



MATRIX TOOL INC.
ADVANCED MOLDING AND TOOLING

A Major Move in Micro Molding

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A Micro Precision Paradigm Shift

Over the past few years there has been a groundswell of momentum sweeping across the injection molding landscape in the field of 3D Additive Manufacturing (3DAM). While the Global Pandemic may have derailed some of that momentum, the adoption of 3DAM technology is showing up everywhere from conformal cooling inserts for injection molds to fully functional, OEM finished products. What was once a technology for producing non-functional prototype samples is now becoming a mainstream manufacturing alternative.

But 3DAM isn't the only paradigm shift happening in the field of injection molding. Over the past several years, Matrix Tool has been spearheading an innovative way to reduce tooling complexity, while significantly improving yield. While this might seem to be a contradiction of terms, it isn't—let us explain.

The traditional approach to increasing capacity with injection molded parts is through higher cavitation. As cavitation increases, many customers opt to implement hot runner systems, along with in-cavity pressure monitoring systems. These help to minimize waste and ensure a more robust molding process. While these productivity approaches are valid, in the area of extremely high precision molded parts, higher cavitation and hot runner systems introduce both added cost, increased mold size and greater variability.

Matrix Tool has well over a dozen degreed Plastics Engineers on staff. That's a ton of engineering horsepower, and we've put it to good use. We are extremely well-versed in the use of all the leading injection molding technologies, and they are widely used throughout the plant. But several years ago, we started asking ourselves this question: Is there a better way to significantly improve throughput on extremely high precision, micro molded parts?

The "Aha" Moment

We were producing an extremely small, micro precision part the size of a resin pellet. Due to the added technology incorporated into the mold to offset expensive resin costs, the tool grew significantly in size, cost and complexity. The mold stack height vs. the shot size was upside down to run in our conventional injection molding machines (IMM's). The resultant higher internal scrap rate combined with increased customer demand created a manufacturing impasse. We approached our customer to explain the dilemma and we both came to the same conclusion: their core & cavity sets needed to be in a custom frame suited for a Micro IMM. The results were higher yields, better part quality and reduced material waste—despite eliminating the hot runner system.

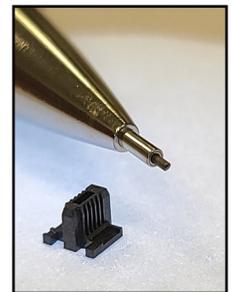
We learned a very important lesson from that experience: Bigger isn't better; better is better.

Lessons Learned

Fast forward many years later and Matrix has continued to build upon a term we've coined, "The Matrix Way." Simply put, our engineers have developed a system of mold design and process improvements that challenge conventional injection molding wisdom. This, coupled with our unconventional runner layouts and sprue designs yield unconventional productivity gains. We are driven by the simple concept of providing the highest quantity of quality parts at exceptional value—wherever that path leads.

Each time a transformative or disruptive technology is introduced, there are a host of responses—from doubters, to early adopters to visionaries. Benefit from our learning curve by sending us your next high-precision, micro injection molded part. You'll join the growing list of customers who already have!

"The definition of insanity is doing the same thing over and over again and expecting different results."



**5-Position Micro Connector,
.023 gram part weight**

For more information, contact: **TOM MOYAK** OR **MARK FUHRMAN** AT **(814) 474-5531**