



CGI, Inc.





Extensive design knowledge, diverse manufacturing services, analytical capabilities, and partnerships with customers have made CGI a leader in precision gearbox, precision machined components, and electromechanical assembly solutions.

By Molly J. Rogers

AS A FLEDGLING GEAR DESIGN AND MANUFACTURING company that began in 1967, CGI developed a reputation early on for quality products and innovative solutions, particularly in the medical and aerospace industries. Founded by Don Snow and based in Southern California, the company was named California Gear and Instrument at that time. Garnering customers such as Jet Propulsion Labs and Hall Surgical, CGI continued to grow.

In 1990, Snow decided to move the business with 15 employees to Carson City, Nevada, and it was then that California Gear and Instrument formally evolved into CGI, Inc. CGI became a pioneer in providing standard industrial gearbox solutions along with the established OEM component products that CGI had provided for decades. In the late 1990s, CGI expanded its facility to effectively double manufacturing square footage.

In 2006, Mike Madison and Brian Coclisch purchased the company from Snow. Despite the challenges of the recession, the new owners have taken the company to new heights, making CGI a strategic partner for customers in numerous industries. Last year, CGI's newest building brought manufacturing square footage to approximately 75,000 square feet.

Today, CGI is committed to providing quality products and services that exceed its customers' expectations while offering a broad range of capabilities. With over 80 employees, the team at CGI is driven by engineering and innovation. CGI offers design and manufacturing engineering support to facilitate product realization to its customers, effectively becoming an extension of the customer's engineering and manufacturing footprint.

The company has 72 gear fabrication machines, 39 CNC machines, two facilities, and a global customer and supplier base. CGI serves the medical, robotics, aerospace, consumer, packaging, semiconductor, defense, industrial, entertainment, and energy industries. Certifications include ISO 9001, AS9100, and ISO 13485.

For the gear industry specifically, CGI offers a vast variety of solutions. From the onset of a project, CGI's design engineering group can provide gear design and analysis services or provide a complete turnkey design. These services are not limited to discrete gear components, but also to a gear system (i.e., gearboxes and gear trains).

CGI is vertically integrated in order to provide OEM component products either manufactured from material (bar) stock or to gear-cut a customer supplied blank. Its gear-cutting solutions include hobbing, shaping, bevel gear cutting, gear skiving, and broaching. Depending

on customer requirements, CGI can also provide value solutions such as metal injection molding (MIM), powdered metal (PM), or plastic injection molding (PIM).

Additionally, 70 percent of the products provided by CGI are assembled mechanical or electromechanical products. CGI's manufacturing engineering group can provide support from prototype to production with services from validation testing to Kanban programs. The company also provides an offering of precision planetary servo gearboxes to interface with NEMA and metric motors that can ship the day it is ordered. These products are contained within a robust quality management system (QMS) that includes gear testing, analysis, and the latest inspection equipment.

While CGI provides gear-cut services for a range of pitches, it specializes in fine pitch precision gears (down to 160 DP). The company thrives on challenging designs and parts that often daunt others such as autoclaveable assemblies, low backlash/low friction gearboxes, high rpm gear systems, and harsh operating environments. Product quantities can be low volume prototypes to higher quantity production.

"Thriving on challenges — coupled with our extensive design knowledge, diverse manufacturing capabilities and services, analytical capabilities, and willingness to collaborate and partner with customers — set CGI apart from others in the industry," said Mike Madison, CEO of CGI. "Our world-class equipment and process improvement initiatives such as Six Sigma and Lean are also differentiators."

CGI has gained the trust of many customers due to the collaborative nature of its relationships. CGI and its customers work together toward the common goal of efficient,





robust, and cost-effective solutions. An example of this collaborative process is when a new customer approached CGI regarding a competitor's popular off-the-shelf gear motor solution that did not work in the customer's application. The customer was in a "line down" situation, rejecting approximately 80 percent of the existing incoming product, and they requested CGI's assistance in characterizing and understanding the problem. After careful analysis, it was determined that the competitor's off-the-shelf gearbox had inconsistent performance that led to failures on the final product. Consequently, CGI designed a prototype custom gearbox that was fabricated, assembled, and shipped in two weeks. This gearbox was successfully integrated to the existing motor, and CGI continues to provide this product.

With this situation and many other similar successes, CGI has developed a loyal and expanding customer base, and being able to

respond to its customers as well as industry challenges is a priority for CGI.

"Our customers are pushing smaller package sizes that, in turn, translate into challenging smaller and more complicated components," said Brian Cocolich, COO of CGI. "Customers are also pushing the envelopes of the speed (rpm) of the devices, so we are seeing that custom solutions are becoming more prevalent."

CGI also faces continued pressure from offshore competitors along with shorter lead-time expectations. And there are stricter requirements in the medical industry regarding documentation and control as well as stricter environmental requirements, according to Madison.

In order to meet these expectations and maintain its position as an industry leader, CGI continually invests in technology such as CNC gear hobbing, automation, multi-tasking, EDM, passivation, and laser weld.

For its future plans, CGI sees growth in gear grinding capabilities, continued investments in automation, and new industries.

"We will also pursue new technologies and further develop our MIM, PM, and PIM capabilities along with expanding our mechanical/electromechanical assembly capabilities," said Cocolich. "Furthermore, CGI will continue to partner with companies in new and exciting industries such as robotics, 3D printing, autonomous vehicles, and the Internet of Things."

As CGI expands its own offerings, the company also takes the time to assist its local community through projects such as the FIRST Tech Challenge (FTC), a competition for middle and high school students to design, build, program, and operate robots. In addition, the company provides scholarships to the local college, doing its part to prepare the next generation. ☀

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