

CNC West

"On Your Mark, Get Set . . . Go CNC! A Tool And Die Maker Turns A Hobby Into A Racing Success."

April/May 2002

When does a shop know that it is time to invest in CAD production —

machines, software, personnel, and training? For any machine shop owner, the answers to when and how to expand rest on a sequence of factors. The story of the birth of Cobra Motorcycles shows how one entrepreneur combined vision, hard work, careful planning, and conservative financial management into a success story—a dream made possible only by a venture into CAD/CAM/CNC production.



A Bootstraps Operation

Bud Maimone, a tool and die maker since 1972, opened his own plastic injection mold shop in New Middletown, Ohio in 1983. He and two other operators produced and repaired molds on manual machines for Rubbermaid, among several other manufacturers in the greater Youngstown, OH. After 2 years, Main Street Molds moved from its garage shop to a nearby 4,000 sq ft building.

Due to a lack of in-house capability, Main Street Molds was outsourcing a considerable amount of precision work. Even so, at its peak, the company generated sales in excess of \$500,000 annually. Like most smart businessmen, Maimone reinvested surplus income in his business. Unlike many entrepreneurs, however, Maimone had other interests outside his business, namely his wife, son Brent and his long-term interest in repairing motorcycles. He also became heavily involved in youth motocross racing.

Shifting Career Gears

Pursuing his interest in motocross, Maimone soon learned that youth racing cycles in the 50cc class were little more than lawnmower motors on a bare-bones frame with motocross trimmings. They lacked the suspension, strength and handling of a true dirt bike. He also discovered that a high-quality, true racing-class 50cc bike was available nowhere. This, he calculated, was a real opportunity. Maimone envisioned starting an entirely new business that he would call Corbra Motorcycles. The problem was that, if he dropped all of Main Street Molds business, he would be risking everything on an untried venture. Also, he would have to begin at an extremely high-quality production level in order to capture the market from existing manufacturers like Japan's Yamaha and the Austrian KTM cycles. It also would be difficult to obtain financing with no immediate cash flow to back up the monthly payments.

Cobra Startup

In 1993, Bud Maimone met with his banker for advice on raising the money necessary to finance the Cobra startup. Since Maimone deliberately had established an excellent credit record, his banker was very receptive to the new proposal and recommended development of a business plan. The banker suggested a visit to a local group of retired businessmen, who would help him form the plan. As it turned out, the idea was such a good one, Maimone began receiving funds even before he had a business plan.

Ultimately the plan included continuing the Main Street Molds operation as-is while Bud and wife Sunny began Cobra Motorcycles, living on income from Main Street Molds and plowing all profits from motocross sales back into Cobra.

Success Builds Success

During the 1994 motocross season Bud Maimone's new Cobra bike gained notoriety as his son, Brent, won numerous events, up to and including the national championship for 7 and 8 year olds. In fact, Cobra riders took every American competition during the bike's first year of production. So into the mechanics of the bike was Brent that, when dirt fouled his carburetor in a championship run, he upended the bike, cleaned the carb, and took off again to win despite the impromptu pit stop.

The 1994 Cobra sweep immediately propelled this American-made rocket to the forefront of 50cc racing. Every rider who hoped to contend in the following season (See photo previous page.) realized they would have to

purchase a Cobra to be competitive. The result was that Cobra Motorcycles instantly gained a large market share in this small market. This is probably the most significant factor in the growth of Cobra Motorcycles; instead of trying to compete against large companies by introducing a variety of models, Mr. Maimone chose to specialize in a class where he could take a major market share without being challenged; it was only a small piece of a very large pie.

Expanding The Market

Because of the Cobra's success and the cost of research and development to compete in such a small market, most of the large competitors opted to leave the class. As a result, in 1995 Cobra was required to increase its staff to eight to meet the soaring demand.

When the 1997 season rolled around, Cobra introduced a smaller bike, the CM50, to compete in the four- to six-year-old class. This class is even smaller than the seven- and eight-year-old class but its long-term effect was powerful. Cobra became the young racer's first bike: a real racer rather than, as Mr. Maimone puts it, "a lawnmower on two wheels." As a result, riders were more inclined to stay on Cobras when they moved up to the next class. Additionally, these new sales helped the company increase cash flow and profitability. While many parts and assemblies could be adapted to the CM50, its reduced seat height, shorter axle-to-axle length and, for safety, slightly reduced horsepower required some reprogramming and purchase of a different scale of outsourced parts.

CNC + CAD/CAM = Productivity

It was during this time that Maimone realized his present equipment and facilities were not going to be adequate to support his growing business. In addition, the poor quality of the lathe work he was subbing out was costing money and, more important to the rapidly growing company, time. So, Maimone began to research and eventually leased a Daewoo vertical machining center and lathe. After researching the software market, he purchased one seat of Mastercam software, read the manual, and began producing parts by the end of the first week.



Though his first CAM trainee didn't know how to program, he understood the concepts of programming. As had Maimone, he made some progress from the Mastercam manual and the program's intuitive user interface.

