

# The Doorway

A Publication of The Gill Corporation

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# Inspection



ANTIMICROBIAL TREATED



Since 1945, The Gill Corporation (TGC) has been dedicated to surpassing customer expectations with our products and services. We maintain an uncompromising commitment to quality, ensuring top-tier excellence across all our activities. Our cutting-edge facilities boast the latest in technological advancements, including 3-, 5- and 6-axis CNC machines for unparalleled precision and efficiency in manufacturing.

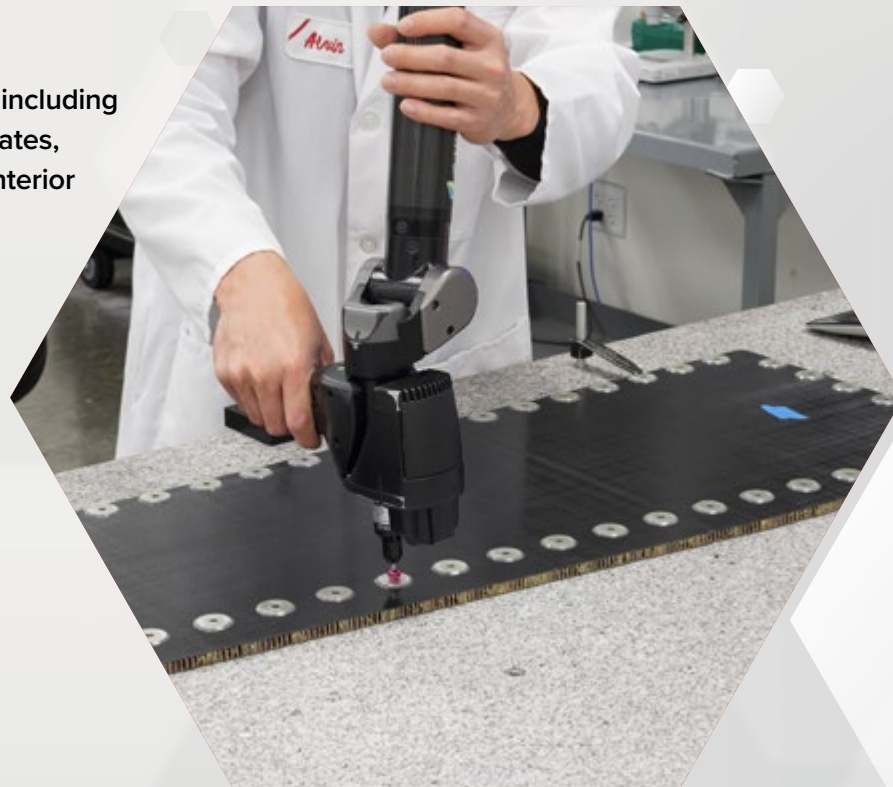
Our workforce comprises of highly trained operators and technicians proficient in handling our sophisticated machinery. We adhere strictly to proven methods with rigorous inspection protocols, utilizing manual or advanced technologies at every production stage. This meticulous approach ensures our products not only meet but exceed the highest benchmarks for aerospace quality and performance.

### **Vertical Integration (Laminates and Panels)**

Our vertical integration allows us to oversee and manage every stage from research and development to design, production, and final delivery. We program sophisticated CNC equipment to machine high-precision, tight tolerance parts to exact customer requirements, converting raw materials into finished parts and assemblies that are ready for installation.

Our products undergo a detailed fabrication process where they are precisely cut, drilled, countersunk, chamfered, and edge finished. Our expert teams install various components such as inserts, insulation blankets, titanium intercostals and completes the part customizations with specific markings and placards tailored to each client's specifications.

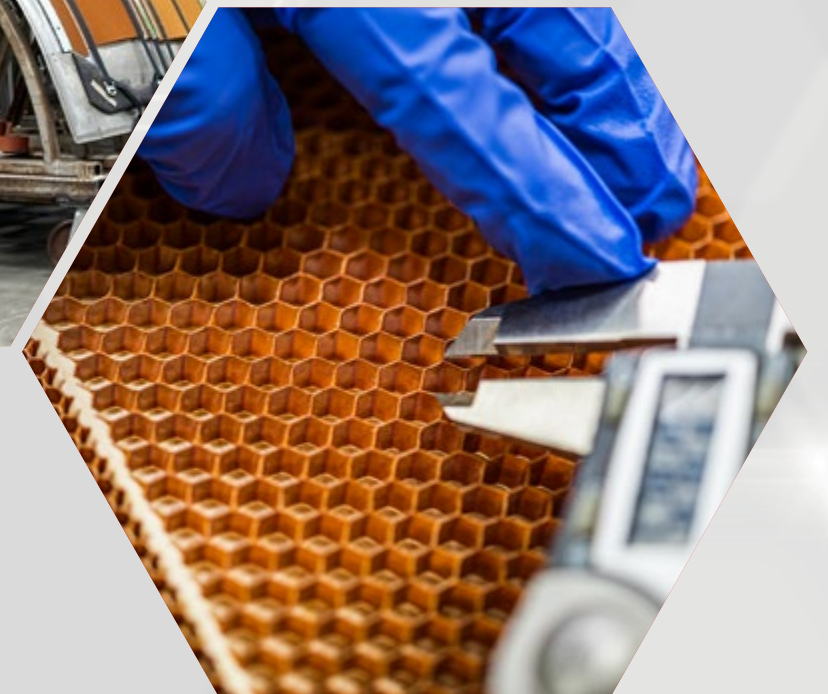
We work with a range of materials including composite sandwich panels, laminates, and produce assemblies such as interior monuments and cabinetry. Before delivery, every fabricated part is subjected to a thorough final inspection, ensuring adherence to our rigorous quality and performance criteria.



