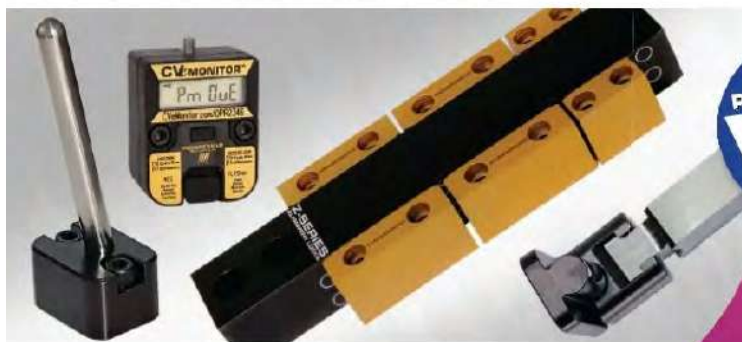


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MARCH 2022 / VOL. 25 / NO. 3

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ON THE COVER

This month's cover is courtesy of Mastip. It shows a recent project completed by Mastip which involved designing a multi-material, multicolor hot runner system for a three-shot overmolded part. With a combination of six manifolds connected via three bridging manifolds, the system had a total output of 72 drops (24 drops per component). The system incorporated the popular MX13 and MX16 nozzle ranges and was controlled by back-to-back valve gates being fed by three separate injection points. Each injection point was controlled by individual valve pin shutoff to eliminate any drool during sprue break. The final completed part consisted of a three-component overmolded part with TPE and LDPE material in a range of colors. The overall hot runner system weighed around 1,500 pounds with an estimated hot half weight of 10.5 tons. *Please note, due to confidentiality restrictions, the part pictured (the cap) is not the actual bi-material cap produced by this system. See related tip on page 88.*

Images courtesy of (left to right): HP Inc., Sandvik Coromant and Integer Holdings Corp.

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From the Editor

How Does Your Shop Stack Up Against the Competition?



Well, now you can find out.

Since 2003, *MoldMaking Technology* has recognized outstanding moldmaking performance and innovation through our annual Leadtime Leader Awards Competition. However, this year we are going one step further by launching a moldmaking industry benchmarking survey to assist moldmakers in building their businesses and offer insight into manufacturing trends. Without further ado, we introduce the *MoldMaking Technology* Top Shops.

Top Shops is a benchmarking program launched 10 years ago by MMT's parent company, Gardner Business Media, and used across all its brands. The survey is conducted in partnership with Gardner Intelligence, our internal team developing and delivering market intelligence to industrial manufacturing (and those responsible for our monthly Gardner Business Index).



For 2022, we decided it was time for MMT to have its own survey aimed at mold builders to shed light on the technologies and processes that power the moldmaking industry's most successful shops.

This survey collects data across several categories, including operations, technology, business strategy and human resources. Top Shops participants answer a series of thorough questions about their businesses. Responses are anonymously com-


plied to create a collective view. Select measures are scored and summed to total scores that serve as the basis for honoring certain shops.

Note that it is in the best interest of your shop to answer all questions. All data and responses are kept confidential and reported only in combination with others.

Everyone who completes a survey receives:

- A custom report from Gardner Intelligence showing how your shop stacks up against other shops in key metrics. Reports serve not only as baseline report cards, but they also list areas of relative strengths, areas where your business is on track and opportunities for improvement. Then consistent benchmarking can demonstrate your shop's improvement over time and provide data that can be used in your sales and marketing strategy, or aid your management team in yearly goal setting.
- A chance to be selected as an honoree to be profiled in the October 2022 issue of *MMT*. Even though the program is open all year, honorees will be chosen from surveys completed before **April 30, 2022**.

Take the survey at short.moldmakingtechnology.com/mmttopshops

Thank you in advance for your support! 

Christina Fuges

Christina M. Fuges
Editorial Director

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MMT TIPS

5

TRICKS OF THE TRADE

Great Tips from This Issue

1. Tiny Triumphs

New drive systems for the machines have been developed that are more reliable and repeatable than traditional methods for micro milling.

PG. 12.

2. Fix It Fast

For additive manufacturing (AM), it is more important to iterate quickly rather than get it correct the first time. If you make a mistake with an injection mold, it may take 12 weeks to correct. With AM, you can correct an error and print again in less than 12 hours.

PG. 18.

3. Going Digital

Digital live machining enables the real-time footage from machine cameras to be broadcast through a video conferencing program, which is ideal for mold builders that want to upskill their workforce but don't have a big travel budget.

PG. 22.

4. Ask For Help

To successfully transition a business to the next generation, a support team and getting a third-party perspective is essential.

PG. 34.

5. Hot Tip

An important relationship exists between the tip and the gate detail. Our gate size recommendation is typically on the smaller side because you can always increase the gate. If you start too big, it's harder to go back.

PG. 88.

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EAB Insight

People, Pins, Passing It On

By Christina Fuges

James Jergens, operations manager for Ernie Green Industries (EGI), is fiscally responsible for managing all aspects of product development and purchasing of injection molds for EGI manufacturing sites. Here, he continues this year's EAB series by sharing his three favorite *MoldMaking Technology* articles and how this content has been valuable to his work.

1. January 2019 – Training Redefined: A Three-Pronged Approach to Solving the Skilled Labor Shortage

A mold builder uses a solid onboarding program, personality profiles and learning styles to quickly and effectively grow its own skilled workforce.

Several years ago, I read this article and was amazed at Westminster Tool's work to change its company culture. They changed from hiring a person to fill a position to hiring the right person and teaching them hard and soft skills to succeed in their company. I also wonder how this has helped their team at home and in the community. The results speak for themselves by their reputation in the industry, with 30 Under 30 2021 Honoree Hillary Thomas and winning the 2021 Leadtime Leader Award.



James Jergens, operations manager for Ernie Green Industries and one of MMT's Editorial Advisory Board (EAB) members, shares the three MMT articles that resonate with him the most.

As the article states: "The proof is in the numbers. When Westminster Tool changed its hiring approach four years ago, the average employee age was 51. Today it is 35."

The article reinforces my practice of hiring the right person over hiring for a position, and the power of creating a culture of empowerment.

