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THE M.C.GILL DOORWAY

New Vistas in Composites

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O.K., I FETCHED...

Now what?

O.K., HERE'S WHAT:

THE M.C. GILL CORPORATION HAS COMPLETED THE PURCHASE OF ALCORE, INC., LOCATED IN EDGEWOOD, MARYLAND, AND ITS SUBSIDIARY, ALCORE BRIGANTINE, IN ANGLET, FRANCE.

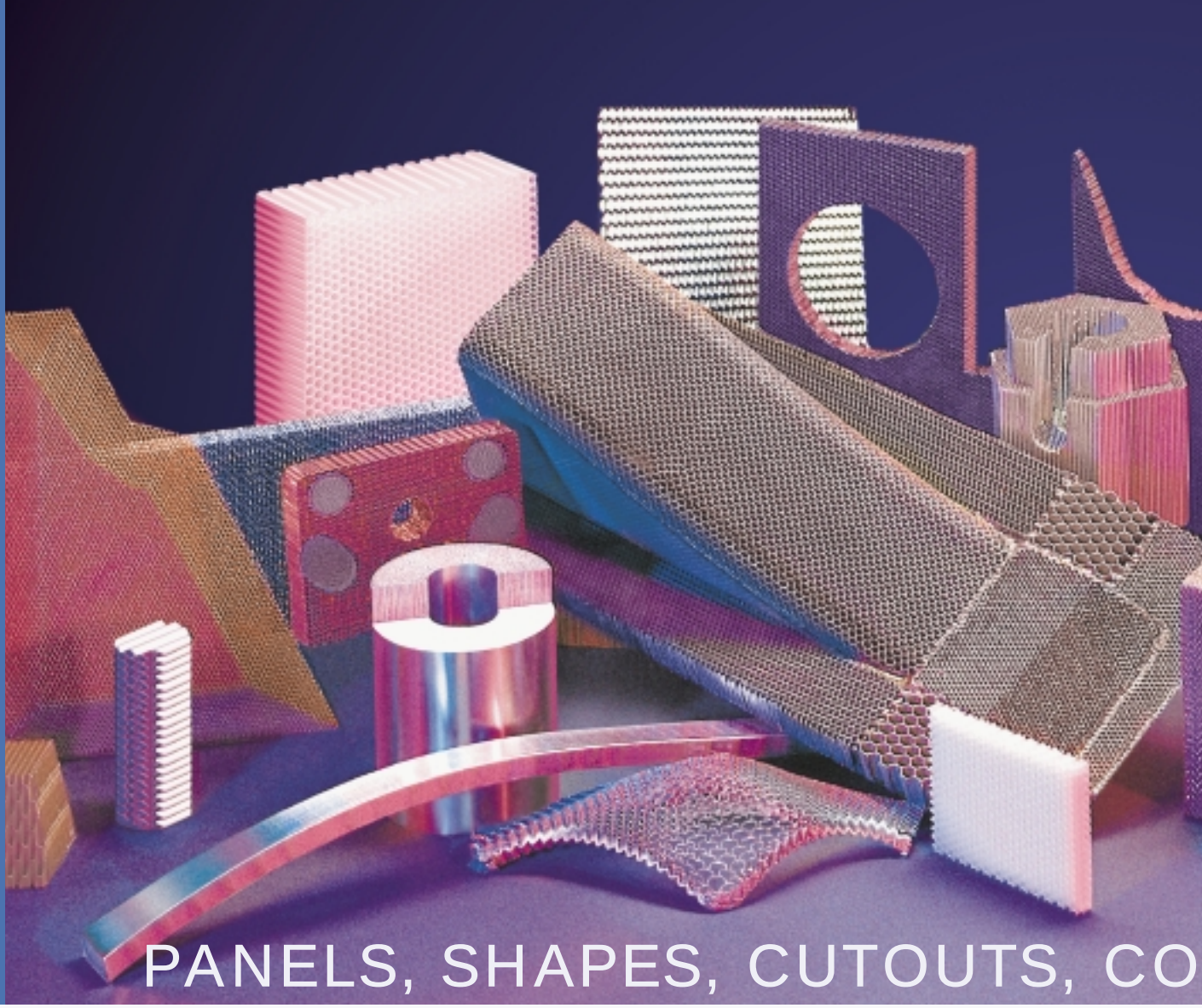
Some History of our Newest Acquisition

ALCORE

Alcore and its forerunners have been around for some time, in one form or another. In 1958, the General Grid division of Bloomingdale Rubber began manufacturing adhesives and honeycomb. In 1962, American Cyanamid purchased General Grid. Thirty years later, Lunn Industries purchased the honeycomb operation from American Cyanamid and formed Alcore. The following year, 1993, Lunn purchased Pollux and combined it with Alcore. In 1997, Technical Products Group purchased Lunn Industries to form Advanced Technical Products (ATP). In 1998, ATP purchased Brigantine Aircraft in Biarritz, France, and became Alcore Brigantine. The lineage is completed at this point when, in 2001, the M.C. Gill Corporation purchased the assets of Alcore and Alcore Brigantine. *The buck stops here and you can bet on it!*

We've Been Down This Road

M.C.'s first foray into the honeycomb manufacturing business was many years ago and was the result of his purchase of the equipment of a small honeycomb manufacturer—*aluminum honeycomb*, as a matter of fact. We did not stay in that facet of the business too long, however, because of the increasing usage of Nomex® honeycomb by our customers--usually at the expense of aluminum honeycomb. As a result, M.C. decided that the big future for honeycomb was aramid fiber and he concentrated his efforts on that product rather than aluminum, still a wise decision. But aluminum honeycomb, a product of considerable worth, has been making a comeback of late.



This Acquisition Works Because…

The Alcore purchase is especially notable for several reasons.

First, getting us back into aluminum honeycomb manufacturing conforms with our well-documented long-term goal of horizontal integration. Alcore manufactures a wide variety of lightweight structural core material, primarily aluminum honeycomb—a core material found in many of the sandwich panels manufactured by the M.C. Gill Corp. In fact, Alcore has been a major supplier of our aluminum honeycomb requirements.

