pièces les plus complexes. Etude et fabrication d'absorbeurs de chocs en aluminium pour de nombreuses applications allant du ferroviaire à l'automobile.

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Manufactures aircraft insulation, details composite panels including various honeycombs and creates complex assemblies using advanced fabrication methods. It also provides warehousing for other M.C. Gill products for quick European delivery.

Insoleq

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Seems there was a treasure ship on its way back to port. About halfway there, it was approached by a pirate, skull and crossbones waving in the breeze!

"Captain, captain, what do we do?" asked the first mate.

"First mate," said the captain, "go to my cabin, open my sea chest, and bring me my red shirt." The first mate did so.

Wearing his bright red shirt, the captain exhorted his crew to fight. So inspiring was he, in fact, that the pirate ship was repelled without casualties.

A few days later, the ship was again approached, this time by two pirate sloops!

"Captain, captain, what should we do?"

"First mate, bring me my red shirt!"

The crew, emboldened by their fearless captain, fought heroically, and managed to defeat both boarding parties, though they took many casualties. That night, the survivors had a great celebration. The first mate asked the captain the secret of his bright red shirt.

"It's simple, first mate. If I am wounded, the blood does not show, and the crew continues to fight without fear."

A week passed, and they were nearing their home port, when suddenly the lookout cried that 10 ships of the enemy's armada were approaching! "Captain, captain, we're in terrible trouble, what do we do?"

The first mate looked expectantly at the miracle worker.

Pale with fear, the captain commanded, "First mate... bring me my brown pants!"

* * *

"I'm sorry," said the clerk in a flower shop, "we don't have potted geraniums. Could you use African violets instead?"

Replied the customer sadly, "No, it was geraniums my wife told me to water while she was gone."

$\star \star \star$

Why wouldn't they let the butterfly into the dance? Because it was a moth ball.

* *

What do you call a chicken at the North Pole? Lost.

★ ★ ★ What's Tarzan's favorite carol? Jungle bells.

 $\star \star \star$

What part of a fish weighs the most? The scales.

 $\star \star \star$

What is full of holes yet can still hold water? A sponge!



Spiral staircases in medieval castles turn right as they ascend. This was so that (right-handed) knights defending the castle could more easily combat invading foes who were climbing the stairs.

Roulette, an invention by the mathematician Blaise Pascal, was a by-product of his experiments with perpetual motion.

Neil Armstrong first stepped on the moon with his left foot. $\star \star \star$

Great Britain was the first country to issue postage stamps, so theirs are the only stamps in the world not to bear the name of the country of origin. Also, the glue on Israeli postage stamps is certified kosher.

> The ammunition belts in WWII aircraft were 27 feet long, thus the expression "the whole nine yards."

* * *

 $\star \star \star$

The word "pound" is abbreviated "Ib." from the Latin "libra pondo," meaning weight or balance; that's how the constellation got its name.

All polar bears are left-handed.

Non-dairy creamer is flammable.

 $\star \star \star$

* * *

Elizabeth I of England suffered from anthophobia, a fear of roses.

 $\star \star \star$

"Admiral" is derived from the Arabic phrase "amir al bahr," which means "lord of the sea."

* * *

When the University of Nebraska Cornhuskers play football at home to a sellout crowd, the full stadium becomes the state's third largest city.

* * *

The average human body contains enough:

Iron to make a 3-inch nail Sulfur to kill all fleas on an average dog Carbon to make 900 pencils Potassium to fire a toy cannon Fat to make 7 bars of soap Phosphorous to make 2,200 match heads Water to fill a 10-gallon tank.

www.mcgillcorp.com