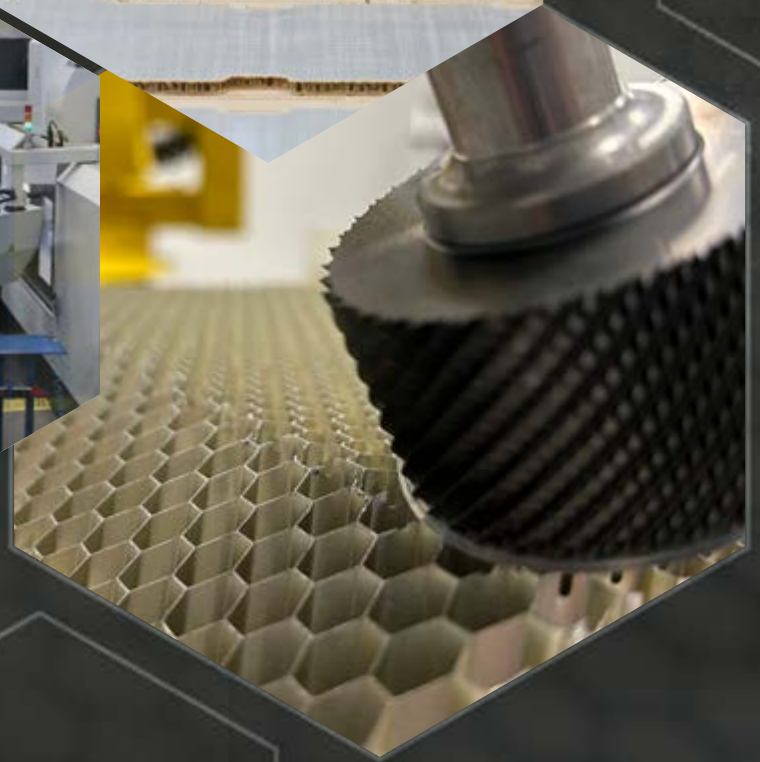
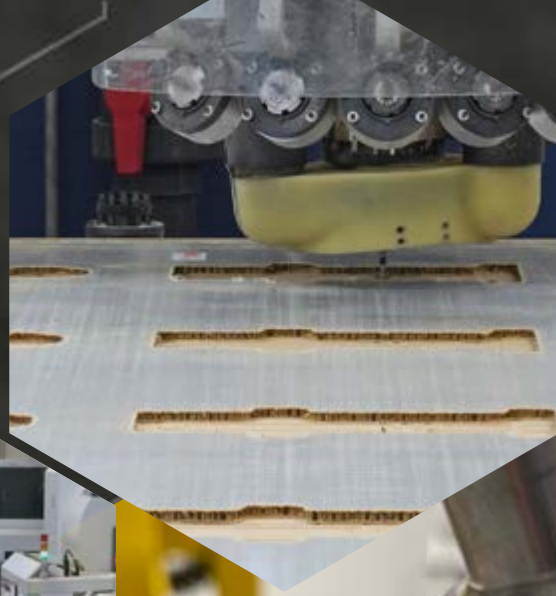


# The Doorway

A Publication of The Gill Corporation

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# MACHINING



ANTIMICROBIAL TREATED



## AEROSPACE MACHINING

Today, aircraft incorporate composite, alloy, and metallic materials as structural elements to build the floors, sidewalls, ceilings, stowage bins, compartment walls, business class seats, moveable wing surfaces and other areas.

The demand for improved aircraft performance, lower fuel consumption and reduced environmental impacts has not only driven demand for advanced materials and technologies; it has also created requirements for new equipment and processes for producing complex metallic and non-metallic, composite structures.

Flooring systems in both the passenger and cargo cabins need to be light weight and strong enough to handle the loads they bear.

Composite panels are machined to shape before they are assembled with components that integrate with the structure of the plane. Flight control surfaces and aerodynamic structures are generally contoured and represent varying degrees of complexity. As such, honeycomb used in these applications must be precision machined and stabilized before skins can be applied.