Additionally, Alcore is one of only two sources in the world for PAA (phosphoric acid annodized) core. Such core is highly corrosion resistant and can replace non-metallic core.

Second, the purchase agreement includes Alcore's and Alcore Brigantine's manufacturing equipment including two print lines, eight presses, three CAD/CAM stations, four 5-axis mills, two 3-axis mills, eleven slicing saws, a core trim saw, seven expanders, and two refrigerated storage units.

M.C. Gill can also take advantage of the many years of experience of Alcore's employees—an asset M.C. considers far more valuable than any capital equipment.

Finally, Alcore Brigantine helps expand and solidify our long established ties with European commercial

NTOURS... ALCORE DOES IT ALL!

aviation customers—after all, our very first airline sale was to Swissair in 1955. With Insoleq in Northern Ireland making fabricated sandwich panels, and now Alcore, we have an even stronger presence in Europe. Alcore Brigantine is one of a very few companies in Europe that offers the broad capabilities and expertise required for structural core materials technology. The company has two specialized honeycomb production facilities—one for industrial or commercial-grade core and one that supplies the aeronautical and space requirements.

Also, Alcore Brigantine has sandwich panel capability for the industrial market; an expertise in using aluminum honeycomb as a kinetic energy absorber for various applications including those in the aviation, high-speed rail, and automobile safety markets; and, 5-axis CNC capability which it is already using to support requirements for machined honeycomb in Europe. Moreover, we can continue to increase the level of service to our customers on that continent as well as intensify our efforts to become a supplier to the Airbus' OEM program.

The Best Fit We've Ever Had

Aluminum honeycomb is just one thing M.C. Gill and Alcore have in common. Customer bases are very similar—not a big surprise because the product lines of both companies rely on commercial aviation/aerospace for the bulk of their sales.