2. November 2021 – 3D-Printed Stainless Steel Vent Pins Produce Defect-Free, Injection-Molded Parts

The Innovent Pin from Next Chapter Manufacturing is said to offer 10-15

times the volume of venting over traditional venting methods with suitability for filled and unfilled plastic resin grades.

At Amerimold 2021, I attended a Tech Talk, "Applying 3D Printing to Mold Venting," where Next Chapter Manufacturing presented its 3D-printed vent inserts. Additive venting sinters precision areas of the mold with micro pores while making other areas of the insert, like shutoffs, fully dense to maximize tool life. Additive venting inserts are engineered for long life and are not prone to clogging. The presentation explained how 3D printing can vent molds 10-100 times better than that of traditional venting methods, double the hardness for the toughest, high-wear resin applications and keep maintenance costs in line with typical preventative maintenance.

EDITORIAL ADVISORY BOARD (EAB)

The EAB enhances the standing of the publication and strengthens its professional integrity through the active involvement of its members.

The Board represents all aspects of the mold manufacturing industry with a balance of moldmakers, molders, OEMs and academia, and various moldmaking segments and job functions. A member is selected based on his or her experience and knowledge of the moldmaking industry to serve a three-year term.

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Get to know MMT's EAB members at
short.moldmakingtechnology.com/EAB

I have used conformal cooling and porous steel inserts for years but combining the two was ingenious. So, at our next engineering lunch and learn, I presented the technology to our mold designers and tool engineers. As a result, our team now has another tool to help increase mold performance and reduce cost. A few months later, this article came out about Next Chapter's 3D-printed ejector pins. I would encourage shops to investigate the use of this technology further.

3. September 2021 – Best Practices for Hitting Critical Numbers: Communication and the Shrinkage Factor

Start with an upfront review, discussion and collaboration with the customer and then consider the shrinkage factor.

Over the years, I have had great mentors who taught me what this article summarizes. As Jim Fattori says, "The biggest tooling problem I know of has little to do with cutting steel. The problem is failing to consider, obtain and verify all the pertinent information up front to ensure the mold will produce a dimensionally, functionally and aesthetically acceptable part."

I have saved this article so that I can provide it to those whom I mentor. Rather than taking years to learn these topics, now they can learn and start using the information in an afternoon. 

FOR MORE INFORMATION

Ernie Green Industries / egindustries.com



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Central Community College Advanced Manufacturing Design Technology

Christina from MoldMaking Technology magazine interviews with 2 Central Community College Advanced Manufacturing Design Technology students.



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Christopher Allbozek • 2nd
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What a great program.

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Bob Schiavone • 2nd
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Wow!!!! If this was commonplace all over the US for the last 20 years - we wouldn't have the skills gap issues we have now. Kudos to these guys. fantastic!!!!

Like 2 Reply



Rory Webber • 3rd+
Business Development Manager at Sanbury Colour and Coating Solutions

Very good! Just imagine what could happen.

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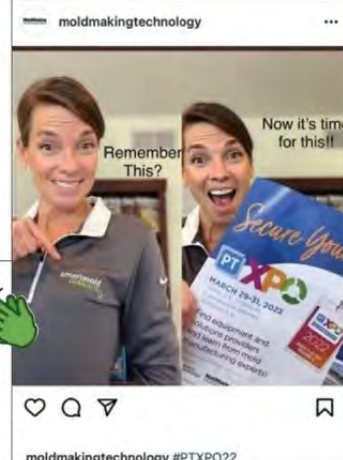
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Profile

A Conversation with ... MTD Micro Molding

By Christina M. Fuges

Who is MTD Micro Molding?

Kyle Kolb, Tooling Supervisor:

MTD is a medical micro molding company, proudly celebrating its 50th anniversary this year. The business began under the name Miniature Tool & Die in the basement of the founder's home in 1972 and at that time, the business focused on tooling only, primarily wire EDM. When the founder's son, Dennis Tully, took the helm in the early 2000s, he began transitioning the business to build micro tools solely to support the growing micro injection molding business and in 2010, Miniature Tool & Die was renamed MTD Micro Molding.

Today, MTD is a contract manufacturer serving many of the top 20 medical OEMs, creating incredibly tiny and powerful components and finished devices. We specialize in manufacturing complex micro geometries and being a strategic partner for our customers by providing materials expertise and services like custom assembly and packaging.

Last year, we grew our footprint from 16,000 square feet to 28,000 square feet at our Charlton, Massachusetts, location (complete with a brand-new state-of-the-art tooling center), which effectively doubled our medical manufacturing space.

Share your job function and brief background.

Kolb: My role at MTD is tooling supervisor and I oversee day-to-day operations of the tooling department. I am also the tooling designer, handling all mold designs and end of arm tooling (EOAT) designs, fixtures and gages. For most of my 30 years in the industry, I focused on injection mold design and product design. I have also worked for stand-alone mold builders and vertically integrated medical device manufacturers.



MTD Micro Molding is a contract medical device manufacturer for micro components and finished devices with a team specializing in complex geometries, custom assembly and materials expertise.

All images courtesy of MTD Micro Molding.



MTD Micro Molding
15 Trolley Crossing Rd
Charlton, MA 01507
800-998-5549
mtdmicromolding.com

- MTD Micro Molding has a strong, family-like, innovative culture built on five pillars: Be the first, be the best, be ever forward, be responsible and be a team.
- Twenty percent of new projects come to MTD as rescues or failed attempts by others. Another 30% are projects no one else would even attempt.
- Focused 100% on micro medical device manufacturing with in-house tooling and molding under one roof.
- R&D projects explore what new micro-molding capabilities MTD can create so that customers can achieve new product breakthroughs faster and more cost effectively.
- Developed expertise in micro molding bioabsorbable, implantable applications.
- Creates high-resolution features as medical devices get smaller with ultra-precise tooling.
- Workpiece accuracy target is 42 millionths.
- Sarix 3D EDM milling machine creates cavity geometry by following a toolpath similar to CNC milling, but the significant difference is that the end mill is an electrode as small as five microns.
- Validation strategy is based on the IQ, OQ, PQ processes.

What is the key to MTD's success in micro moldmaking?

Kolb: Our employees are the key, providing us with the right tools to be successful. We have some of the most talented toolmakers I have ever met. They range in experience level from just a few years to a few decades and each brings something unique to the table.

MTD does all of the design, build, maintenance and repair of its micro molds in-house. Can you share your arsenal of technology and talent that allows that to happen?