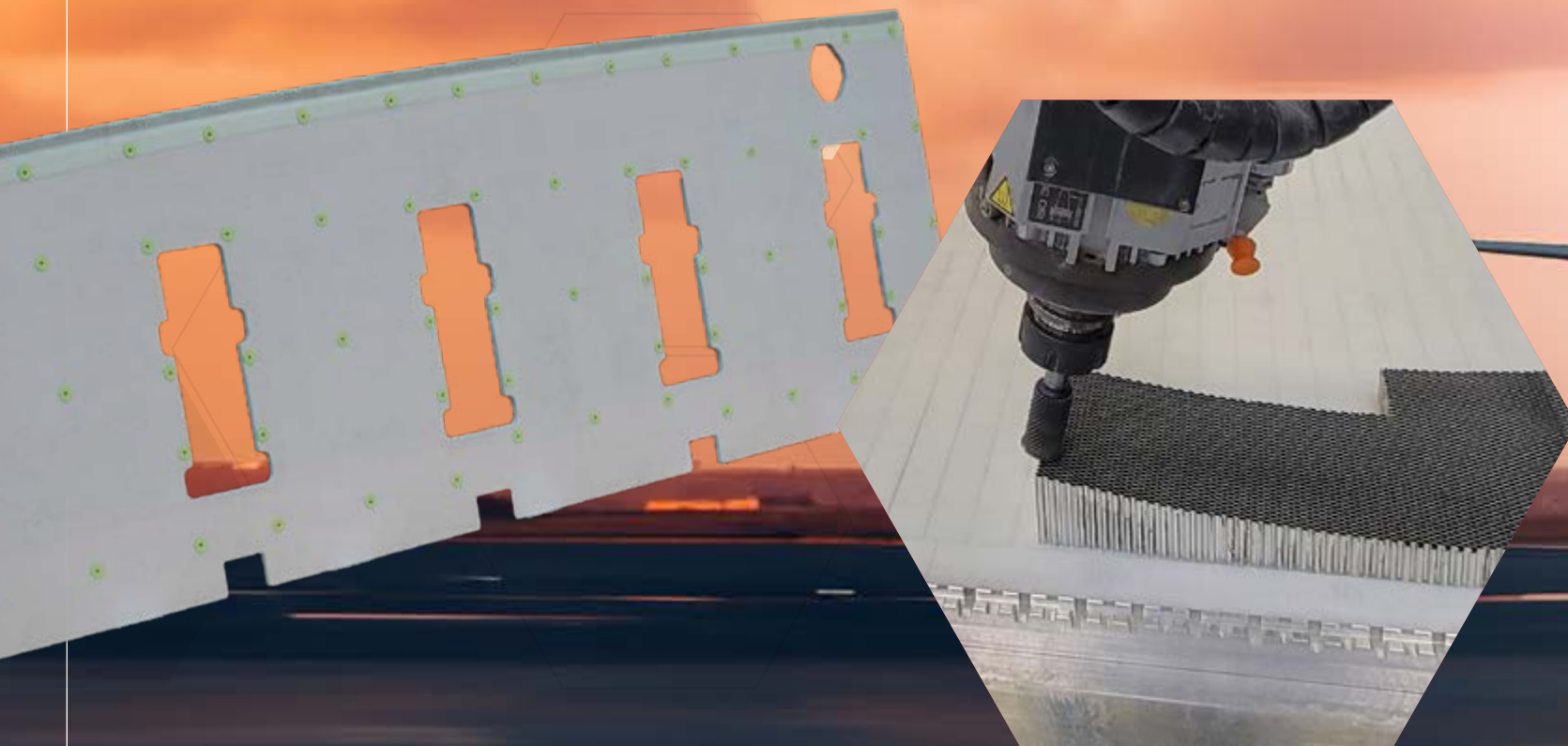
As a leading manufacturer of aluminum and aramid honeycombs, The Gill Corporation (TGC) anticipated the need to expand our manufacturing capabilities to ensure our ability to support OEM's and Tier 1 suppliers with not only block and slice honeycomb, but also fabricated assemblies, machined honeycomb details and bonded assemblies.

In 2001, TGC acquired Alcore, Inc. and Alcore Brigantine, known today as The Gill Corporation-Maryland (TGC-Maryland) and The Gill Corporation-France (TGC-France).

Consistent with TGC's philosophy of vertical integration, this acquisition not only brought the manufacture of metallic honeycomb in-house, but also established Centers of Excellence (COE) for honeycomb machining and special processing in both Europe and North America. Since then, TGC has established a third COE at its headquarters in El Monte, California USA.

Today, TGC has multiple machining capabilities which are used across our product lines. We have saws for cutting basic shapes or slices, 6-axis robots, and almost everything in between.