Alcore's Processing Capabilities

They build on and add to M.C. Gill's own expertise in that area. Alcore's array of equipment that will cut, shape, mill, form, and bond… serves to complement the M.C. Gill competence in the fabrication of different shapes and contoured parts. These processing capabilities include tooling design and manufacture, bonding, potting, insert work, roll-forming, routing, 3- and 5-axis profiling, and horizontal and vertical sawing.

THE FOLLOWING TABULATION OUTLINES TYPICAL APPLICATIONS FOR ALCORE'S PRODUCTS

MARKET	PRODUCT APPLICATIONS
Aircraft	Flaps, slats, spoilers, rudders, ailerons, engine nacelles, flooring and other interior structures
Space	Launch vehicle cowlings, solar panels
Industrial	Nuclear casks, curtain wall panels, marine structures railroad panels, clean room panels

Additionally, almost half of Alcore's top fifteen customers are among M.C. Gill's largest volume customers. Moreover, as shown below, Alcore's products are qualified at many of the same customers as M.C. Gill, including Aerospatiale, B.F. Goodrich Aerospace, Boeing, Lockheed Martin, Vought, Northrop Grumman, and Raytheon.

ALCORE QUALIFICATIONS BY CUSTOMER

CUSTOMER	QUALIFIED TO:
Aerospatiale (Alcore Brigantine)	SNA 4357
Bell Textron	299-947-059
BF Goodrich	RMS-026 and RMS-1588
Boeing	BMS 4-4, BMS 4-6, BMS 4-25, DMS 1588, MMS-714,D1-4426, D6-53993 (BAC 5317), Form B
Dassault (Alcore Brigantine)	CR 0.4.2.143, CR 1.4.2.40
Hispano Suiza	BLGG-500201
Hurel Dubois (Alcore Brigantine)	IGC 042 100
Lockheed Martin Aeronautics	STM Y 1071
Lockheed Martin	FMS-3010
Middle River Aero	STM P-Y 100, STP-65P113, 72M001
U.S. Military	Mil-C-7438
Mitsubishi Heavy Industry	M-3062A
Vought	GC-100B, GC-100F
Northrop Grumman	NAI-1171
Pat's Inc.	PS-28
Pratt & Whitney	LCS (Laboratory Control Source)
Raytheon Aircraft	BS 25017
SAE	AMS-4348, AMS-4349
Saab	STD-124210-005, STD 124214
Showa Aircraft Industries	SMS 1204
Sonaca	SMS 1003

A Happy Ending

Although M.C. dislikes the use of the word "assume," its synonyms, and the concept in general, it appears to be safe, to use that word, to assume that Alcore has finally found a permanent home with the M.C. Gill Corporation. Every indication points to a long-lasting relationship and a mutually profitable one for our customers as well as Alcore and the M.C. Gill Corporation.

Infusions of capital for both raw materials and equipment purchases and upgrades will be forthcoming soon. Moreover, M.C. Gill key personnel will help assimilate Alcore's already experienced and capable personnel into the M.C. Gill culture, e.g., methods of manufacturing, quality control, engineering, customer service, and sales and marketing. The result will be a synergistic effect on both entities that bodes well for the success of the newly expanded and improved M.C. Gill Corporation, which will soon reach $100 million in sales annually.

A Tip of the Hat…

…to Ken Boudreau, VP Operations, Irv Freund, VP Sales and Marketing, Bill Heinze, Chief Financial Officer, Paul Draghi, Manufacturing Director, and their supporting team for their untiring efforts in successfully completing the Alcore acquisition.

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Phone: (410) 676-7100, E-mail: sales@alcore.com

Alcore Brigatine, European Headquarters
Anglet France, Tel: 33(0) 5 59 41 25 25

The M.C. Gill Chair, a symbol and forerunner of M.C.'s retirement (not imminent) has morphed into the previously endowed USC "Chair in Composite Materials." The funds used to endow the chair ultimately led to the establishment of "The M.C. Gill Center for Composite Materials."