Kolb: We have the best people and equipment to support our tooling department, and that includes fine wire EDM technology that enables us to produce inside corner radii down to 10 microns, which translates to molded parts that are essentially dead sharp.

We also utilize our Sarix 3D EDM milling machine that can produce its cutting tool down to five microns in size and milling core and cavity details. Most importantly, we have highly trained toolmakers who know how to drive the equipment and squeeze every bit of capability out of them, and typically push them past their limits.

You state that MTD "pushes its equipment beyond the published accuracy and repeatability from the manufacturer, which has become our limiting factor." Can you explain how you "push" your equipment beyond what the manufacturers expect?

Kolb: This primarily pertains to our sinker and wire EDM processes. For sinker EDM, there are many variables that can work against accuracy, such as the variation in the cutting tools that are used to produce the electrodes. The precise machinery that cuts the electrodes has some error in its axes and the same goes for the sinker EDM. At MTD, we have developed a unique method to remove nearly 100% of the error introduced, ensuring the highest precision and quick tooling lead times.

For wire EDM, the height of the parts that can be cut is limited by the diameter of the wire, so the smaller the wire diameter, the shorter the workpiece must be. We invest 10% of annual revenue into R&D efforts, which includes developing new machine settings to push the equipment's limits and have been able to machine a 3-inch (76.2-millimeter) tall part with 0.002-inch (0.05-millimeter) wire. According to the manufacturer, the maximum workpiece height for this diameter wire is 0.75-inch (19.05 millimeters).

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Profile



MTD Micro Molding uses fine wire EDM technology capable of producing inside corner radii down to 10 microns.

tools, we work with the customer to come up with a design that can be manufactured.

Every project we take on has some level of impossibility and collectively we come up with the most robust design and fabrication plan to achieve the end goal of producing a functional product that meets our customers' requirements.

Let's discuss some current micro moldmaking trends and challenges.

Here are 11 key trends we see:

(1) Micro Milling

Kolb: Machine tool manufacturers and tool/workholding manufacturers have been working for years on perfecting this. New drive systems for the machines have been developed that are more reliable and repeatable than traditional methods. Together with machine improvements, toolholding and workholding are critical components to success and having toolholders that are balanced and run true to the centerline of the spindle reduces vibration and maximizes cutting tool life.

(2) Materials

Kolb: There hasn't been much for new tool steels for micro tooling beyond powdered metals, which we often use for inserts that need to hold a knife-edge.

(3) Cutting Tools

Kolb: I think the biggest thing in new cutting tools isn't the geometry of the cutting tool but the coating of the tool.

You note that to date, MTD has not "failed to produce tooling for any designs." Can you share details of a specific project that tested the team but proved successful in the end?

Kolb: I don't have a specific project as an example. It's more about the fact that we design with our technology in mind and if a particular feature cannot be produced with our machine

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Micro-molding trends include tighter tolerances and dimensions, which push MTD Micro Molding to continually improve its processes and invest in new technology.

Coatings can be formulated for different material hardness and ductility and can help extend tool life.

(4) Mold Coatings

Kolb: While there are plenty of new coatings, they are more suitable for external insert features. Options are limited for coating the inside of holes that are under 1/16 inch, for example.

However, they do give us the ability to mold parts without the use of grease and we have discovered a coating that is certified for medical devices, which is critical for the products we manufacture.

(5) CAD/CAM

Kolb: Micro-mold simulation has been showing some promising advancements.

(6) Micro Welding

Kolb: While laser welding technology has undoubtedly come a long way and now makes it possible to weld micro inserts, it still is the last resort for us. Even though the sink is



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minimized, the integrity of the steel is compromised and when the inserts are so tiny, they lose their strength and ductility.

(7) Mold Design

Kolb: Larger parts with micro features seem to increasingly become a bigger part of our portfolio. These are often the most difficult to design due to incorporating larger moving actions that require more "slop" to move freely while trying to incorporate precise, interlocking features.



Machine tool improvements, toolholding and workholding are critical components to MTD Micro Molding's success.

Another big one, as of late, is allowing for "flash" heating and cooling cycles in the tools for extreme heat tools. This involves using non-traditional heating and cooling methods within the same tool. Steel selections and moving components fall under more scrutiny when tools are subject to these extreme temperature cycles.

(8) Micro Molding

Jared Cicio, Production Manager: I have seen micro-molding trends in customers requiring tighter tolerances and dimensions. These requirements have continued to push us to improve our processes and invest in new, cutting-edge equipment to give us the ability to machine and create molds with features and dimensions that would have been near impossible years ago.

The challenges of building these molds so tightly to control flash create other problems such as venting issues. So, we must carefully walk the fine line between making a mold tight enough to not flash out of tolerance while allowing the mold to vent to properly fill and pack.

(9) Validation

Alex Maroon, Project Manager: From a high level, some trends/challenges with validations that we are currently seeing is an increase in inspection requirements from our customers.



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A 2021 facility expansion increased MTD Micro Molding's footprint from 16,000 square feet to 28,000 square feet at its Charlton, Massachusetts, location, including a new tooling center.

We are also seeing an increase in the number of requests for mechanical testing for part functionality, which we manage in-house during the validation process.

(10) Automated Assembly

Cicio: We are seeing more and more requests for us to not only mold devices but also to do all secondary operations such as trimming, assembling, gluing and packaging. As a result, we have had to look more at automating these operations to keep up with customer demands. In addition, with the current state of supply chains, customers see more of a need to work solely with one supplier for all their needs.

(11) Training

Kolb: We are currently working on providing our tool and moldmakers with in-house molding/processing training to better understand what our process engineers deal with on a day-to-day basis.

What do you see as the next advancement in micro moldmaking?

Kolb: Laser machining/engraving has come a long way and shows promise as a potential alternative to micro EDM milling. Also, electroformed mold inserts are being used in microfluidics quite a bit. We're looking into incorporating these technologies into future tool designs. [MTE](#)

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3D-Printed Tooling

By David Plerick



All images courtesy of HP Inc.

What Is Additive Manufacturing's Place Alongside Traditional Moldmaking?

Technology improvements and design freedom solidify 3D printing's role in mold manufacturing.

