



Success Story

Moldmaking taken to the next level with *hyperMILL*[®]

Rick Finnie founded M.R. Mold in 1985 to build molds and tools for silicone and plastic part manufacturers. In the early 2000's as competition significantly increased, Finnie was forced to find a way to evolve...



About M.R. Mold

Founded in 1985 with Rick Finnie and one employee, M.R. Mold & Engineering Corp. currently boasts 30 employees and a 15,000-plus square foot facility complete with a 4,000 sq. ft. Technology Center, home to 6 molding machines for customer required samplings, run offs and automation technology. Located in Brea, California, the company has spent the better part of 30-plus years designing, manufacturing and testing silicone and thermoplastic injection molds. Today, M.R. Mold is known for its unprecedented expertise in LSR as well as leaders in the education of the silicone industry. The company's core focus (approximately 80%) is within the medical industry where LSR is primarily used for the production of parts ranging from long-term implants, catheters, oxygen and sleep masks, to artificial knuckles.

> www.mrmold.com

... and remain competitive in a rapidly changing market. While at a trade show, he saw a presentation on how survival in the industry required finding a niche and focusing on it.

Working with silicone is inherently more difficult than working with plastics because you have to get it right the first time. If you're not happy with a plastic part you can melt it down and reuse the material, but once silicone cures you just don't have this option. Silicone parts begin as a thermoset liquid that flows through a cold runner system to maintain its low viscosity and high flow rate on its way to cavities where heat is applied to cure and solidify it. As such, silicone temperatures and pressures must be very precisely maintained to allow the material to flow freely to the mold and then expand at a controlled rate while heated and cured.

Another key consideration is that silicone 'flashes' very easily which results in excess material being attached to the finished part. Rick re-examined the silicone mold portion of the business and realized that they had already overcome these technical process challenges. They had created proprietary and unique cold runner systems, had solved the flashing problem by holding extremely tight tolerances and were proficiently producing silicone molds. However, they weren't doing

a good enough job of marketing their unique silicone expertise. Also, when he looked at the competitive landscape he saw that although there were thousands of mold makers in the world, the majority of them were focused on building molds for plastic injection molding, whereas less than a dozen or so serious competitors with silicone mold expertise exist worldwide.

Eureka, it's silicone!

Rick Finnie had found his company's niche

M.R. Mold's Technology Center is stocked with the latest plastic and silicone injection mold equipment to ensure the integrity of their molds and to manufacture samples of finished product for their customer's inspection.



“We chose *hyperMILL*® because we felt it was the best solution to complement our high-end 5-axis machine and fully maximize our production operations.”

Rick Finnie, CEO
M.R. Mold & Engineering Corp.



and took the bull by the horns by aggressively marketing their silicone expertise, while developing new tools and unique cold running systems to support silicone mold manufacturing. They also opened a 4,000 square foot technology center and equipped it with company-owned plastic and silicone injection molding machines to allow them to conduct mold trials, and perform first article inspections and mold qualification testing before delivering the molds to their customers.

Finding the perfect mill and new CAM software to drive it

M.R. Mold had been producing their molds using a time consuming combination of EDM and 3-axis machining and Finnie realized that if they wanted to reduce time and increase efficiencies they needed to invest in a 5-axis machining center.

Last summer Finnie was introduced first hand to Yasda milling machines while at the AmeriMold Expo with a friend and fellow manufacturing plant owner. “I knew of the Yasda brand,” Finnie said, “It was popular, highly regarded and extremely accurate. My friend, who owned a Yasda mill, explained that he had nine other mills, that were well known and respected, but he told me that the Yasda was far superior.”

Finnie and M.R. Molds’ management conducted their due diligence and purchased a Yasda YBM Vi40 5-axis machining center and began looking for CAM software that was up to the task of controlling this high-end, high-speed 5-axis super mill.

Complex molds for silicone parts like these require high tolerances to eliminate flashing and a built-in cold runner system for accurate curing.



‘Like putting unleaded fuel in a dragster.’

Finnie said, “When we purchased the mill, the Yasda representative recommended that we reconsider the programming software we were using. We had been using a very popular brand for years and all of our employees were trained on it. But, he basically told me that using that software on this new Yasda machine would be like putting unleaded fuel in a dragster.”

“He recommended 3 or 4 different CAM programs and we started our investigation by getting quotes and learning about their capabilities. We finally narrowed it down to two software packages and I did a little additional research by visiting and exploring their websites. The OPEN MIND *hyperMILL*® website was very impressive. One of the real selling points for me was looking at their testimonials and list of customers, realizing that *hyperMILL*® is the software that manufacturers use. We chose *hyperMILL*® because we felt it was the best out there to make this high-end 5-axis machine do what we wanted it to do. We needed it to hold extremely tight tolerances and deliver parts with superior surface finishes. With the Yasda mill if I want to take off one-tenth (0.0001 inch), I could remove one-tenth and that’s exactly the type of accuracy I need,” Finnie continued.