THE M.C. GILL CENTER FOR COMPOSITE MATERIALS

On May 11, 2001, University of Southern California's School of Engineering Dean Leonard Silverman made the following announcement at the school's graduation commencement ceremony.

"After today, you will proudly call yourselves alumni of USC Engineering. But I would like to take a moment to mention one alumnus who may one day serve as a role model for you... Mr. M.C. Gill.

"At the age of 90, he continues to run the company he founded, the M.C. Gill Corporation.

"I mention M.C. because yesterday I learned that he is planning a generous endowment [$7,000,000] to create the M.C. Gill Composites Center in the building right behind me. So, let us all take a moment to salute M.C."

M.C. Gill has a history of sharing the fruits of the corporation bearing his name with the University of Southern California (USC). Beginning in the late 1960's he contributed $5,000 annually as an Industrial Associate to the Department of Chemical Engineering. In 1975, he became a member of an eight man task force whose first undertaking was to raise $500,000 for the establishment of an endowed chair to honor Dean Emeritus Robert E. Vivian, and that would be used to pay a qualified expert to engage in energy research at USC.

M.C. has had a long-held belief that America's colleges and universities were not doing all they could in terms of providing a curriculum for aspiring composite materials scholars as evidenced by the following quotation he made in 1978… "*There has always been a lack of adequately trained people in the reinforced plastics industry, and we're trying to do something about it.*" He's also had a long-held belief of putting one's money where one's mouth is, and in keeping with that philosophy he announced the establishment of a $250,000 endowment to the University of Southern California from the M.C. Gill Corporation.

As M.C. explained it at the time… "*I believe far greater importance should be given to reinforced plastics as structural materials… I anticipate that as more students become acquainted with, see and appreciate the technology and challenges of the plastics industry, more will enter it as a career. And, they will come better prepared.*" That was 23 years ago and it turned out that that quarter of a million-dollar donation was merely the beginning.

In 1988 M.C. donated to the School of Engineering the largest in a series of financial gifts which resulted in the M.C. Gill Chair of Composite Materials. In addition to the Chair, the Center for Composite Materials was established. Five years later, in 1993, Dr. Steven Nutt was appointed as new senior member of the Composite Materials Program and became the first permanent holder of the M.C. Gill Chair. As Chair holder, one of Dr. Nutt's primary responsibilities is to direct the Center for Composite Materials, including the activities of its staff—six faculty members, four postdoctoral associates, 20 graduate students, and twelve undergraduate students.

The dynamic mechanical analyzer determines the mechanical properties of a material as a function of temperature. Dr. Terry Creasy, Assistant Director of the Composite Center, demonstrates the loading of the sample.

The CNC profiler is used to make tooling and patterns for contoured parts. The operator, Ms. Siari Sosa, is a Ph.D. candidate.

The primary purpose of this thermogravometric analyzer is to determine the onset of degradation. The operator is Hongbin Shen.

The Center is a hands-on facility that houses such pieces of equipment as a dynamic mechanical analyzer, which determines the mechanical properties of material as a function of temperature; an Instron test machine that measures tension or compression strength at temperatures as high as 2500°F; a Computer Numerically Controlled (CNC) profiler to make tooling and patterns for contoured parts; and, a differential scanning calorimeter.

The Center coordinates and enhances composite materials research; acts as a catalyst for industry investment in this research; and focuses on problems relating to the design, manufacture, and performance of composites. From its inception,

the Center was meant to be "user oriented"—the first clients have come from the industrial sector. However, as with many start-up operations, there has been a lack of qualified personnel and not enough equipment to conduct the projects and complete them in a timely manner. As a man who prides himself on customer service excellence in his own company and one who has been heavily involved with the Center from the outset, M.C. is well aware of these shortcomings.

