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# THE M.C.GILL DOORWAY™

HIGH-PERFORMANCE COMPOSITE PRODUCTS SINCE 1945

## Stepping Up To Cyberspace



[www.mcgillcorp.com](http://www.mcgillcorp.com)

# New Web Site Swoops Visitors into Cyberspace

That's how futurists describe the shock the World Wide Web is already having upon every level of society – and especially how it is revolutionizing the way we do business around the world. M.C. Gill Corporation recently launched a new web site, with improved capabilities for answering questions and delivering continually updated information. There is an expanded browse-able archive of our product data sheets. Copies of our popular *Doorway* publications can readily be searched and accessed. A contacts list of our global network of representatives is easy to view, among other features.

We are lucky, in working in aviation and with others in industry where instant access to information is critical, that we can make this dynamic tool available. The exciting expanse of Cyberspace allows anyone with a computer and an Internet connection the opportunity to visit us online, and stay in touch with M.C. Gill products and services. Zoom through our new web site and explore what it has to offer.



**The Internet is as significant in the changes it will bring to the civilization as the discovery of fire or Gutenberg's invention of movable metal type.**





Product index page for browsing or searching by Main Product Lines or OEM.

Narrowing it down by browsing deeper into a sub-category.





In Progress

This searchable, database on M.C. Gill products at

You can find the product you are looking for by its number. The online archive is also sortable by OEM, product type and other factors. Additional features will be added, as we learn more about how our customers and web site visitors are using this powerful tool.



Displayed list of products with links to their data sheets.



# ZOOM

## Around the World

### Accessing Contact Information



Finding the right person to contact for information is a cinch. Check out the Contacts Page where you can sort by region of the world on the map or by the list. Either one will take you – with a simple click – to a list of representatives for M.C. Gill products in that region of the world.

Of course, in the unlikely event you find yourself in a place that's not on the list, just get in contact with us at the main office in El Monte, California. All the information needed to do that is right there at the top of the list of locations.

# BEAM UP

## YOUR FAVORITE ISSUE OF THE LEGENDARY DOORWAY

Since the early 1960s *The Doorway* newsletter has delighted, informed and redefined the way a corporation can stay in touch with its customers. The last dozen years of *Doorway* issues are available on our new web site. Some of the favorite issues are highlighted in a box, making them easy to find.

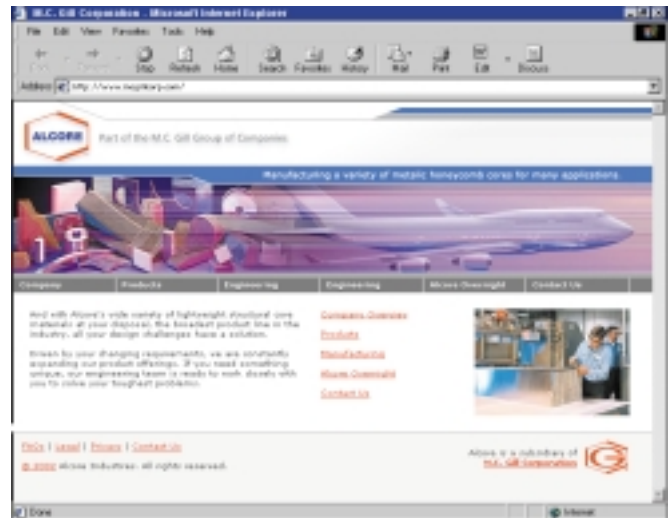
Issues are all available by their date, plus there is an index of articles with the ability to search using keywords, because the issues are stored in easily printed PDF format.





## Alcore

The Alcore site features newly revamped data sheets and a galaxy of information about products and an explanation of the work cells implemented for lean manufacturing.



## Alcore Brigantine

In both French and English, learn about Alcore Brigantine skills in fabricating parts for trains, automobiles and aircraft.

# Voyage to the Web Sites of The M.C. Gill Group of Companies

## Castle Industries

Showing images of everything from observer seats to electronics cabinets to mechanical assemblies, explore Castle's capabilities for fabricating high-performance metal parts.



## M.C. Gill Europe – Insoleq

Visit the home of our European operations to learn about everything from their fabrication capabilities and warehousing of M.C. Gill products, to their well-respected Insoleq brand products.



# Even Heating from New Dielectric Press Cures Honeycomb Blocks Faster

A Dielectric Press has been added to M.C. Gill Corporation's arsenal of equipment used to manufacture honeycomb.