"Mastercam was very easy to use," says Maimone. "It allowed two guys who had no knowledge at all of the program to read the manual, fumble a few times, and get it into basic production. It's a very sophisticated program, with a lot of tool, time and material-saving features we used right off. We sent our programmer to Mastercam for schooling to hone his skills. Between us, there wasn't a machined part we needed that we couldn't design and produce."

Growing Into Mastercam

Maimone took full advantage of Mastercam's design capability, ease of toolpathing and toolpath associativity. They improved existing designs or redesigned parts, prototyped them and got into production within days rather than weeks, as before. The investment in Mastercam gave Cobra and Main

Street Molds hands-on quality control, faster turnaround and lower cost per part. The costs were offset by working in-house rather than outsourcing, plus increased production with the same crew.

"The engine casing was our most intricate part," recalls Maimone. "It was so intricate that we couldn't have done it without Mastercam. Using what was then Mastercam Basic, we carved away rough toolpaths from the original design on billet. We left stock where we felt fine-tuning might be needed, then test-ran it, did some final tweaking, tested again and then finalized the toolpaths. Mastercam's toolpath associativity was a lifesaver in this whole process. Every time we changed the design, we just clicked on "regenerate" and the toolpaths followed all the changes.

"We also designed the molds for casting the engine cases. This was before there was Mastercam's Moldplus add-on to do the work. We just manipulated the geometry in Mastercam until we got it to work. It was only because Mastercam has such built-in flexibility that we could accomplish it seconds. By 1997 we had purchased Mastercam Mill v. 7.2 and, of course, Moldplus. The mold shop part of the operation then built more complex custom injection molds for some of our major customers, the copier industry and a general run of other custom molds.

Cobra production had increased so dramatically that Maimone hired a plant manager in 1999 to run the shop for him. That was also the year the company ceased making molds for other companies, he reports.

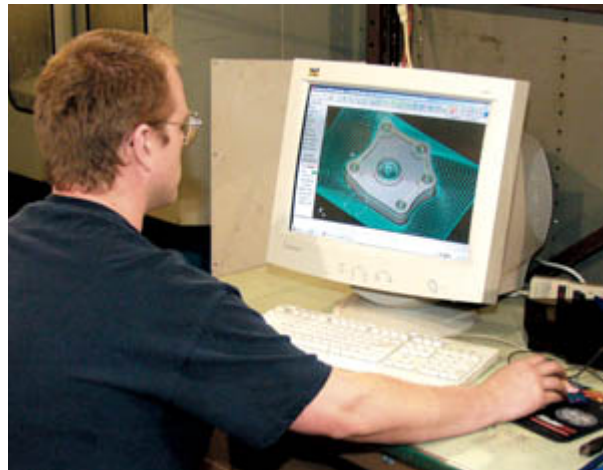
Movin' On Up

Even with the CAM equipment and powerful programming software, the 4,000 square foot shop space limited Cobra production. To solve this problem, Maimone placed a 25,000 sq ft prefabricated steel building on a 100-acre piece of land he had purchased some time earlier. Cobra moved into the new building in 2000. The 100-acre site now features an outdoor test racing facility. The new building houses the Cobra machine shop, fabrication and assembly areas, shipping department, office, and room for production expansion.

"Being experienced at Mastercam moldmaking, we built almost 30 plastic injection molds for the 50cc bike," says Maimone. "We also built 21 different stamp dies, one die-casting mold for the cylinder head and a permanent mold for casting our own wheels. The wheels were turned to dimension and the cutouts, mounting holes and other details roughed, then finish machined. We relied on Mastercam as our major tool for production accuracy and efficiency."

Cobra Production Today

Currently Cobra is running Mastercam toolpaths on two mills and a lathe - and simply can't keep up with the ever-growing demand for Cobra motorcycles. Cobra's three programmers have created the toolpaths for engine, front fork, wheel, and frame components. The machining overload is safely put in others' hands because the outsourced parts are run with the same already-tested Mastercam toolpaths. Assembly is completed in the new facility and, from there, Cobra bikes are shipped across the USA and in 10 other countries around the world. In 2001, Cobra shipped 600 units. Mr. Maimone's projection for 2002 ranges between 2,000 and 2,500. The company grossed over \$2 million last year



Cobra Into The Future

Despite the weak economy, motocross people apparently are not prepared to give up their hobby. Demand for Cobra motorcycles continues to stay strong. The new CM 50 bike for four- to six-year-olds began delivery in January. The 2002 King Bike for seven- and eight-year-olds shipped in February and the 2002 DC 65 model (65cc) also has started shipping.

Cobra has expanded its dealer network, which is expected to cause a substantial jump in 2002 sales. Cobra is investigating expanding its product line further in 2003, but won't release details in order to keep the competition guessing.

"We're proud of our home-grown, American-made originals," says Maimone. "Right now, from where we sit, the future looks great."