

## CAM Capable Shop Grows, Meets Foreign Competition

**Learning the metalworking business from the ground up, by sweeping floors in his father's shop, a California machine shop owner today relies on state of the art CAM programming for expansion.**

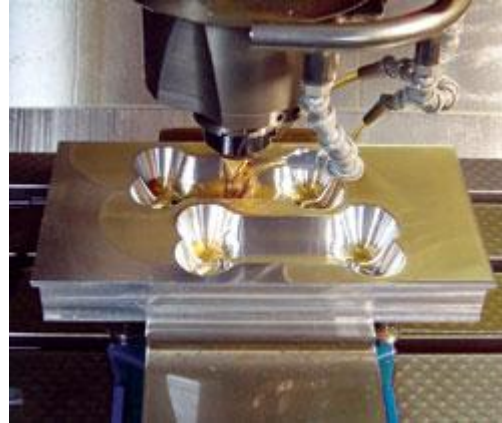
Tom Muggleton, owner and operator of Tom's Machining Service (Cerritos, CA), has a rich and diverse history in manufacturing. He first started getting comfortable with machining when he was nine-years-old at his father's gun drilling shop. Like most kids in family businesses, he started off by sweeping up the shop after school. Over time, Muggleton learned to use a micrometer and other tools, and also did a variety of tasks such as pulling chips off of the machine, and changing parts.

After working at his dad's shop for 16 years, Muggleton decided he wanted to diversify his experience, so that his skills would be transferable to any shop in the country.

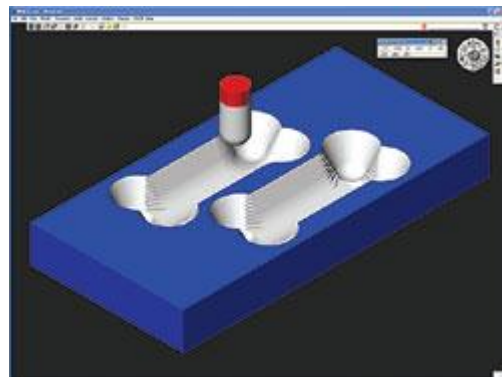
His depth of experience, even at the age of 24, got Muggleton into many doors where he quickly moved into management positions, soon achieving his goal of widening his machining and manufacturing experience. However, he eventually found the work unchallenging and he got bored. Thus was born the idea of starting his own business.

At first, he worked from his garage while still maintaining his full-time job. After about one year, Muggleton decided it was time to go off on his own. He quit his full-time job, moved into his own space at a local industrial park, and bought more equipment.

Today, Tom's Machining Service does mostly prototype and repair work, with some medium size production runs. The company does work for a variety of industries including aerospace, medical, automotive, consumer, and others. Muggleton's customers find it very valuable working with a shop whose owner and primary contact offer such a deep understanding of machining and manufacturing. "I provide consulting to most of my



Tom's Machining Service produces 70/75 aluminum mold plates on a Fadal 40/20 VMC. The mold was directly imported from a Pro/E file into GibbsCAM Advanced 3D.



customers on machining, manufacturability of designs, and other areas like heat treating, selection of bearings, strength of materials, assemblies, and more. Sometimes the design engineers don't really understand or have experience on the manufacturing side, and I am able to bridge that gap," adds Muggleton.

For 12 years, Tom's Machining Service had been a conventional shop doing manual machining on lathes and mills. After Muggleton was married, his wife, Wendy, started to help out by doing administrative tasks, business accounting, making deliveries, and anything else she could do to help out her husband. He realized that they could only produce a limited amount of work—and he was the only machinist. But he also knew that he didn't want the hassles of hiring and managing employees, at least, not anyone outside the family.

After much thought and research, Muggleton purchased a Fadal vertical milling CNC machining center, and GibbsCAM (Gibbs and Associates, Moorpark, CA) for CNC programming. He bought the software, seeing it as another way to increase his productivity.

### **New challenges.**



Using a flexible CAM program, Muggleton feels confident about being able to produce whatever a customer brings in the door.