Additive manufacturing (AM)—also referred to as 3D printing—is becoming an increasingly valuable counterpart to injection molding. Once seen as a novelty for prototyping, AM has established its unique importance in producing a wide variety of parts. It contributes to an injection molder's profitability through high-margin bridge molding, part count reduction, quick-to-market commercialization and the manufacturing of very complex, expensive parts.

This is why AM is growing by 20% a year—and that's just for prototyping. For serial production of real parts, AM has increased by nearly 50% each year for the past three years. Three years ago, people were asking questions like, "Can you print this part?" and today, they are asking, "Can you make 10,000 of these parts, consistently within this very tight tolerance?"

AM, working in tandem with injection molding, owes its rapid growth and increasing variety of applications to a combination of technological advances, design freedom and significant economic and supply chain benefits.

AM Tolerances and Material Properties Match Molding

Today's possibilities with AM are markedly better than four or five years ago and certainly better than two years ago. Of course, for a single-component part, AM can't quite match the tolerances obtained with precision molding or hard steel, but it's not always about a single component.

The limitations of injection molding design due to draft angles and pull directions often require combining several simpler parts into a single part through mating surfaces and screws. In those cases, the stack tolerance of the finished object is the sum of the tolerances of each individual part.

The design freedom offered by additive manufacturing (AM) is an unmatched advantage compared to injection molding. The HP Multi Jet Fusion technology shown above can print the entire combination of parts into one printed object, eliminating any stack tolerances and enabling unique iteration and greater world reach quickly.



With AM, it is more important to iterate quickly. For example, a cooling duct was redesigned from a six-piece injection-molded cooling duct into a single-piece duct. By redesigning into a single-piece duct, AM reduced the cost by a third and increased manufacturing time.

AM's design freedom allows the ability to print the entire combination of parts into one printed object, eliminating any stack tolerances. In addition, the process will enable one to combine complex geometries into one part, which results in better tolerances compared to a multiple-piece injection-molded part.

Although AM may still produce items with slightly less density, its properties are becoming almost identical with injection molding material. AM processing conditions can correct this deficit, but doing so adds to processing time, which costs money. One must also remember that most injection-molded parts have a weld line—known to cause strength reductions of 20-60%. AM parts do not have weld lines and can produce stronger parts than injection-molded parts with significant weld lines.

Unique Ability to Iterate

AM offers a design freedom advantage compared to injection molding. For example, a part with a dead sharp corner will be weak. To add a radius in a mold for injection molding, you must consider the cost of machining a larger radius, plus the limitation of the radius size to obtain a decent cycle time and prevent warpage from occurring. On the other hand, there are no design restrictions to a printed radius.

An increased radius does not add cost because there are no tooling considerations. And because no molded-in stresses occur (AM has zero shear rates), you can design a generous radius without warpage becoming an issue.

Lately, a "pre-deformation" technology has advanced to the point where you can scan a part, compare it to the original CAD file and make automatic adjustments to the CAD file to compensate for the out-of-spec dimension. Then, within 12 hours, you can print a "pre-deformed" part to prove that the final dimensions are within specification.

For AM, it is more important to iterate quickly rather than get it correct the first time. For example, if you make a mistake with

an injection mold, it may take 12 weeks to correct. With AM, you can correct an error and print again in less than 12 hours.

For example, for a printer, we redesigned a six-piece injection-molded cooling duct into a single-piece duct. The price to injection mold and assemble the pieces was \$29.79 per duct. By redesigning into a single-piece duct, AM reduced the cost by a third, to \$19.58. Plus, we could start manufacturing immediately rather than wait 16 weeks for tooling.

Unfortunately, the first air duct design was restricting airflow, and the printer was not cooling sufficiently. We had two choices: a more powerful fan motor or a redesigned duct. Computational fluid dynamics (CFD) showed that airflow would improve if we altered the duct to take on a more organic shape with fewer sharp angles to reduce pressure drops.

We used a software integration of CFD and generative design to create a unique, organic design that reduced air restrictions. The new, organic-shaped part with optimized flow could not be produced with injection molding, but it improved airflow by 22.3% and was still less expensive than the original injection-molded part.

More Resilient, Localized Supply Chain with Global Reach

The potential that exists when AM is used alongside injection molding is massive. Custom molders can now use this process to get high margins on low volumes of work (bridge molding), which is work they may have had to turn down before.

With injection molding, tooling represents an investment that must be paid off before you can make any profit. As a result, injection molding becomes cheaper on a per-part basis as the number of parts grow. With AM, each part—the first or the last—has the same production cost.

We often see a break-even point for the two manufacturing methods at about 8,000-9,000

units. However, sometimes the number is much higher. For example, there are circumstances where AM is less expensive than injection molding for up to 30,000 parts. We can see that ramping up to hundreds of thousands of parts.

For example, SmileDirectClub uses Multi Jet Fusion to produce the millions of molds to make its aligners, which is enough to keep up with its current production of 40,000-50,000 aligners a day. Now is the time for injection molders to capture higher margins, better serve their customers with fast-to-market products and support local manufacturing while maintaining their global reach.

AM can also introduce urgently needed resiliency into supply chains. With AM, it's relatively simple to design a part in the U.S. and then produce it in, say, the U.K., where it's

If you make a mistake with an injection mold, it may take 12 weeks to correct. With AM, you can correct an error and print again in less than 12 hours.

3D-Printed Tooling

needed. Then, just email the file to a printing facility in the U.K. Electronics are cheap to ship; molds are not. This advantage has benefits on several fronts. For example, those digital



AM can introduce urgently needed resiliency into supply chains. In the early part of the pandemic, there was a shortage of face shields. Within less than a week, HP printed and assembled the first face shield design and had the design certified and shared with hundreds of different digital manufacturers across the globe within two weeks.

files incur no tariffs, unlike a finished product that travels internationally.

Distributed local manufacturing enabled by additive has been crucial during the pandemic—for example, all of the face shields for medical workers. One Thursday night in 2020, early in the pandemic, we got a call saying there was a shortage of face shields and asking if we could produce them quickly. By Monday morning, we printed and assembled the first face shield design. In two weeks, we had the design certified and shared with hundreds of different digital manufacturers across the globe. That sums up the excitement of AM.