To create Gillcore™ honeycomb, a block is created before being accurately sliced into sheets of specific thicknesses. The first steps in the process of creating a block involve printing precision lines of adhesive onto the appropriate Nomex® or Kevlar® paper. The paper is then sheeted and stacked, so that once the adhesive is cured, it can be expanded to create the uniform cells that make up the honeycomb.

A critical step in the fabrication process involves heating the block under pressure so that the adhesive cures properly. In conventional systems the block is cured using oil or steam heat. Using this traditional system, the heat must slowly pass from the outside of the block into its interior until it fully penetrates the entire block for a prescribed length of time. Heating and curing a block by this method can take upwards of 30 hours. In contrast, the new Dielectric Press used by M.C. Gill Corporation can cure that same block in less than one hour. This is possible because heat is developed uniformly throughout the entire block using radio frequency energy.

## How Does Dielectric Heating Work?

When certain materials are positioned in an alternating electric field, their molecules rotate and move laterally. This movement occurs millions of times per second as the molecules attempt to align with the changing field. This generates heat very quickly and evenly throughout the block.



The Dielectric Press greatly shortens curing time.

Many non-conductors of electricity, such as the Kevlar® and Nomex® thermo papers used in Gillcore™ honeycomb, exhibit electrical losses in a high-voltage, high-frequency electric field. These losses express themselves as heat in the material. Dielectric heating is performed at radio frequencies (RF) between 10 to 100 MHz.

The block to be cured is placed in the Dielectric Press between two conducting plates. These plates are part of an electrical circuit and act as electrodes. The paper block becomes the “dielectric” of a capacitor.

Dielectric heating is a very efficient method of curing adhesives used in honeycomb manufacturing. Heating is concentrated in areas containing the most polar (water) molecules. It actually heats the paper. The node adhesive cures because the paper gets hot. Less moist areas absorb less RF energy, which helps avoid damage that might be caused by overheating the paper substrate.

The process is simple and precise, providing our customers the benefits of faster turnaround times, excellent uniformity and improved quality. The monitoring of the process includes: temperature, time and pressure. Our quality improves because the material sees less heat history and is cured more evenly.

## Value Engineering –

### Means Continuous Development of Better Ways to Fabricate Products

The introduction of a Dielectric Press into the honeycomb production line is part of the M.C. Gill commitment to continually improve the way we design and produce products through Value Engineering. This process involves systematically improving quality and product attributes, while at the same time working to keep costs under control.

The goals of Value Engineering include conservation of resources, elimination of nonessential functions, simplification of operations and maintenance-conscious engineering to cut costs and improve reliability. To achieve solid results, Value Engineering carefully scrutinizes systems while continually enhancing them. It is a structured decision-making process that assists in the creation of alternatives to the current method of operation leading to improved operations and production costs.

## Lean Manufacturing Also a Major Program

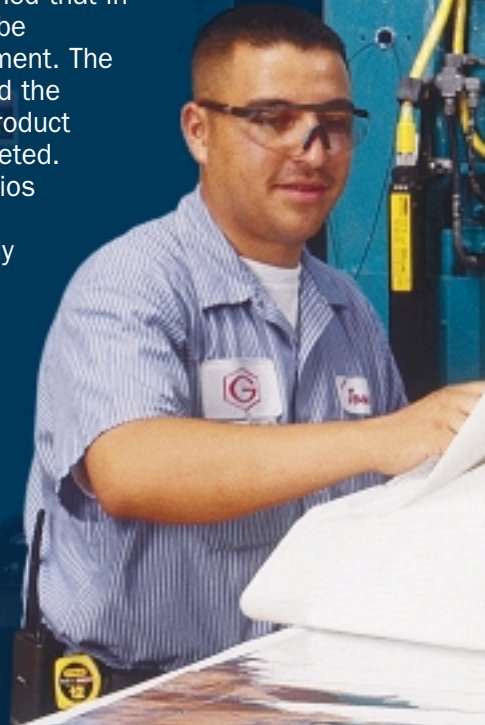
To additionally make sure there is no waste in the manufacturing process, M.C. Gill also practices Lean Manufacturing. This is related to Value Engineering, since it provides customers with additional benefits, such as keeping costs under control by seeking to eliminate any waste in the fabrication processes.

Lean Manufacturing essentially means manufacturing without any waste. Of course, waste can come in many forms, including the excessive handling of material, additional process time and unnecessary inventory. These are examples of areas where improvement is possible.