The young machinist had never before worked on a computer, and Wendy had only limited experience with office applications. However, Wendy was definitely more geared to the computer than her new husband. "I hadn't even touched a mouse before we got the CNC programming software," he adds laughing. Wendy, however, immediately began learning the GibbsCAM program. "I had some computer background but not a lot. I used the GibbsCAM user manuals and they provided us with in-house training, which was very helpful," says Wendy. Additionally, her husband's seasoned experience in manufacturing helped to guide Wendy to early programming success, but they both credit the software. Wendy continues: "It is so easy to use. GibbsCAM's slogan is true: 'Simply Powerful. Powerfully Simple.'"

Muggleton and his wife were programming and producing simple parts within one week.

Muggleton states: "Our biggest year in the company's history was the first year that we had the CNC machine with the Gibbs software." Because both now program together using the GibbsCAM software, programming time has been drastically reduced and part production has greatly increased. "She is my CNC programmer and operator, and I am the setup man."

### **Overseas Competitors**

Intense competition from overseas and a paradigm shift that includes just-in-time inventory have greatly affected many shops near Tom's Machining Service, some even

being forced out of business.

Where typical customers in Muggleton's area used to request medium size production runs, now they just want a few parts, because inventories are kept lower and a larger portion of production work is getting shipped overseas. This has had severe consequences for nearby shops that relied on production runs and had their operations set up to accommodate this type of business. Although the production run jobs are now harder to get, Muggleton has noticed that the opportunity for prototype work has increased, since this kind of job often requires many iterations before settling on a final design, and shipping it overseas just doesn't make sense. Muggleton concludes: "Not only can I produce short run parts more quickly and profitably with my new technologies, but also, Wendy has become so accomplished at programming the GibbsCAM software that she is now able to handle any part that comes in the door—no matter how complex. This is a great advantage to a small shop like ours."

### Digital Input

Another change in the manufacturing landscape that Tom's Service is now seeing: more files come in electronically in 3D, whereas, in the past, it was more typical to receive hardcopy prints. Having the latest technologies, again, has become a great advantage.

"Some of my customers really like that I can directly import their Pro/ENGINEER or SolidWorks or other CAD files directly into my GibbsCAM system. That way, they don't have to jump through hoops to provide me their data, and I don't have to hassle with drawing and dimensioning. This is a real time saver for both of us."

Muggleton and Wendy often work seven-days a week to meet customer demand. If a customer comes in Friday afternoon and wants a part by Monday morning, he and Wendy make it happen. However, the hard-working couple imagines a day when they will be able to take their weekends off. And they both see the continued investment in technology as a way to realize their dream. Tom's Machining already has been able to run jobs unattended on its CNC machines, due to his confidence in their programming software, which include verification tools such as Cut Part Rendering. "I can dry run any part on the computer and verify machining accuracy to an exact degree. If the part machines perfectly on the computer in GibbsCAM, it will on the machine—every time."

As a smaller shop, being able to handle a wide range of jobs helps Tom's Machining Service win more work. One of the company's regular customers makes sculptures for museums. They are usually made out of stainless steel, and some of the components are put together mechanically, such as the base, threads, pipes, and other apparatus.



Machined from a blank of 304 stainless steel, this constant pitch screw was programmed using GibbsCAM's Advanced Rotary.

“I was asked to machine a 4.0" taper pipe thread in a stainless base. The part was too big to swing in a lathe, which would be the conventional way to machine the thread.” Muggleton knew that he could just mill the threads on the vertical CNC machining center, since thread milling is a common feature for a CNC, but not common to many shops in and around Tom’s Machining. “I had to rely on the GibbsCAM software to program it for us. We never thought we’d be doing advanced rotary milling, but because GibbsCAM had the capability, and Wendy has become so accomplished at programming, we have successfully completed this kind of work and more.”

The couple is furthering their education on the GibbsCAM products at a local community college (Cerritos College, Cerritos, CA) in Advanced 3D Machining. Muggleton sees great future opportunity in machining parts designed in 3D. “We are concentrating on 3D because it is very difficult to machine from parts designed in 3D.

“For a small shop like ours, it was a big leap to invest in these technologies, but now we realize it is the best thing we ever did.”