The pandemic is just one proving ground for the new supply chain paradigms our world is rapidly moving toward—where customization and resiliency are leading differentiators. The time is now, and there is no doubt that manufacturers who can combine the efficiencies of injection molding with the transformative design and supply chain freedoms of AM will become the leaders in plastic parts production. **MMT**

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Cutting Tools/Training

By Mike Andersen

Staying Sharp to Remain Competitive

Continued training helps moldmakers make tooling decisions and properly use the latest cutting tools to efficiently machine high-quality molds.



All images courtesy of Sandvik Coromant.

Continued training helps mold builders remain competitive by teaching them to properly apply modern cutting tool technology in the way it was designed to be used.

Today, there are many innovations in cutting tool technology. Whether a seasoned pro or novice, these technologies are new for everyone. New edge preps, coatings, cutting materials, digital capabilities and application methods are differentiators that help shops remain competitive if their moldmakers know how to use them properly.

While moldmakers who are entering the field for the first time may have already encountered some of these advancements in a vocational school or technical college,



Hands-on training teaches moldmakers the most effective ways to use the latest cutting tools confidently.

putting theory into practice on the job isn't always easy. In addition, as the industry changes, all moldmakers must continue their education to help keep their shops and their skillsets up to date.

Modern Cutting Tools Enhance Quality

To accurately achieve the most challenging features in a mold base, moldmakers must choose the cutting tools and toolholders that are most appropriate for the job and know how to use them. In addition, toolholders must have clearance, while cutting tools must withstand cutting forces generated by hardened material and easily access any part of the mold.

To get deep inside a mold or cavity, moldmakers want to choose durable tools that have extended length-to-diameter ratios that can reach far beyond the spindle interface and provide a superior surface finish. Some of the latest solid round tools have very small diameters or complex shapes or forms on the cutter, creating features within the mold cavity. Continued training gives moldmakers

Integrating and learning how to use digital tools can help shops practice predictive maintenance and improve tool performance.

the know-how to improve their decision-making and use the latest tools to efficiently machine high-quality molds.

If a cutting tool and toolholding system isn't the right choice for the job, doesn't have clearance or isn't set up correctly, a moldmaker won't be able to get the tolerance and accuracy needed to execute a particular radius or angle within the mold base, and the quality of the components it produces will suffer.

Hands-on training is an effective way to learn the theory behind modern cutting tools and properly use them. Training like this is different from a technical school or apprenticeship because of the perspective on modern

cutting tools and what makes modern cutting tools work. The theory is often presented through interactive conversations or presentations in a classroom. The hands-on part is then conducted in a shop environment where participants practice techniques and methods on real machines.

If travel isn't possible, some training centers also offer virtual classes or self-paced, online learning to help moldmakers upskill from wherever they are. Participants can access courses through a phone, computer or tablet and learn new skills when it's convenient for them.

Digital Machining Improves Productivity

Mold builders have evolved to highly digital environments. While moldmakers continue to focus on cutting tools, they're now also focused on digital tools that can improve shop productivity and the data they can collect. For example, machine performance metrics offered by some cutting tool suppliers collect data from the machining operation and allow machinists to gain insights about machine utilization, as well as stop causes, alarms and faults that could decrease productivity.

Mold builders must understand how to properly use digital tools and analyze the insights from the gathered data. Training helps ensure they can confidently use those insights to act in tangible ways that make a difference on

Cutting Tools/Training



Mold builders should take a look at standard and customized training programs.

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the shop floor—from practicing predictive maintenance to improving tool performance.

Many training facilities include digital technology in their classes, such as smartphone applications and cloud-based software, as part of standard training. For example, during one hands-on practice on the shop floor, participants download an app and use it to calculate all the parameters to run a part. Incorporating digital tools transfers essential skills and makes classes more interactive and engaging.

In addition to standard training, customized training can help shops further their digital transformation journeys. For example, a shop may have specific questions about something as straightforward as CAM and verification tools, or it may simply want to know where to start. Customized training can break down complexities so shops can understand the possibilities of what they can do to improve productivity and reliably achieve business goals.

Five Factors to Consider When Evaluating Training Options

There are specific criteria to consider for those moldmakers and shops searching for training that directly benefits their businesses. Some are obvious, such as deep experience and CNC machines on the training floor. Other criteria, however, may not be as apparent. These include digital live machining (DLM) capability, a worldwide network of specialists and R&D investment.

1. Deep Expertise

A cutting tool manufacturer's training center often has an advantage simply due to the number of experts on hand. In addition to their full-time, dedicated instructors, training centers can bring production, engineering and R&D experts into the classroom. These experts are the people making the actual cutting tools, so they

intimately know how the tools are supposed to work and precisely what they do.

If a class wants to learn about grades and edge prep technology, the instructor can ask the grade development specialist to speak about grade development. Some training centers are even connected to their production unit, so instructors can take participants into the shop to see cutting tool manufacturing in real time.

2. CNC Machines

For onsite classes, a facility must have an advanced machine shop with different CNC machine tools for hands-on application of metal-cutting operations. Some training centers even put cameras on each machine so that participants can see real-time processes up close rather than huddle around a tiny window on the front of a machine tool.



Cutting tool training centers should provide participants with hands-on access to a range of CNC machines.

3. Digital Live Machining (DLM)

DLM allows participants to attend training virtually, while feeling like they're in the training center. DLM enables the real-time footage from machine cameras to be broadcast through a video conferencing program. Depending on the conferencing program used, presenters can switch between lecture, presentation and DLM demonstration modes. This can be ideal for mold builders that want to upskill their workforce but don't have a big travel budget. They can project the training in a conference room and receive live instruction.

4. Worldwide Network of Specialists

Some training facilities are part of a more extensive network of global centers, each with its machining specialties. With the help of DLM equipment, instructors can call into other

"Oerlikon HRSflow's sales and technical support teams at tool trials are some of the strongest in the market. The technicians are always available to support the customer in any way possible, including the assistance on the molding side thanks to the vast knowledge gained over the years in the industry. Oerlikon HRSflow is a great team to work with."

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centers to view machining demonstrations to share capabilities they don't have on site. This multiplies a single center's capabilities, providing a broader range of skills to participants and more significant benefits for shops.

5. R&D Investment

High-quality training centers don't simply teach the same things over and over. Instead, they invest in modern cutting

tool innovations and the continued education of their teaching staff. As a result, they not only teach the latest technologies, they drive industry innovation.