### **Bonded Assemblies (Honeycomb)**

Our capabilities in machining and assembling expertise extends to 5-axis machining and the bonding of honeycomb structures. Our skilled assemblers employ specialized foaming adhesives to seamlessly integrate various honeycomb densities and cell sizes into a bonded assembly. When specified, we apply potting compounds into specific areas of the honeycomb core to establish robust attachment hardpoints that can be installed by us, or by our customers during later phases of aircraft or engine assembly.

Inspection is integral to our manufacturing process, with the requisite emphasis placed on inspection as well as on production itself. Our inspection techniques utilize advanced tools like Coordinate Measuring Machines (CMM) and Portable Measuring Arms, alongside traditional instruments such as calipers, height gauges, protractors, and straight edges, ensuring every detail meets our precision standards and customer requirements.





## PRECISION MEASURING INSTRUMENTS

### Coordinate Measuring Machines (CMM)

Quality control is at the forefront of our operational processes, evidenced by our substantial investment in state-of-the-art Coordinate Measuring Machines (CMMs). These machines, where utilized, are pivotal in ensuring that the components we produce meet our exacting standards for precision and accuracy. On these machines, parts are firmly mounted onto a precision-calibrated granite table. The CMM's probe, maneuvered by an overhead gantry, meticulously contacts the part to collect detailed dimensional data. This technology enables us to inspect and verify even the most intricate shapes, confirming that all measurements fall within specified tolerances.

Our expert technicians leverage cutting-edge software and tools to perform rapid, precise measurements, pinpoint any discrepancies, and implement corrections as needed. This rigorous inspection process is our commitment to delivering products that not only meet but often surpass our clients' expectations. With CMM technology, our customers receive assurance that they are getting components of the utmost quality.



### Portable Measuring Arm

The Portable Measuring Arm, a mobile variant of the Coordinate Measuring Machine (CMM), is indispensable for the meticulous dimensional inspection of honeycomb structures, sandwich panels, laminates and machined parts. Its role is critical in aerospace, where precision and accuracy are non-negotiable. This device excels in measuring intricate shapes across various sizes, from minute components to expansive assemblies.

Unlike the CMM, the Portable Measuring Arm is mobile allowing it to be moved for on-the-spot inspections right on the production floor, which streamlines operations by eliminating the need to transport parts for measurement, thus enhancing efficiency. Moreover, the user-friendly design of the Portable Measuring Arm means that even operators with limited metrology experience can conduct accurate inspections.

Incorporating CMM technology, this mobile tool upholds rigorous quality control standards, ensuring that all manufactured items comply with the necessary specifications. The Portable Measuring Arm thus fortifies the manufacturing process with its ability to deliver dependable, precise, and swift inspection services, which are vital for maintaining superior product quality and customer satisfaction.