Our experienced engineering, programming, and production teams utilize 3-, 5-, and 6-axis CNC machines to produce close tolerance machined composite panels and honeycomb details that are fabricated or bonded into complex assemblies. These assemblies are delivered to customers across various industries, including aerospace, space, defense, military, marine, rail, and others.

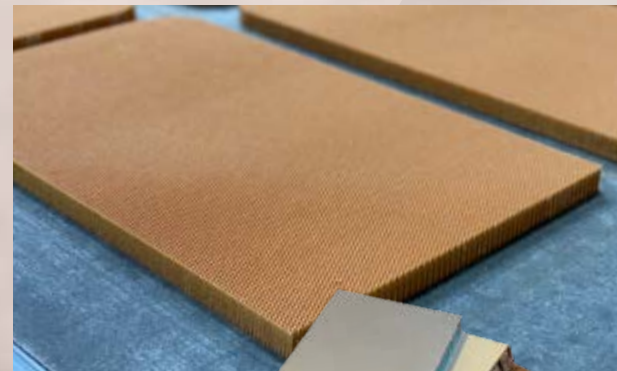




### 3-AXIS

#### CNC Cutter and Router

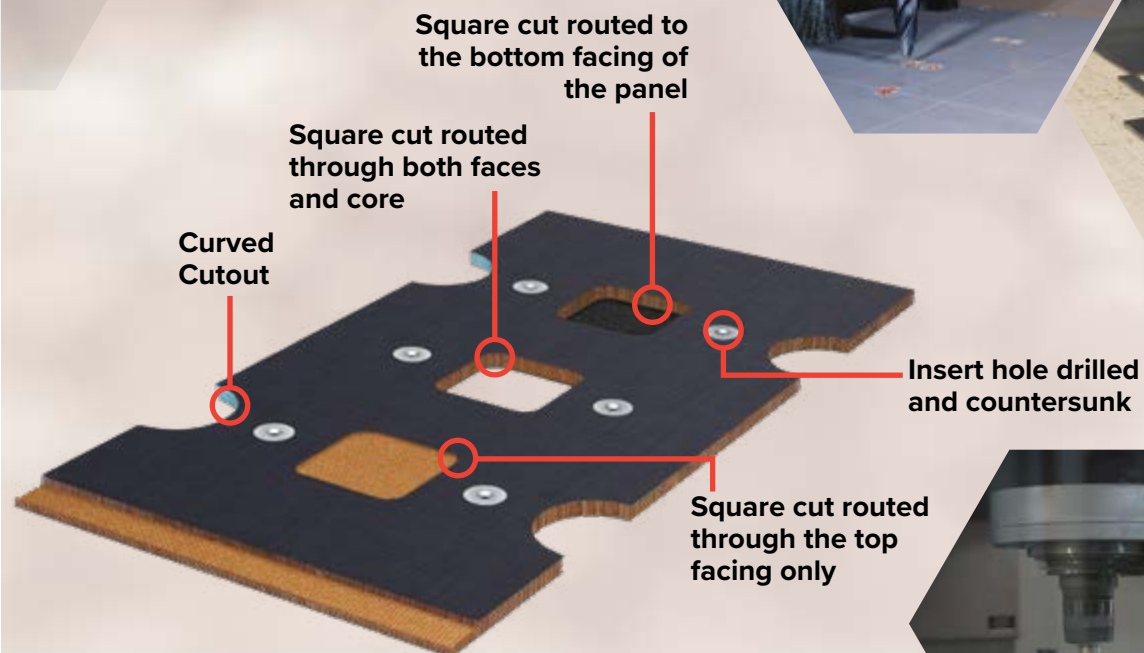
Our 3-axis CNC cutters and routers are capable of nesting blanks on the shop floor with no extra programming and produce semi-finished honeycomb core details. 3-axis routing is an efficient and cost-effective method of machining flat surfaces such as laminates, panels, and sheets. Precise hole locations, various perimeter cuts, and interior cutouts are all possible with 3-axis CNC machining.



#### 3-Axis CNC Machines

The 3-axis machines in our Fabrication COEs are capable of cutting a variety of materials.