Hence the most recent endowment. It was M.C.'s intention that the monies be spent to beef up the personnel and equipment shortcomings. As he says, "I don't want these people spending weeks and weeks trying to buy second-hand equipment and looking for the best price. That takes a lot of time and time is one thing we just don't have enough of—once it has gone you can't get it back. Spent properly, I believe that this contribution will cure many of these ills and we can get on with doing what we're supposed to do."

The high-power light microscope allows maximum magnification of polished polymer and composite samples through one of the five turrets. A real-time digital camera captures images for analysis of parameters such as fiber volume fraction.

Quartz lamps enable this Instron machine to test in tension or compression (shown) at temperatures as high as 2500°F while heating the samples within seconds.

Graduate student Chanman Park inserts a coupon to test for tension fatigue and stress rupture of ceramic matrix composites.

Those who have worked for M.C. for any length of time can guarantee that the endowment will be spent properly and we are just as sure that whatever it is the M.C. Gill Center for Composite Materials is supposed to do will get done and done well!

For more information on the Center for Composite Materials just click onto their website– http://www.usc.edu/dept/materialsscience/ccr/

How to Install Aluminum Inserts in Airbus Replacement Floor Panels

The following pictures and accompanying captions illustrate the installation of aluminum inserts in M.C. Gill Corp. replacement floor panels for Airbus aircraft. Instructions shown here are installations in panel test specimens, but the procedures are identical for the full size panels to be installed in Airbus aircraft.

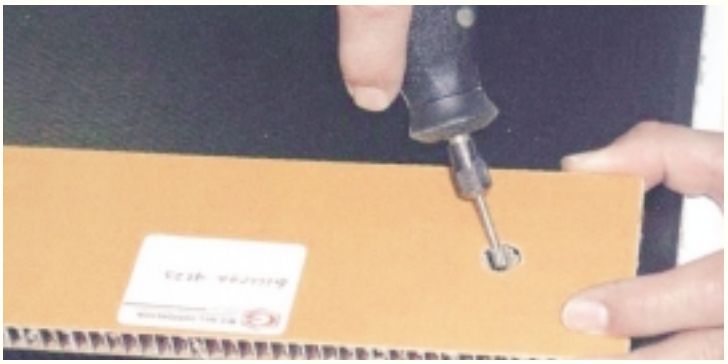
By following them closely the required pullout strengths of the installed inserts will be obtained. It is very important to remember that Airbus floor panels are structural components and contribute to the overall integrity of the aircraft. Finally, please remember that this article is not meant to be a stand alone Helpful Hint, but rather, MUST be used in conjunction with the applicable M.C. Gill IRM (Installation Repair Manual) and the Airbus SRM (Structural Repair Manual).

If you have any questions regarding this article, PLEASE CONTACT OUR CUSTOMER SERVICE DEPARTMENT. See the phone, fax, or address on the cover.

Step 1: Mark locations for drilling, 38 mm. (1.5 ins) from each end of panel specimen, along the panel centerline. (For fabrication of replacement panels the existing panel may be used as a template; or, refer to drawings in the SRM)

Step 2: Drill holes at marked locations; drill diameter 11.1 mm. (7/16 in.). Use a hand drill or drill press, and make sure holes are perpendicular to panel surface.

Very important! To allow for a sufficient amount of the potting adhesive to bond the insert and provide structural integrity, make sure the routed-out cavity is large enough.



Do not remove or otherwise damage the facings. The potting adhesive also provides a barrier against moisture.

Step 3: Rout core with a high speed rotary tool—undercut 3 to 5 mm. (1/8-3/16 ins.), about one cell width. Do not remove facing material—only the core.

Step 4: Check that enough core has been removed to allow insertion of the adhesive. The illustration shows a depth of about 4mm. (5/32 ins.).

Step 5: Lightly sand the facing in the area of the insert flange. Sand both sides of panel for the 2-piece inserts.