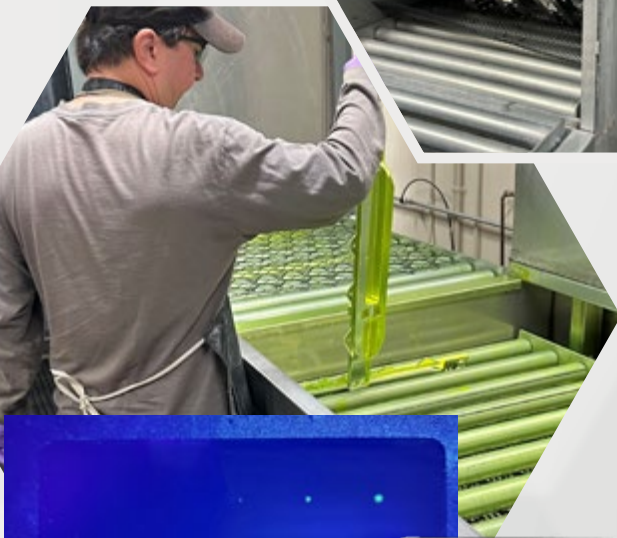


**Geometric Dimensioning and Tolerancing (GD&T)**

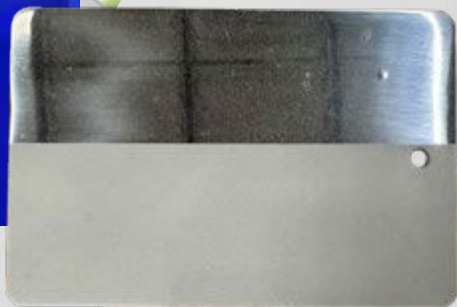
Many of our customers incorporate Geometric Dimensioning and Tolerancing (GD&T) into their engineering designs and data models. By adhering to the ASME Y14.5 standards, our CMM technicians and quality engineers adeptly analyze CMM data to ensure it aligns with the GD&T specifications provided. Our teams possess the comprehensive expertise in interpreting and inspecting against GD&T criteria like surface profile, true position, concentricity, perpendicularity, and flatness, ensuring that our manufacturing processes meet these precise engineering demands.

**Liquid Penetrant**

A common quality concern in metal machining is the risk of cracks and voids forming or existing within the material. If overlooked, these minute imperfections can escalate into significant failures during operational use. To address this, Liquid Penetrant Inspection is employed, where a UV-sensitive dye is applied to the part. This dye seeps into any microscopic cracks, making them detectable under UV light. At TGC, our NDT Level II inspectors, with their advanced training, can identify these tiny defects that are often invisible to the unaided eye. Our liquid penetrant inspection process is Nadcap accredited and meets various aerospace OEM standards, ensuring the highest level of quality control.



Inspection under UV light



**FINAL INSPECTION (PANELS / HONEYCOMB)**

Our final inspection department oversees the visual aesthetics and conducts fundamental dimensional checks of parts, including assessments for thickness, warpage, cell size, and color consistency. Our quality technicians are skilled at comprehending customer specifications and conducting inspections in line with these guidelines. They utilize tools like calipers, height gauges, and straight edges to ensure that our manufactured parts align with the customer's quality standards.



**COMMITMENT TO QUALITY**

Our dedication to quality is top down and bottom up, demonstrated through our robust inspection methods, investment in CMM systems and advanced CAD software, which allow us to produce parts with meticulous accuracy according to our customers' precise requirements. Our adherence to meet or exceed industry standards is reflected in our ISO, AS9100, and Nadcap certifications, underscoring our commitment to quality and customer satisfaction.



For further details, please explore our Quality Certificates available at [www.thegillcorp.com](http://www.thegillcorp.com).



# Fun Facts

*The world's first motel is in San Luis Obispo, which was built in 1925. When opened, it cost \$1.25 for a two-room bungalow with a kitchen and a private adjoining garage.*

*Scotland was one of the few countries able to hold off being conquered by the Romans in the first century A.D.*

*I Will Always Love You was originally written and recorded in 1973 by Dolly Parton. It was written as a farewell to her mentor of seven years.*

*"Opposites attract" is a common myth. People are actually attracted to people who look like family members or those with a similar personality type.*

*Llamas can be used as guards against coyote attacks on sheep herds. Studies have proven that just one guard llama is an effective protector and can even kill the attacking coyotes.*

*If you heat up a magnet, it will lose its magnetism.*

*The most expensive virtual object is "Club NEVERDIE" in the Entropia Universe, which is worth \$635,000. It was originally bought at \$10,000.*

*Birds are the closest living relatives of crocodilians, as well as the descendants of extinct dinosaurs with feathers. This makes them the only surviving dinosaurs.*

*Small as they may be, ladybugs have a unique smell that humans are incredibly sensitive to.*

*During WWII, a U.S. naval destroyer won a battle against a Japanese submarine by throwing potatoes at them. The Japanese thought they were grenades.*

*The Marshal Mathers foundation for at-risk and disadvantaged youth was founded by Eminem.*

*Since 1955, 50% of the population of Niger is consistently under 16 years old. The total current population is 21,600,000.*

*The author of Mary Had a Little Lamb, Sarah Josepha Hale, is most responsible for the creation of Thanksgiving being a national holiday.*

*Chicken Run is the highest-grossing stop-motion animated film, even beating The Nightmare Before Christmas.*

*Nobody knows how the Academy Awards came to be referred to as the Oscars. The earliest mention was in 1932 and was made official in 1939.*

*More tornadoes occur in the United Kingdom per square mile than in any other country in the world.*

*Owners of personalized license plates in Uganda are facing a tax increase of over 300%, which will raise the tax from \$1,498 to \$5,992.*

*Popularized by Shakespeare's play, many people think Julius Caesar's last words were, "And you, Brutus?" In reality, he said, "You too, my child?"*



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