- Panels
- Laminates
- Protective layers

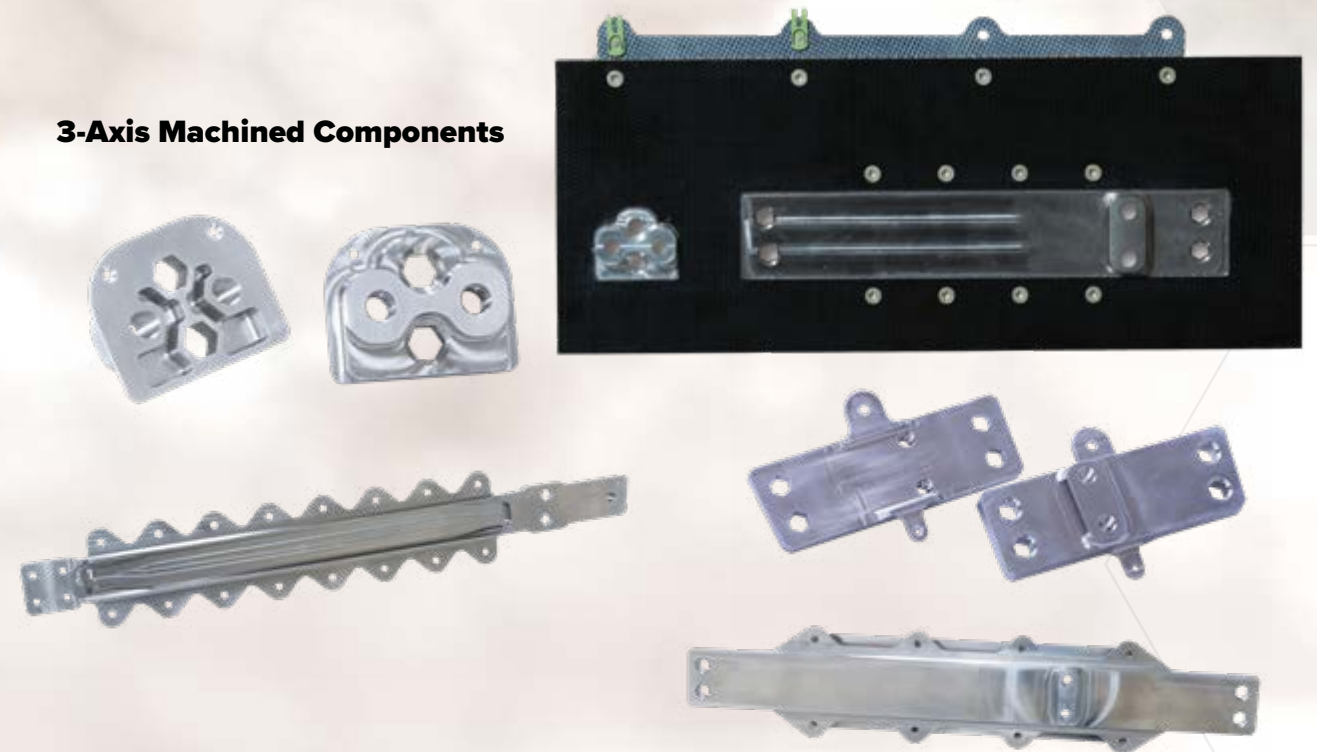


### 3-Axis Milling Machines

We utilize the latest in high performance cutting tool technology. Our rigid, high torque machines combined with indexable tooling and high pressure coolant allow us to machine titanium, aluminum, and other metals with relative ease. Our palletized milling centers allow us to load materials prepped for machining and run "lights out".



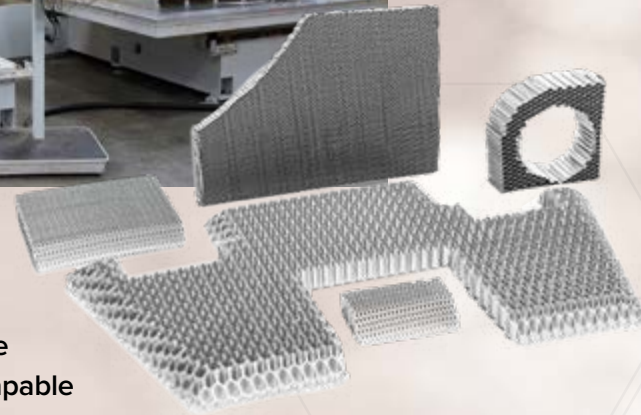
### 3-Axis Machined Components





## 5-AXIS

Our 5-axis CNC machines cut in X, Y, and Z planes and rotate on two additional axes, A and B, allowing parts to be approached from all directions. They can machine metallic and non-metallic honeycomb and composite panels with high precision and consistency, and enable us to make some tools in-house. 5-axis machining is suitable for complex 3D surfaces, wedges, curvatures, interior cutouts, and unique hole locations.



