

An Extreme Transition: Moldmaker to Mold Manufacturer

In today's manufacturing milieu, customers want product perfection at warp speed and the lowest possible price. "We live in an age of instant gratification and the mold business is no different. Expectations and quality requirements continue to escalate, a trend that will only increase moving forward," says Mike Zacharias, President of Extreme Tool and Engineering, who decided that to satisfy these demands and successfully position their company for the future, advanced, automated precision machining would be the answer.

Located in Wakefield, Michigan, Extreme Tool and Engineering, Inc., founded in 1998, provides comprehensive plastic product development services for the packaging, medical, automotive and electronic industries. Extreme operates two facilities in Wakefield. The company has grown from 6 employees in 1998 to 80 employees today and sales currently approach \$15 million annually. Eighty percent of their revenue is from design and manufacturing of precision injection molds.

Journey via Machining

Time and labor are the largest drivers in injection mold costs, and manually fitting/finishing molds leads to variable quality, yielding inconsistent results. "Not that long ago, we lived in the world of setup, machine, check, fit, re-machine, re-check, re-fit," commented Zacharias. The process was inefficient and not accurate enough to keep up with growing customer demands. As a result, Extreme began a journey to investigate how to evolve from their traditional moldmaker business model to that of a world-class mold manufacturer. Extreme's journey required stepping out of their conventional comfort zone and investing in highly precise, predictable machining solutions.

Extreme consulted with Mr. Jeff Johnson, who at the time owned All Tech Machinery and is currently Die and Mold Project Manager on the YASDA Precision Product Management team at Methods Machine Tools, Inc. in Sudbury, MA. Extreme was aware of YASDA and their reputation of being the most precise machine available. But would the investment return the degrees of accuracy, time and productivity savings, and process security that Extreme sought? Zacharias, who was initially skeptical, issued test

cut challenges to Johnson, who confidently guaranteed that the YASDA would meet or exceed the challenges. Johnson recommended the YASDA YBM 640V3 3-Axis CNC Vertical Jig Borer, which provides high rigidity, precision boring and milling operations for high accuracy mold, die and complex component manufacturing. The test results were excellent, so Zacharias decided to take Johnson's advice and purchase the YBM 640V3. It proved to be a wise decision that changed the shop's processes and accelerated their precision mold manufacturing efforts.

"Business changed forever when we put machines on the floor that were more accurate than we were and we became a process-driven manufacturer. We could never be any better than the most accurate machine in the shop," explained Zacharias.

High-Accuracy Mold Manufacturing

What makes YASDA different? YASDA's innovative, unique design optimizes its rigidity, repeatability and thermal stability to deliver the utmost in accuracy, precision and throughput. A reinforcement rib under the machine's bridge provides great rigidity and minimizes vibration during acceleration and deceleration, allowing for the heavy duty machining often required in mold manufacturing. Machining efficiency is optimized by keeping the weight of the spindle head and saddle as low as possible and all critical machine surfaces are meticulously hand scraped, providing outstanding mechanical accuracy. "In many cases, the YASDA's accuracy completely eliminates the need for finishing/polishing, which means the toolmakers no longer need to fight the manufacturing process," said Trevor Meinke, Extreme's Director of Operations/Moldmaking.

An exclusive spindle bearing preload self-adjusting technology provides optimum preload at the full range of spindle speeds. A rugged spindle enables a full range of machining from heavy duty roughing to delicate fine finishing, all while providing a long tool and spindle bearing life. Zacharias commented, "We've eliminated many of the off line operations we previously had. Now we go right into abrasive cloth and sometimes no polishing is required due to the net/zero machining capability of the YASDA."

"The YASDA has proven to be the most accurate machine we have ever purchased or run. To this day it continues to amaze us with the reliability and accuracy it offers on a daily basis. When we ask this machine for a tenth, it gives it to us and it can easily deliver micron levels," explained Zacharias.

Medical Molds and More

One of Extreme's most demanding and challenging applications is a 420SS mold for the mammography market, which requires true optical quality finishes on often very large, contoured surfaces. "It is critical that these molds are machined accurately to a very fine finish, such that limited polishing is required in post machining in order to maintain the accuracy of the surface," explained Zacharias. "We also produce molds for the optometry field where ultra-precise dimensional control is required. In both cases, efficient mold manufacturing could not occur without the degree of precision the YASDA provides."

The mold manufacturer also builds high-cavitation, high-performance injection molds for many other demanding industries. Extreme's clients expect full interchangeability, fast cycle times, and molds that last forever. Having equipment in-house like the YASDA allows Extreme to provide repeatable, consistent results and eliminate time consuming handwork.

Mold Breaking Quality, Savings

While performance can be a good indicator of success, it is essential to take a comprehensive look at a new technology purchase to determine the return on investment. "We firmly believe that YASDA is the most accurate and best built CNC machine in the world. It truly was the best money we ever spent," said Zacharias.

The YASDA also realized substantial time savings for Extreme. "There is less benching, polishing, fitting and finishing required when building molds with complex contoured parting lines with the YASDA YBM 640V3. There is less time offline and more time spent in actual production, which naturally increases profitability," explained Bob Sikonia, Director of Engineering, Molding/Tooling.

Due to the YASDA, Zacharias estimates that the company saves up to \$300,000 annually via productivity gains, increased accuracy, reduced or eliminated operations and extended spindle and cutter life.

"The YASDA's precision technology has not only attracted more business, but a higher level of clientele that helps separate Extreme from our competition," remarked Doug Hippe, Director of Continuous Improvement and Training.

Of course, one of the greatest measures of success is customer satisfaction. "Our key performance index/metric for on-time delivery is 95%. I am proud to say that our 2014

on-time delivery rating was 100% and client satisfaction rating was at an all time high,” said Zacharias. “The bottom line is YASDA played a crucial role in our transition from a traditional “moldmaker” to the precision “mold-manufacturer” that we are today,” summed Zacharias.

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