Studies show that most companies waste upwards of 70% of their available resources, leaving a great deal of room for improvement.

M.C. Gill Corporation is constantly looking for ways to implement Lean Manufacturing principles. During a recent week-long review of a safety stock product labeling operation, it was determined that in one area greater efficiency could be achieved with a very small investment. The Lean Manufacturing team reviewed the current procedures for handling product labeling as each piece was completed. They suggested a range of scenarios to redesign the current mode of operation, and were able to quickly determine the best method for improving work flow. The result was establishing a new work cell capable of labeling and packaging target products, resulting in reduced cycle time and cost.

The continuous use of both Value Engineering and Lean Manufacturing at M.C. Gill Corporation benefits the customer by providing a consistently high-quality product with an emphasis on cost controls.



**M.C. Gill Corporation's Dielectric Press is used to produce a superior quality honeycomb.**

# Snapshots

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



Paul Draghi, Manufacturing Director, gives Dr. Steven Nutt, Director of the Merwyn C. Gill Composite Center, and his USC students a plant tour to gain first-hand knowledge of composites production.



(At right) Francesco Irtinni, Raffaele Mucciolo, Vincenzo Belmonte, Gennaro Carifi from Alenia, and (at left) Rudy Rodriguez and Phil Giffin from M.C. Gill.



Dave Cross, who represents M.C. Gill Corporation in South Africa and many other African nations.



(Left to right) Mr. Chiaki Tomiyama, Manager – Sales & Business Development and Mr. Toshiyuki (Steve) Nagamatsu, President ITOCHU Aviation, Inc. with M.C. Gill.



Pat Whyte, CEO of Comtek.



Robert Giovanni from the Comtek Purchasing Department.

# The M.C. Gill Group of Companies



## M.C. Gill Corporation

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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.

Visit us at: [www.mcgillcorp.com](http://www.mcgillcorp.com)



## Alcore

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.

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

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



## Castle

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.

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## Alcore Brigantine

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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## Insoleq – M.C. Gill Europe Ltd.

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.

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# Trivia

Many hamsters only blink one eye at a time.

★ ★ ★

A full moon always rises at sunset.

★ ★ ★

A cubic mile of fog is made up of less than a gallon of water.

★ ★ ★

A Pulsar is a neutron star that gets its energy from its rotation.

★ ★ ★

If birds were sent into space they would die; they need gravity to swallow.

★ ★ ★

Uranus is the only known planet that spins on its side in reference to the sun; every other planet spins counterclockwise or clockwise.

★ ★ ★

A neutron star has such a powerful gravitational pull that it can spin on its axis in 1/30th of a second without tearing itself apart.

★ ★ ★

A lightning bolt generates temperatures five times hotter than those found on the sun's surface.

If you attempted to count the stars in a galaxy at a rate of one every second, it would take around 3,000 years to count them all.

★ ★ ★

Venus' day is longer than its year.

★ ★ ★

A neutron star is so dense that a tablespoon of matter from it would weigh over 5,000 tons.

★ ★ ★

All the stars in our galaxy, the Milky Way, revolve around the center of the galaxy every 200 million years.

★ ★ ★

Any free-moving liquid in outer space will form itself into a sphere because of its surface tension.

★ ★ ★

The rotation of the Earth will eventually slow down to match the moon.



## THE FUNNY SIDE

What do you call a robot that always takes the longest route round?

R2 detour!

★ ★ ★

What did the metric alien say?

Take me to your litre!

★ ★ ★

What is the name of Jupiter's big red dog?

Spot.

An interplanetary visitor is traveling in his flying saucer when he realizes he is lost. He descends and locates a man below. He hovers the saucer above the man, then shouts, "Pardon me. Can you help? I don't know where I am. I'm behind schedule rendezvousing with some of my colleagues."

The man below says, "Yes, you are in a flying saucer, hovering approximately 20 meters above this field. You are between 30 and 32 degrees north latitude and between 52 and 61 degrees west longitude."

"You must be an engineer," says the interplanetary visitor.

"I am," replies the man. "How did you know?"

"It's easy," said the visitor, "what you have told me is technically correct, but I have no idea what to make of your information. I remain lost."

The man squinted up at the saucer, "You must be a manager."

"I am," replied the visitor from outer space, "but how did you know?"

"Simple," replied the man. "You don't know where you are or where you are going. You have made a promise which you don't know how to keep, plus you expect me to solve your problem. Additionally, you are in exactly the same position you were in before we met, except it is now my fault."