## 6-AXIS

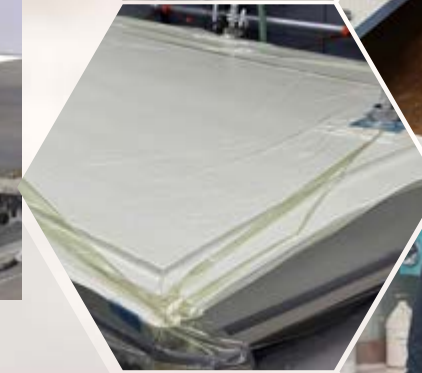
Our 6-axis robots are articulated robots capable of machining in X, Y, and Z planes while also performing roll, pitch, and yaw movements. This allows them to make movements that are similar to those of a human arm. They have the ability to machine intricate curved components and can easily accommodate conventional, ultrasonic, and other machining methods. 6-axis robots also offer labor savings and consistency over hand routing parts.



## FABRICATED ASSEMBLIES

Our value-added capabilities turn composite panels into fabricated assemblies that are kitted and shipped to customers ready for installation. TGC provides fabricated assemblies for both OEM and Aftermarket customers. Based on customer designs, TGC installs and attaches both purchased and vertically integrated components.

- Insert installation: pressfit, swaged, plug & sleeve, blind
- Insulation blankets, vibration damping and sound damping
- Fittings, intercostals, and splice plates
- Edge fill and edge seal
- Wet lay-up
- Painting and priming
- Vacuum bag oven cure
- Anti-skid tapes, part markings, and labels
- Specialized protective coverings