Proper preparation of the panel is extremely important—once these steps are completed, insert installation can proceed as shown in the following steps. Procedure for both 1- and 2-piece inserts is shown. It also is important to note that only approved components, as shown in the M.C. Gill Corp. Installation Manual, MCG IRM-9701 are used.

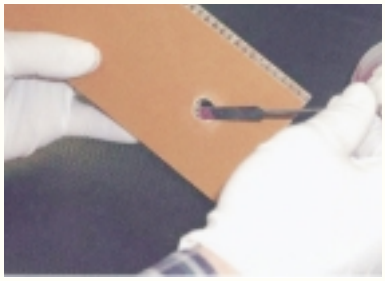
Step 6: Degrease the inserts by immersing them in clean solvent (acetone is recommended).

Step 7: Thoroughly mix the 2-part epoxy adhesive, Hysol EA 9309.3NA. After it is mixed, the adhesive should be uniform in color.

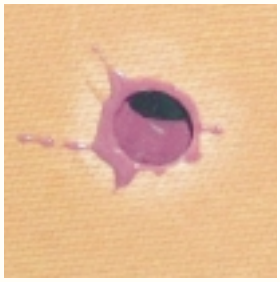
The aluminum inserts to be used must be free of any grease, oil, or other contamination, and it is suggested that the inserts be soaked in a solvent prior to use; acetone is recommended, but any other effective degreasing solvents may be used. The parts must be thoroughly dry before using, and should be handled only while wearing protective gloves.

Make sure that the panels are prepared, and the inserts ready to install before mixing the adhesive. The adhesive has a work life of only 35-45 minutes before becoming unusable.

The following steps are generally applicable for both 1- and 2-piece insert installations, and any differences in procedure are shown in the illustrations.



Step 8: Apply epoxy adhesive generously to routed-out core cavity.

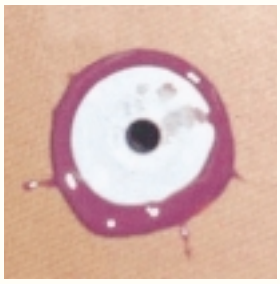


Step 9: Make sure that routed-out core cavity is filled with adhesive.

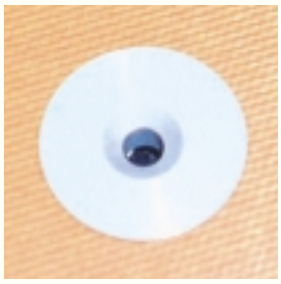
The application of the epoxy adhesive to the routed-out core cavity is especially important to provide the high levels of pullout strengths required. This is very critical with the 1-piece inserts, because there is only one flange bonded to the panel facing. Protective gloves should be worn to prevent contact with the adhesive, which can be irritating to the skin, and to keep the inserts free of fingerprints.

Step 10: Apply adhesive to the inside of the insert flange and around the barrel of the insert.

Application of the adhesive is shown with the 1-piece insert; an alternative is to apply the adhesive to the panel surface instead of the insert flange, but it is still very important not to squeeze too much adhesive from under the flange when seating the insert in the panel. For the 1-piece insert, it is recommended that adhesive be applied to the insert barrel to ensure an adequate amount of adhesive in the core cavity.



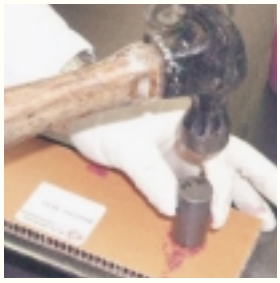
Step 11: Firmly seat the insert in the panel. Some adhesive should squeeze out, but be careful not to squeeze too much adhesive out from under the flange.



Step 12: Top view of the 2-piece insert after seating and removing excess adhesive.

To install the 2-piece insert, it is recommended to insert the bottom, or sleeve, part first. Then, place the top, or plug, part on top and seat the two parts by lightly tapping with a hammer, or light pressure from an arbor press. Steps 11 and 12 show the insert sleeve placed in the bottom facing, and a view of the finished installation.