Continuing Education Moves Mold Building Forward

The simplest way to find quality training that focuses on modern cutting tools is to check in with your cutting tool provider. Some providers list their training schedules on their

websites. If preferred training isn't available, check with your sales team to see if your provider offers customized training.

To remain competitive, it's essential that shops take modern cutting tool technology, apply it properly, use tooling how it was designed to be used and look at their manufacturing operation from the cutting edge back. The way to do this is through continued training.

Digital live machining (DLM) allows participants to attend training virtually, while feeling like they're in the training center. DLM enables the real-time footage from machine cameras to be broadcast through a video conferencing program.

When moldmakers step out of their day-to-day environment and learn how to apply modern cutting tools most productively, it can help the shop become more profitable. Conversely, when shops aren't on the cutting edge of what's new in the industry, they could miss out on advantages that drive their business forward. **MMT**



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Still Learning After All These Years

Challenging medical mold is fully validated after seasoned professional attends Plastics Technology & Engineering course at American Injection Molding Institute.

With sales to over 50 countries, Integer Holdings Corp. is among the world's largest contract medical device manufacturers, specializing in advanced medical technologies for the cardiac, neuromodulation, vascular and portable medical markets—including implantable devices. The company also supplies batteries for high-end niche applications in the medical, energy, military and environmental segments.

At its Cardiac Rhythm Management and Neuromodulation (CRM&N) facility in Plymouth, Minnesota, a team of 350 design and produce everything from custom medical components to fully packaged implantable devices, including supporting parts and tools. In addition to making most of its injection

molds (100/year), the company extrudes tubular components and produces a broad range of thermoplastic parts via two-shot injection molding, insert molding and micro molding. Typical production runs range from 1,000 to 50,000 parts/year. Most molds feature only one or two cavities but use inserts to enable a single tool to produce multiple part sizes and designs.

Troubleshooting Challenges

Ed Flores, Integer CRM&N senior process engineer, uses scientific molding practices to develop implantable medical devices, including writing protocols, validating products and equipment, statistically analyzing results and running continuous



Image courtesy of Integer Holdings Corp.

Like most of Integer's tools, this two-cavity injection mold for a device called an introducer uses inserts to produce parts in seven different sizes and two different designs per size (14 total part numbers). The CRM&N team was struggling to validate the tool for certain part sizes due to filling issues. Eventually, a second tool (with minor parting line, runner and base-size changes to modify ejection) was produced and sent to an Integer facility in Mexico. While a team in Mexico worked on validating the new tool, Ed Flores in Minnesota focused on getting the original one to pass final testing.



Image courtesy of Integer Holdings Corp.

Integer Holdings Corp.'s commitment to world-class manufacturing centers on lean facilities equipped with state-of-the-art technology. Eighteen manufacturing sites are ISO 13485 certified and 11 are FDA registered with approval to manufacture Class I to Class III medical devices. The company's New Ross, Ireland, plant has twice received the prestigious Shingo Bronze Medallion for operational excellence. Shown here is the micro-molding area at the CRM&N facility in Plymouth, Minnesota.

improvement projects on existing tools. Before joining Integer eight years ago, he spent almost 18 years developing molding processes at an automotive contract parts supplier.

Flores' first project at Integer involved troubleshooting a two-cavity injection mold for a device called an introducer, which features an overmolded polymer tube and two thermo-plastic wings designed to break away/peel apart after device insertion. Like most Integer molds, this tool uses inserts to produce introducers in seven different sizes and two different designs per size, totaling 14 different part numbers. The critical medical parts must pass rigorous testing and process capability and performance (Ppk) requirements to ensure they are molded as designed and to spec. The CRM&N team was struggling to validate the tool for certain part sizes due to filling issues, which caused high scrap and higher frustration. Eventually, a second tool was produced by Flores' predecessor and shipped to Mexico, where a team there worked to validate it while Flores focused on getting the original one to pass final testing.

"Technically, this mold had a geometrically balanced runner system, meaning each of the two gates feeding each part, and each runner feeding those gates had the same dimensions as corresponding runners and gates on the other cavity," explains Flores, who says that despite moldfilling predictions to the contrary, parts didn't fill evenly in certain part sizes. "The two outside gates were filling parts faster. We measured a 10% variance from one side of the part to the other and a 5% variance

between cavities in these sizes. Flow imbalances meant we were fighting multiple issues, forcing us into a very tight processing window. If one part had good break force, then the part in the other cavity had poor handle integrity or vice versa."

Flores had previously attended a molding workshop taught by John Beaumont, retired chair/professor of engineering at Penn State Erie, The Behrend College's Plastic Engineering Technology program and founder of injection molding consultancy Beaumont Technologies Inc. (both located in Erie, Pennsylvania). At that workshop, Flores learned about a rheological control method invented by Beaumont called MeltFlipper, which corrects viscosity variations in multi-cavity tools that otherwise can lead to long cycle times, high scrap and shrink/warpage issues. It's a technique Flores relied on at his previous job and introduced to Integer.

Flores later learned about the Plastics Technology & Engineering (PTE) workshop offered by Beaumont Technologies' sister company, the American Injection Molding (AIM) Institute, which John Beaumont co-founded. "Since I'd been so impressed with John's knowledge and background in plastic design and molding at the earlier workshop, and I'd heard such good things about the quality of AIM instructors, I made it a personal goal to attend that program and had been asking my manager," Flores recalls. "Even though we produce and use a lot of injection molds, our company is not just a molder or moldmaker but also a medical device company. My previous manager simply didn't know the reputations of AIM founders and teachers like John Beaumont, Mike Sepe and John Bozzelli." Integer's commitment to make the Plymouth facility its Molding Center of Excellence made it easy for Flores' new manager to approve his request. He began the PTE course in 2019, finishing just before the pandemic lockdown.

INTEGER HOLDINGS CORP.

PROBLEM: Find ways to raise medical part and mold design skills to the next level.

SOLUTION: Integer engineer took AIM Institute's Plastics Technology & Engineering education program.

RESULTS: Seasoned professional solves longstanding issues on complex medical mold.

Adult Learning Programs

The AIM Institute was founded in 2014, soon after John Beaumont retired from Penn State, and offered its first class—the PTE program—in 2015. At the time, Beaumont recognized how few options there were for industry professionals to learn

Education/Training / Case Study



Image courtesy of Integer Holdings Corp.