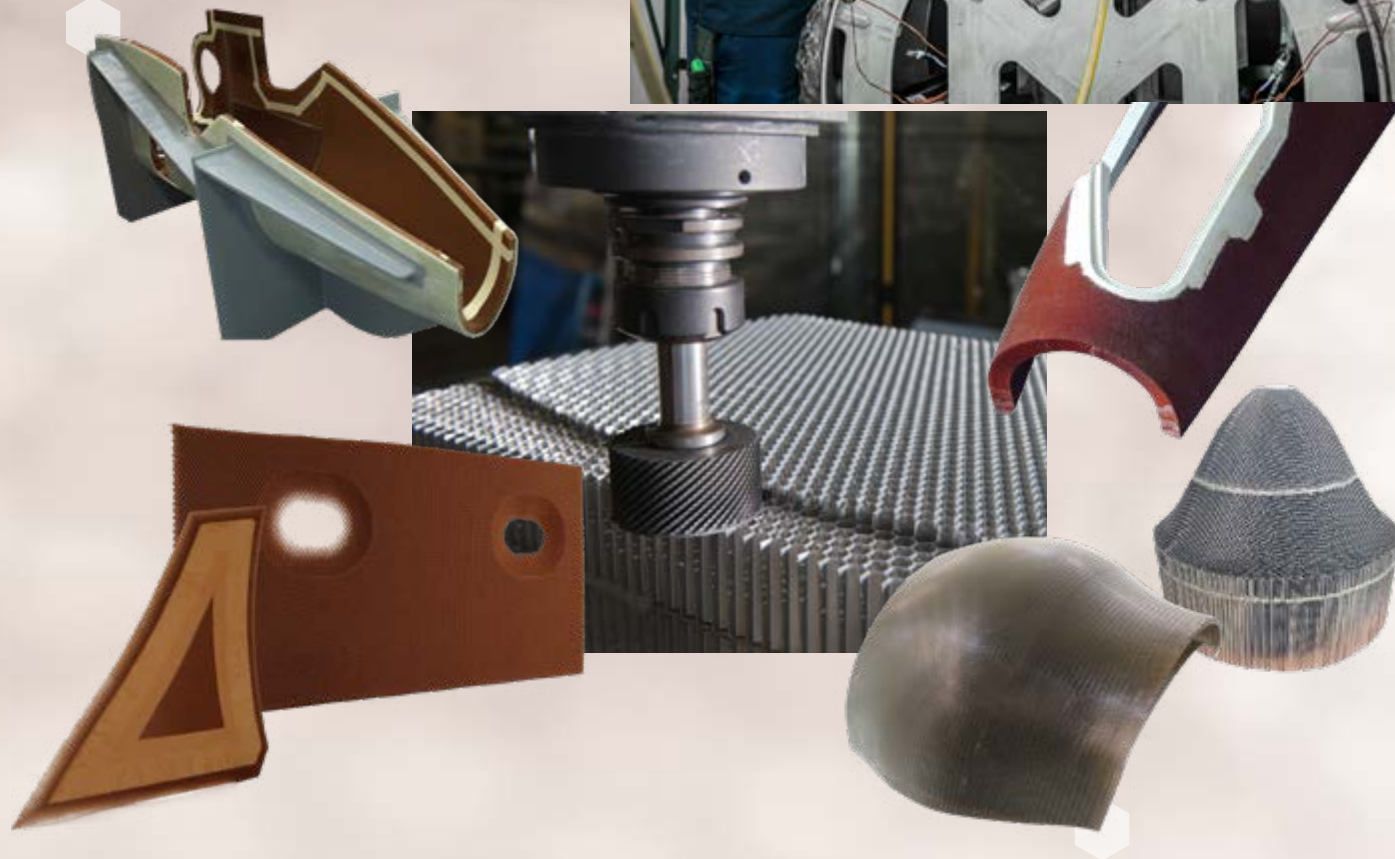




## BONDED ASSEMBLIES

Our special processing capabilities transform machined metallic and non-metallic honeycomb details into contoured bonded assemblies. Materials are processed in regulated Contamination Control Areas (CCA) to enable drop-in condition of supply where customers can eliminate the need for vapor degreasing or any other chemical cleaning of the honeycomb.

- Chamfering
- Cuette milling and expansion of shapes
- Custom countouring (Shapegrid®)
- Routing of rebates
- Core slotting
- Roll forming
- Arc expansion
- Potting
- Splice and septum bonding
- Heat forming
- Vacuum bag processing
- Core stabilization
- Planform trimming



## INSPECTION CAPABILITIES

Our dedication to quality is unwavering, and we are committed to upholding the highest standards of excellence in all aspects of our operations. With our cutting-edge inspection equipment, we can ensure that every part we manufacture meets our customers' standards for precision and accuracy. We follow the best industry practices, and our quality and customer satisfaction are validated by our AS9100 and Nadcap certifications.

### Inspection Equipment/Processes

- Coordinate Measuring Machines (CMM)
- Digital Inspection Arms
- On Machine Probe Inspection
- Liquid Penetrant Inspection





## VERTICAL INTEGRATION

TGC leverages vertical integration to address the increasing demand for sophisticated composite structures in modern aircraft. TGC has established COEs in Europe and North America for specialized honeycomb machining and processing. This strategic expansion broadened our offerings to include not only honeycomb blocks, panels, and laminates but also intricately machined composite panels and bonded assemblies.

### TGC's vertical integration extends to:

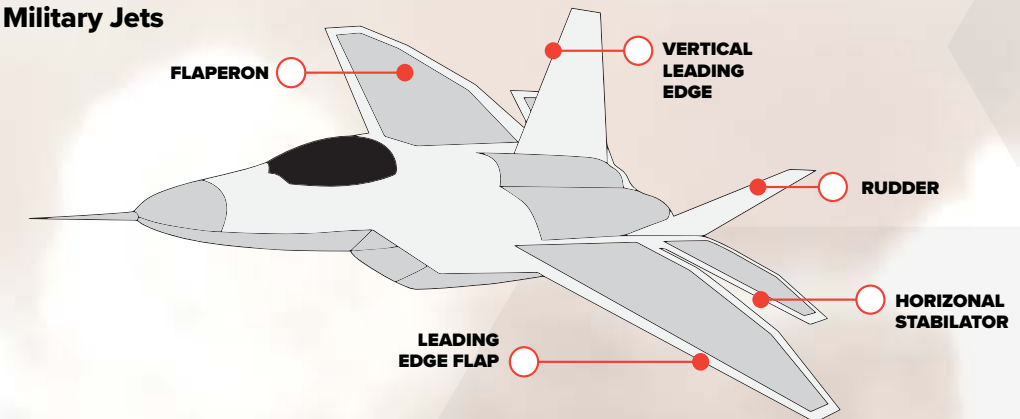
- Resin formulation
- Composites processing of honeycomb, prepregs, and adhesives
- Layup and curing of sandwich panels
- 3-, 5-, and 6-axis CNC machining
- Fabrication and assembly capabilities
- Rigorous quality inspection and testing
- Delivery of finished products kitted to customer production lines

TGC's capabilities allow manufacture of high precision components for diverse aerospace applications, from interior cabinetry to primary structures. Utilizing our vertical integration ensures products meet the highest standards of precision and customer satisfaction.