Another concern, especially when moving to new software, is the learning curve. Finnie said that, “Nobody here had ever operated a 5-axis machine before, and suddenly we were faced with a machine having a rotating table that not only rotated but

M.R. Mold has dramatically improved their throughput and profitability with the speed and accuracy of their new Yasda YBM Vi40 5-axis mill, controlled by OPEN MIND *hyperMILL*® software.



tilts side-to-side while the entire axis moves simultaneously. On top of that, the programmers had to take a crash course on *hyperMILL*® while learning how to operate the Yasda 5-axis mill because we had just received a purchase order for a very complex part that required both.”

To help meet the deadline, Nhut Nguyen, M.R. Mold’s lead programmer, received five days of onsite *hyperMILL*® training. Nhut said, “The trainer came to our company, sat down with us and was totally focused on our needs. He customized *hyperMILL*® to fit our requirements, and that’s pretty unique.”

Nhut added that, “*hyperMILL*® customer support is top notch. When I email questions I get answers back within 10 to 20 minutes. I really appreciate this!” After the training Nhut programmed his first *hyperMILL*® 5-axis job, machined it on the Yasda and completed it well ahead of schedule. “We’ve only been using *hyperMILL*® and the Yasda machine for about 6-months, Finnie said, “and the guys have developed a high level of confidence in programming and operating the machine.”

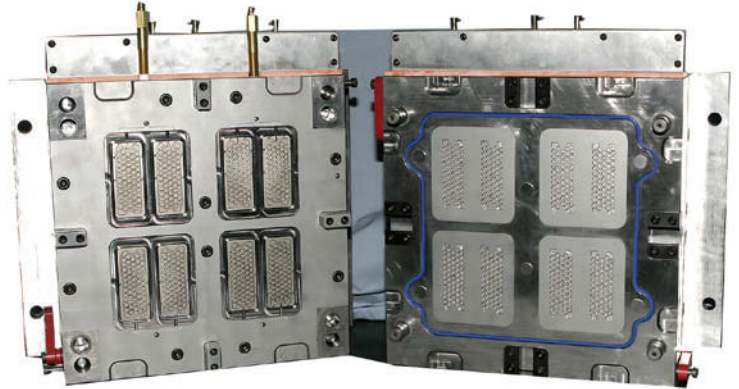
Time saving efficiency – six days to one

“We recently machined a very nice mold for a massage ball that has a whole series of spikes covering 360 degrees. If we had to build that mold a year ago with our older technology we would have had no choice but to make a whole series of electrodes – some electrodes machined from a standing position and some electrodes machined from a side position – and then use an EDM machine to vector-in each of those electrodes,” said Finnie.

Finnie continued, “I estimate that it would have taken us two days to manufacture the electrodes plus another two days of EDM time on each half of that mold, but with *hyperMILL*®, our guys machined the entire mold in just one day, not six! They had one half machined in the morning and the other half that afternoon, and it was done! The machine and *hyperMILL*® software are already paying for themselves. We were very pleased



Nhut Nguyen, M.R. Mold’s lead programmer designed and programmed a challenging mold for a silicone massage ball.



M.R. Mold specializes in unique molds like this with built-in cold runner systems.

with the *hyperMILL*® training we received. We have two seats of *hyperMILL*®, and have two programmers’ who are trained on it, and we hope to get more programmers trained on it moving forward.”

“The people at OPEN MIND have been very helpful and are wonderful to work with. I really don’t have any issues. I understand that we still have more to learn about *hyperMILL*®’s additional capabilities and we’re looking forward to becoming increasingly proficient in the software while increasing our efficiencies. I definitely feel that we made the right choice, “ said Finnie. ■

About OPEN MIND Technologies AG

OPEN MIND is one of the world’s most sought-after developers of powerful CAM solutions for machine and controller-independent programming.

OPEN MIND develops optimized CAM solutions that include a high number of innovative features not available elsewhere to deliver significantly higher performance in both programming and machining. Strategies such as 2.5D, 3D as well as 5-axis milling/mill turning, and machining operations like HSC and HPC are efficiently built into the *hyperMILL*® CAM system. *hyperMILL*® provides the maximum possible benefits to customers thanks to its full compatibility with all current CAD solutions and extensive programming automation.

OPEN MIND strives to be the best and most innovative CAD/CAM manufacturer in the world, helping it become one of the top five in the CAM industry according to the NC Market Analysis Report 2017 compiled by CIMdata. The CAD/CAM solutions of OPEN MIND fulfil the highest demands in the automotive, tool and mold manufacturing, production machining, medical, job shops, energy and aerospace industries. OPEN MIND is represented in all key markets in Asia, Europe and America, and is a Mensch und Maschine company.



We push machining to the limit

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