

# New Software Technologies Make *Faster, Better, Cheaper* a Reality

With a new CAM package a moldmaker/molder can now receive a job in digital format and actually cut metal before it even outputs drawings.

**Mitchell T. Bossart**

Ed Ingram started Plasticraft Manufacturing in 1972 as a small plastic molding facility, and today it employs more than 120 people in its 175,000-square foot Alabama facility—running three shifts five days a week. A newer plant in Iowa, created primarily to better service a key customer, employs an additional 40 people. The company does the majority of its work for the office furniture industry, designing and building nearly 80 percent of its molds in-house. However, there was a time when Plasticraft had a large and profitable business in the power tool industry. Then, out of the blue, the power tool industry moved 95 percent of its work to China, virtually overnight.

This was a major blow to the company's bottom line. The reality of global competition slapped the company directly in the face. The idea of lean manufacturing was no longer a fad, but a reality for survival: increased production, reduced waste, streamlined processes—all became hot topics of conversation. Gordon Tubbs, who was a machinist for 12 years before becoming tooling designer at Plasticraft explains, "We had to seriously re-evaluate the business." Representatives from the company spent several weeks visiting other shops throughout the U.S., observing how they did things: what worked, what

didn't, and then created a list of how they could do things better going forward. Tubbs continues, "The whole situation helped inspire the company to invest more in technology so we could optimize operations—faster, better and cheaper."

## The Software Challenge

For Plasticraft, this meant it had to deal more effectively with the growing number of 3-D solid models that were coming in the door. Since they were receiving CAD files primarily from Pro/ENGINEER, they purchased the product, but found it took awhile to get up to speed. "It wasn't just an overnight thing; it took about three to four years to get everything upgraded, integrated and learn the software." Investing in a CAD system for solid modeling was one step toward optimizing operations. And benefits were already being realized in the way of reduced leadtimes and improved design efficiencies. However, there was another problem that the solid modeling technology itself seemed to create; the contoured shapes so easily created in solids were difficult to program for machining.

Plasticraft had already invested in the latest CNC machines, but they simply didn't have the programming technology to deal with the complex shapes. The company was forced to go to a higher

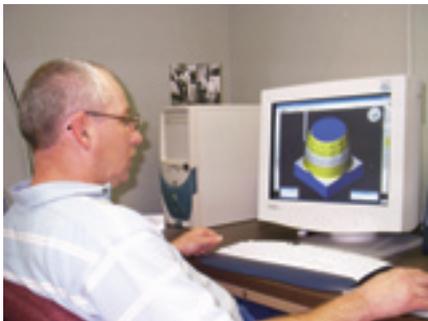
level—a higher end technology that could flawlessly import solid model files and then quickly program the jobs—thereby eliminating bottlenecks out on the shop floor. Tubbs explains, "Because everything is more complicated as you go into 3-D, we struggled to find ways to program and machine these parts. That's when I started to investigate computer-aided manufacturing (CAM) software packages."

## The Software Solution

Several companies were invited to Plasticraft to provide a demonstration of their CAM software. But only one of these companies actually offered to cut metal—Gibbs and Associates (Moorpark, CA)—so Plasticraft decided to buy its GibbsCAM product.

"With our old programming system, on a moderately complex part, it might take three days to do all the programming," says Tubbs. "With GibbsCAM, we can have that same job programmed in half a day." Plasticraft's legacy system required bringing the work into several different modules to perform each operation or process. And carrying the geometry back and forth between modules was time-consuming. Not only that, but the old system required the creation of several different views (section, plan, etc.). These

Photos courtesy of Gibbs and Associates.



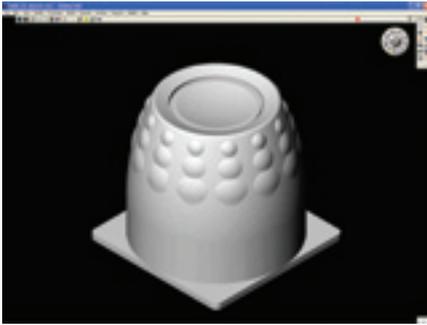
Programmer Scott Cain uses GibbsCAM's cut part rendering to validate machining accuracy of the core before sending the file to the shop floor.



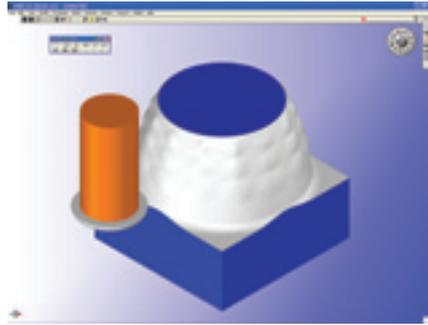
This core and cavity was machined on a Mazak V65/60 vertical milling machine at 1,500 rpm, 12 ipm using a ½-inch HS cutter.