Using his AIM PTE training, Ed Flores identified three design flaws likely contributing to part failures in the introducer tool: unbalanced fill, gate locations and process/material variances. Starting with the part giving the greatest trouble among the 14, the team changed a runner plate on the three-plate tool to introduce rheological controls to balance fill by controlling polymer shear thinning in runners and gates. Remarkably, that one change resolved most of the tool's issues and enabled the part with the most significant problems to finally be certified. The team filled its first production order for that part in late December 2021 without issue.



more about plastics without returning to universities to pursue formal degree programs. AIM's courses were designed to address that need by providing practical, proven adult learning programs for the injection molding industry. In the case of PTE, that involves attending four week-long physical courses at AIM's facility. After returning home, students have several hours of virtual lessons each week during the two months between physical courses in Erie. The material taught by institute instructors is said to have been thoroughly researched by them or other institute members and each instructor performs ongoing research to keep course content updated.

"AIM courses are designed to highlight the difference between education and training," explains David Hoffman, AIM director and instructor. "For example, we recognize that quality education takes time. We use multiple instructors per course and dive deep into the subject matter, pushing students to develop critical thinking skills. Our non-commercial content combines lectures, labs, demos and class exercises supported by homework assignments, weekly online reviews and additional learning opportunities. We assess progress using written exams and skills assessments, where applicable. Regardless of actual job functions, students completing PTE will be extremely knowledgeable in each of the four pillars of plastic materials, mold design, injection molding and part design."

In addition to the PTE program, all three courses under AIM's Molders' Series are now ANAB accredited and ANSI/ASTM E2659 compliant, following ISO/ICE 17011. These standards require content to be reviewed by oversight committees, including an advisory board of 25 companies in AIM's case. They also use formal ADDIE instruction design models, define learning outcomes and use



Image courtesy of American Injection Molding Institute.

John Beaumont, retired chair/professor of engineering at Penn State Erie, The Behrend College's Plastic Engineering Technology program, founder of injection molding consultancy Beaumont Technologies Inc. and American Injection Molding (AIM) Institute co-founder, instructs students about various aspects of mold cooling design.

psychometric assessment tools to measure learning. "We pursued third-party accreditation because we believe it's an essential part of high-value education and training, and 80% of those we surveyed agreed," adds Hoffman. The institute offers a variety of education options ranging from four-hour introductory online "boot camps" to the nearly year-long PTE program.

"We tell our students 'Trust the process,'" adds Hoffman. "That means trusting both the molding process and the education process. The courses and programs may seem daunting at first, but if students follow through and trust the process we've put together, they'll learn more than they ever thought possible."

Knowledge Boost

"Before taking the PTE program, I considered myself a subject matter expert with 27 years of experience in injection molding and a strong background in tool and die," recalls Flores. "Honestly, I expected to breeze through at least a couple PTE courses, but boy was I mistaken. Until I took the course, I didn't appreciate the depth and breadth of knowledge we'd be taught. I not only gained a much better understanding of injection molding but was excited to

start applying what I'd learned." As he completed each course, Flores wrote management summaries describing the purpose, scope, outline and takeaways, often listing planned changes and anticipated cost savings.

Using his training, Flores identified three design flaws likely contributing to introducer part failures: unbalanced fill, gate locations and process/material variances. Starting with the part giving the greatest trouble among the 14, his team changed a



David Hoffman, AIM Institute director and instructor, discusses gate locations and various hot runner components with students.

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Education/Training / Case Study

runner plate on the three-plate tool to introduce rheological controls to balance fill by controlling shear thinning of polymer flowing between runners and gates. Remarkably, that one change resolved most of the tool's issues and enabled the part with the greatest problems to finally be certified. "By controlling rheology, we achieved balanced fill and pack in each cavity, which broadened our processing window to ensure both breakaway force and handle integrity were within tolerance,"

Flores recalls. "This change didn't alter the part's design, specification or process. It only balanced plastic flow by controlling shear." The second introducer tool has since returned from Mexico for retrofit with rheological controls.

Thanks to the knowledge gained from the PTE program, Flores has been recognized and compensated for his contributions. He went from being an individual engineer in a single facility to supporting two facilities and four departments.

Meanwhile, a technician in Flores' facility has completed the Molding 2 course at AIM and a manufacturing engineer is taking the PTE program.

Asked about the most valuable aspect of the program, Flores says access to the deep knowledge of instructors—both during and after the course. For example, students brought examples of problem projects to class for AIM instructors to troubleshoot during the program. "I was working on another project with uneven filling and thought I needed to use rheological controls to fix the problem," he recalls. "I showed it to Dave [Hoffman], who studied the part and short shot data for a few minutes and determined the problem was that the core pins were not on center. Sure enough, we measured the tool and they were off. Being able to access that kind of knowledge is the institute's strongest selling point."

"I survey our students every year and Ed's story is not uncommon," adds Hoffman. "Students often tell us about promotions, pay raises and other benefits coming directly from cost-saving ideas they implemented based on what they learned here at AIM. As instructors, that's very rewarding and tells us we're doing something right." **MMT**

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Business Management

By Christina Fuges



All images courtesy of Burger & Brown Engineering.

Mark and Corey Brown both believe that patience and persistence are two key qualities to surviving their nine-year transition.

and the team maintains its level of customer care and company growth without their hands in every aspect of the business.

Setting the Stage

Burger & Brown Engineering is an engineering-driven manufacturing company focused on close-tolerance, complex work for the defense, aerospace, medical, semiconductor, gaming and food and beverage industries, as well as the U.S. Department of Energy (DOE). They offer injection molding, conventional machining, micro machining, Swiss machining, industrial automation equipment (jigs, fixtures, prototypes), welding, contract inspection and contract engineering.

Burger & Brown also develops, designs, manufactures and tests its products in pre-production settings. If they like a product, they move it into production and offer it to the masses. About 35% of what Burger & Brown does is proprietary products, offering engineered solutions to the injection molding industry, including ancillary equipment supporting mold cooling, in-mold sensors and ejector tie-in systems. Currently, they have 16 trade names and are working on their 11th patent.

Phil Burger founded Burger & Brown Engineering in 1978 as an engineer helping businesses automate their processes. He then started building molds for the injection molding industry and offering contract machining. Mark Brown joined Burger in 1989. He left for five years and then returned in 1994 with the intent to buy the company. He became majority owner in 2005, completing the buyout in 2006. Since that day, Mark has been focused on growth, including a succession plan for his son, Corey.