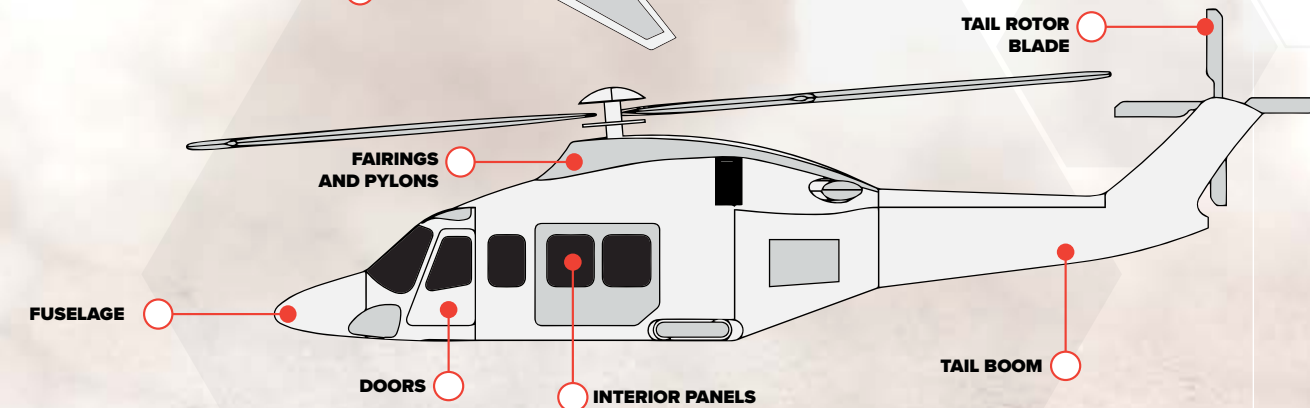


## WHERE OUR PRODUCTS ARE USED

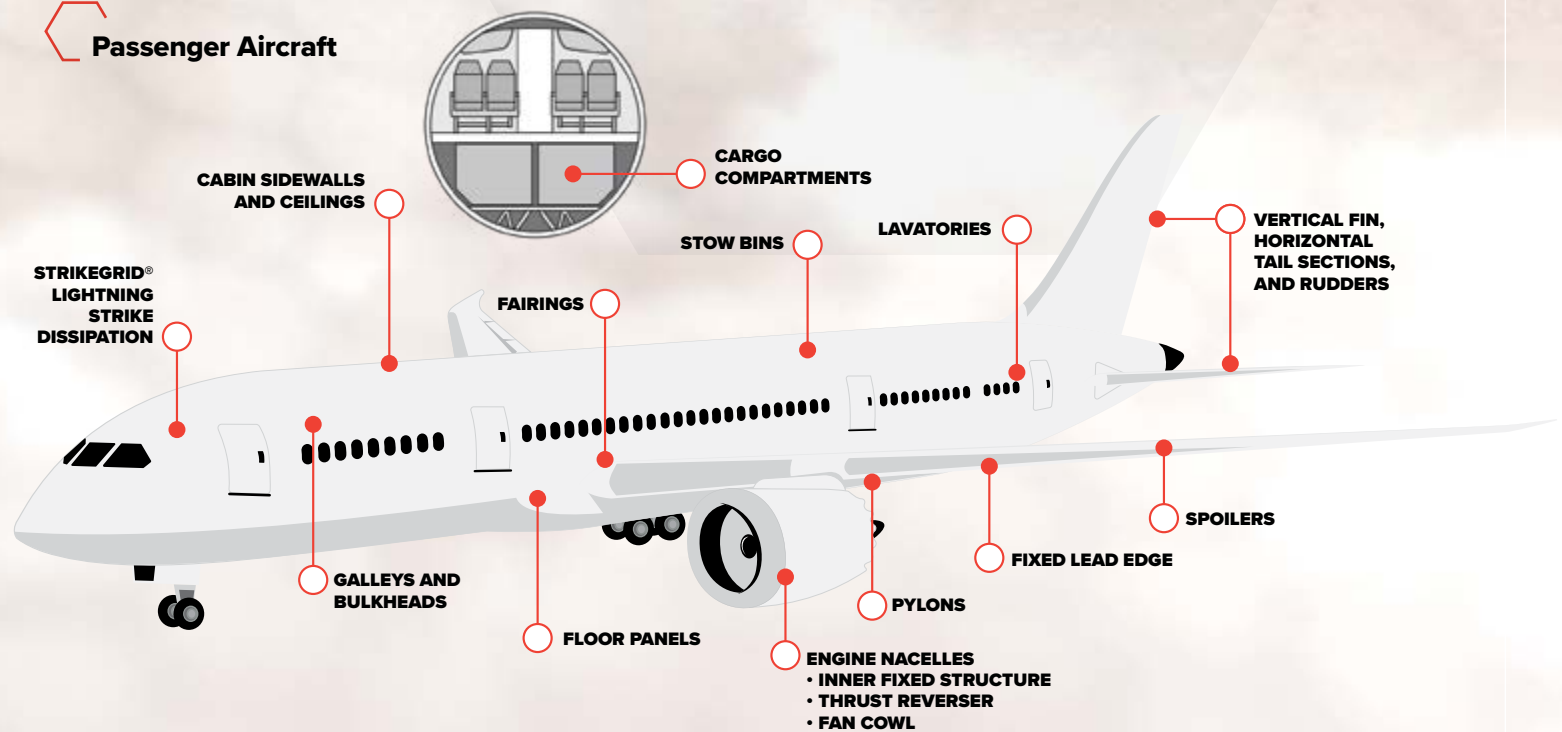
### Military Jets



### Helicopters



### Passenger Aircraft



\*This is not an all inclusive list of where TGC products are used. TGC metallic and non-metallic honeycomb cores, panels, and laminates are sold to customers around the world for use in aircraft applications.

RAW  
MATERIAL  
PRODUCTION

HONEYCOMB,  
PANELS, OR  
LAMINATES

PROGRAMMING

MACHINING

FINAL  
INSPECTION

KITTED PER  
CUSTOMER  
SPECIFICATION

DELIVERED AS  
READY TO  
DROP-IN OR  
FOR SKIN  
APPLICATIONS

FABRICATION  
OR SPECIAL  
PROCESSING

# Fun Facts

*The scientific term for brain freeze is "sphenopalatine ganglioneuralgia."*

*Canadians say "sorry" so much that a law was passed in 2009 declaring that an apology can't be used as evidence of admission to guilt.*

*Back when dinosaurs existed, there used to be volcanoes that were erupting on the moon.*

*The only letter that doesn't appear on the periodic table is J.*

*One habit of intelligent humans is being easily annoyed by people around them but saying nothing in order to avoid a meaningless argument.*

*If a Polar Bear and a Grizzly Bear mate, their offspring is called a "Pizzly Bear."*

*In 2006, a Coca-Cola employee offered to sell Coca-Cola secrets to Pepsi. Pepsi responded by notifying Coca-Cola.*

*The ten highest mountain summits in the United States are all located in Alaska.*

*Nintendo trademarked the phrase "It's on like Donkey Kong" in 2010.*

*The famous line in Titanic from Leonardo DiCaprio, "I'm king of the world!" was improvised.*

*A single strand of Spaghetti is called a "Spaghetto."*

*Hershey's Kisses are named after the kissing sound the deposited chocolate makes as it falls from the machine on the conveyor belt.*

*Princess Peach didn't move until 1988 because it was too complicated for the designers to make her a movable character.*

*To leave a party without telling anyone is called a "French Exit", in English. In French, it's called a "partir à l'anglaise", which means "to leave like the English".*

*If you cut down a saguaro cactus in Arizona, you can be charged with a class-4 felony and penalized with jail time.*

*The Buddha commonly depicted in statues and pictures is a different person entirely. The real Buddha was actually incredibly skinny because of self-deprivation.*

*In Colorado, USA, there is still an active volcano. It last erupted about the same time as the pyramids were being built in Egypt.*

*The first movie ever to put out a motion-picture soundtrack was Snow White and the Seven Dwarfs.*

*If you point your car key remote to your head, it increases the signal range. All the fluids in your head act as a fantastic conductor, allowing you to extend the remote's range by a few car lengths.*



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