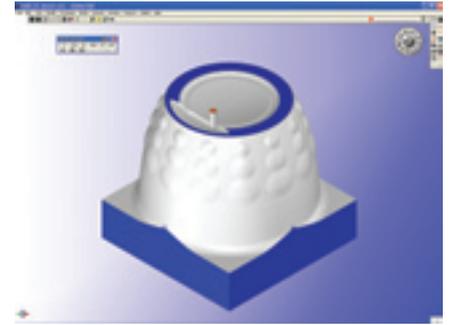
Gordon Tubbs (left), tooling designer and Scott Cain (right), programmer, look over the core and cavity after machining.



After importing it from a CAD file, GibbsCAM renders the solid model of the core.



Roughing routine of the core represented in GibbsCAM's cut part rendering. Roughing pass performed at 2,000 rpm, 60 ipm using a 2 1/2-inch carbide inserted cutter.



Finishing routine of the core represented in GibbsCAM's cut part rendering. Finishing pass performed at 4,000 rpm, 20 ipm using a 1/4-inch carbide end mill.

views then had to be hooked together. Plus, if any changes were necessary, the program had to be completely rewritten.

However, GibbsCAM is a completely integrated software program that allows operations to be completed all in one place—no dragging files from one module to another. The integrated CAD system within GibbsCAM allows the user to make quick changes to problem areas while maintaining associativity. Therefore, if something needs to be changed, all other areas update automatically—no matter where one is in the programming process. These and other modifications can be done on-the-fly, which maximizes programming time.

Now, when the company receives a job in digital format, Plasticraft can actually cut metal before it even outputs drawings. "I can directly export the 3-D solid CAD file and then import it right into Gibbs [no data translation is needed because Gibbs supports many CAD file formats] and begin programming," notes Tubbs. "I can pass the job directly to the guys in the shop without having to give them a detailed print. Back in the 2-D days, nobody could do anything until we got the tool designed. We would have to completely finish the job, plot it out on paper drawings and hand it over to the shop—only then could they go to work. We have reduced leadtimes just because of the better software." For Plasticraft, this means being able to take on more business and better serve its existing customer needs.

Plasticraft also can build and manufacture complex molds that were previously too difficult to handle without GibbsCAM, which provides an efficient way to program just about any job that comes in the door. Tubbs explains, "Once you learn the progression of how to program in

GibbsCAM, it all falls into place. I have a machinist's background and in the machine shop you have an orderly fashion in which you go about doing things to create a specific part. GibbsCAM allows you to do the same thing, only on the computer—such as selecting tools and choosing processes—and then puts it all together for you. It is basically like me taking a center drill, putting it in the machine and drilling the hole in a certain location manually, but now I am doing it electronically. GibbsCAM is very easy for old machinists like me to understand!"

### Achieving the Goal

With the new technologies, Plasticraft's goal of "faster, better, cheaper" is quickly becoming a reality. However, they didn't have to change everything. The company continues to provide a virtual one-stop shop for its customers' plastic-injection molding needs. "Most other shops stick to a certain sized tooling and streamline their shop to that size tool," says Tubbs. But Plasticraft is different. It aims to provide wide-ranging solutions, hoping to meet as many customer needs as possible. Consequently, the company has more than 30 plastic-injection molding machines ranging between 40- and 1,500-tons. Two bulk resin silos automatically load material into the plastic-injection mold machines, which keeps operations going around the clock. Further, the company warehouses a large quantity of replacement mold components for its customers, which shortens downtime when mold repair is necessary.

Moldmakers in today's world need to anticipate market forces as best they can, since customer needs will change. Some changes can be anticipated, but many cannot—especially with the movement of

manufacturing work around the world. The question is, what can you do now to keep your business competitive? Plasticraft has answered many of its questions with technology solutions. And market forces are changing again. This year, the manufacturing recovery in all of North America has been very solid, reportedly producing real growth rates of around 4 percent. This is not as spectacular as China, where industrial production jumps 12 to 15 percent every month, or India, where output is at a rate of more than 10 percent each month. But it is a sustainable, solid growth pattern that is likely to continue.

And it is a different day at Plasticraft. Its investments in technology and ability to change with the industry have paid off. Plasticraft is again winning work from the power tool companies, which are bringing some of their molds back to the U.S. "Even if we don't make the tool," says Tubbs. "We will quote a job to run the parts. We also have run into customers who were not satisfied with their work done offshore." Plasticraft is working to officially validate their processes by seeking ISO 9002 certification. And GibbsCAM software is not only helping the company take on more jobs, but also is helping them to do things more quickly. "There is no comparison to the way we used to do things without GibbsCAM." But when all is said and done, Plasticraft did it for their customers, to provide the best service possible while maintaining the highest integrity. In a local or global market, that kind of philosophy still wins the day.

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For more information contact **Gibbs and Associates** (Moorpark, CA) at (805) 523-0004 or via its Web site at [www.GibbsCAM.com](http://www.GibbsCAM.com); or, **Plasticraft Manufacturing** (Albertville, AL) at [www.plasticraftmfg.com](http://www.plasticraftmfg.com).