To form the flange on the 1-piece inserts, as shown below, install the insert in the bottom face, and place the flange on a solid surface; use the special tool to form a correctly rolled flange. If using a hammer, be careful to hold the tool perpendicular to the panel and use only enough force to cause the insert to be flush or slightly below the surface of the panel. Avoid cracking the panel facing or the aluminum insert edge. Better control of this final seating process is obtained with an arbor press.



Step 13: Use special tool to form the flange on the 1-piece inserts (tap carefully with a hammer to avoid damaging the facing or insert flange).

Step 14: An arbor press is easier to control and is the preferred method to seat and form the flange with 1-piece inserts.

Step 15: Completed 1-piece insert installation; flange is flush or slightly below the top surface and facing is slightly indented around the flange.

The special seating tool shown in Steps 13 and 14 is available from the M.C. Gill Corporation, 4056 Easy Street, El Monte, CA 91731, USA; phone (626) 443-4022; fax (626) 350-5880.

AN ANNOUNCEMENT

In keeping with the Happy Ending mentioned previously, the M.C. Gill Corporation is pleased to announce that Martin Canning is joining us as "Director, European Sales and Marketing." Mr. Canning has spent more than 20 years in the aerospace and advanced composites industries.

With GKN Westland Aerospace Ltd, as Customer Support Manager–his last position prior to joining M.C. Gill–he was in part responsible for developing existing contracts for Airbus A330/A340 components to A340-500/600 program. He also negotiated re-design and contract extension for the Trent 700 fan cowl door.

Mr. Canning will coordinate the sales and marketing activities for the corporation in Europe and will be responsible for identifying and following up on business development opportunities, operational and strategic planning, and contract negotiation. He will be based in Bristol, UK, and can be reached by mail at 5 West Town Road, Backwell, Bristol, UK BS48 3HA; by phone and fax from the US at 011 44 1275 881013, and from outside the US at 01275 881013; and, by e-mail at martin.canning@blueyonder.co.uk.

Labor saving device: A neighbor who doesn't return your gardening tools.

★★★

"I think there is a world market for maybe five computers." Thomas Watson, chairman of IBM, 1943.

★★★

Since the V-chip that blocks out TV programs with sex and violence became available, viewers can't get the evening news.

★★★

As the supervisor told the employee, "Don't think of me as the boss but as a co-worker who's always right."

★★★

Overheard in an expensive restaurant, "I am your server, Nicolle. This is Mr. Johnson, who will arrange your financing."

★★★

You may need to get a new doctor if you can read his handwriting.

★★★

In the "Pets for Sale" want ads: "Piranha fish – $5.00 each. One legged duck – free to good home"

★★★

Golfers have it a lot easier than fishermen. When they lie they don't have to show anything to prove it.

★★★

One good thing about being wrong is the joy it brings to others.

90 percent of tennis elbow cases are caused from too small a grip.

★★★

Every year, U.S. farmers raise 45 million turkeys for Thanksgiving.

★★★

According to the Long Island (NY) Professional Voice Care Center, it takes 52 hours of study to lose a Long Island accent.

★★★

On July 9, 1893, Dr. Daniel Hale Williams performed the world's first open heart surgery.

★★★

William Fargo cashed the first American Express traveler's check at the Hotel Hauufe in Leipzig on August 5, 1891.

★★★

The editor of the first New York daily newspaper, The American Minerva was NoahWebster.

★★★

F.W. Woolworth started selling 5-cent merchandise in 1878 and added 10-cent items in 1880. It wasn't until 1932 that he added 20-cent items.

★★★

Texas averages 124 tornados a year— more than any other state.

★★★

Bald eagles have 7,000 feathers.

★★★

One ounce of venom from a kokoi frog can kill 2.5 million people.

★★★

The Titanic was traveling at 22 knots (25 mph) when it hit an iceberg and sank in 1912.

★★★

Elvis Presley's first Cadillac was blue until he bought it and had it repainted pink.