Mark performed an 11-year transition when taking over Burger & Brown. Discovering that that transition period had been too long, father and son settled on nine years instead. It is now year seven into this nine-year succession plan.

Lessons from a Nine-Year Succession Plan

Small business shop owners share the four keys to transitioning a family manufacturing business.

“What do you call it when Batman skips church?” asks Mark Brown, CEO of Burger & Brown Engineering. He chuckles as he quickly replies, “Christian Bale,” demonstrating the humor he’s retained during a challenging nine years of transition preparation and planning to his son, President Corey Brown.

Emphasizing the need for humor during this journey are some staggering statistics related to transitioning a family business to another family member, which is common across the moldmaking community. “The success rate of a first- to second-generation transition is 32%; second to the third generation is 11% and third to the fourth generation is 2%. So, family dynamics certainly come into play and is one of several challenges to figuring out the way forward with a small business to the next generation,” Mark says.

In a nutshell, to grow a company, both Mark and Corey agree that the owner must be nonexistent, so everything is able to operate without that person. It is with that in mind that this duo developed a plan (albeit not perfect) to work together up until the official day of transition in 2023 so as to reach a point where they are not working **in** the business, but **on** the business—meaning that each employee can function properly,

Transition Timetable

- Year 1—Is he going to make it? How is he interacting with the shop? How is he handling different situations, especially the difficult times? According to Mark, anyone can run a company when it’s smooth sailing—you learn when things get rough.
- Year 2—Mark recognized Corey would make it in this business. He became engineering manager from 2015-2017, then moved out of the engineering department and into the business side as vice president (VP). Becoming president followed in January 2021. Currently, Mark is only there to support.
- Over the next 12-18 months of this transition, Mark will be transferring the company’s international distribution to Corey. He’ll make the introductions, and get Corey acclimated to dealing with different countries.
- The target date for the complete transition is 2023.

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Business Management



Burger & Brown posts its core values throughout the shop for everyone to see. Continuing this culture during the transition demands transparency with all stakeholders—customers, vendors and associates.

Making the Move

In 2014, as Mark was staring at the age of 50 and realizing that he did not want to be worrying about the future of the business and its customers, Corey, an enthusiastic 26-year-old at the time, came on board.

"I was always told that I'd never work for this company, so I went out on my own to gain manufacturing experience. It was my father's way of making sure I could survive on my own. He wanted to be sure that I was able to deal with the real world," Corey says. He was a plant engineer for an oil processing company and a project engineer for a bulk material handling company. In 2014, he came into Burger & Brown when a project engineer position opened up. Both Corey and Mark committed to seeing how it would go and how he would interact with the shop floor. They also agreed that if it didn't work, Corey would leave because family comes first.

"We've always tried to keep our father/son relationship out of the business. But I can't deny that everyone is watching you. So at some point, I tried to prove myself a little too much to show I was not only here for a paycheck," Corey says.

In the second and third years of the transition, Corey went from the engineering manager in 2015-2017 to vice president (VP). After that, he moved out of engineering to experience the rest of the company, becoming president in 2021.

"I took on as much as I could to get involved in everything and would jump in whenever I could while working in the engineering department. Then when I took on the VP role, I had to transition stuff off my plate, which proved difficult

because we were growing at the same time," Corey says. It's a constant battle, but one he is up for facing as the transition moves forward. Mark has documented the transition up until this point in a journal, and both he and Corey have put together some advice for shops facing a similar succession plan timetable.

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Stepping into a Successful Family Transition

1. Keep emotion out of the decision-making process.

Mark's direct business decision-making style was at the core of Corey's frustrations, while Corey's perfectionism was at the core of Mark's frustrations. Corey believes there is always room for improvement, and although Mark admits there is always room to improve, you also need to "roll with it a little bit."

For example, to continue its growth trajectory, the company needed a new ERP system. Mark wanted to jump in and figure it out as he went along, understanding that the initial data would not be perfect, but that it would improve as the company evolved. Corey, on the other hand, wanted to delay the

investment so as to have everything perfect from the start. He thinks if you don't do it right the first time, it's twice as much work to go back and change it. Corey reluctantly agreed to move forward; Burger & Brown is now five years into using its new ERP and can rely on the data.

"Through this process, Corey became more patient and accepting of imperfection. Things are going to reveal themselves in time, so you have to keep battling every day to make it work," Mark says. "Patience, persistence and optimism are vital."

2. Consider all generations in your management and communication approach.

Change is hard, but Burger & Brown was also growing. Transitioning to the next generation only made matters more complicated. Today, the company has 70 employees, a 20-person increase from the 50 employees when Corey started. In addition, they have an average tenure of seven years with some reaching more than 20 years, which alone can make any change a challenge. Plus, the workforce represents four different generations—baby boomers, Gen Xers, millennials and Gen Zs—for which communication and management styles come into play.

For example, Mark's management style is level-headed with little to no emotion, believing that leaders must be the rock during difficult times. Corey's style—initially youthful—created conflict between father and son, employees and other management. His work ethic and intelligence were strengths from the start. It was his people skills and emotion management that needed improvement.

Mark believes that you let youth run its course and maintain patience with the process. However, his patience started

waning around the five-year mark, as he and Corey were having heated discussions regularly.

To remedy this, Corey went out on his own and found a group called Vistage to get an outside perspective on how to change his approach. As a result, his management style changed and he's even brought back valuable insight to Mark.

"A lot of the frustration came from the simple fact that we're a different company than we were 10 years ago. The expectation of how a leader should run the company changed. This was a struggle, for Mark and I had to figure out how to work around that while growing and managing a transition simultaneously," Corey says.

3. Be transparent with all stakeholders.

The core element to the transition culture is Mark and Corey's transparency with the team, not just internally, but with all stakeholders—customers, vendors and associates. It's important to keep them up to date because if you don't give them a narrative, they're going to come up with their own narrative, and that's dangerous.

Mark and Corey frequently come together to talk about significant changes, new investments, health insurance and other important topics. For example, two years ago, they made a \$1.7-million investment in equipment and personnel, and again in 2021, reaching more than one million dollars in new equipment and resource investment.

4. Create internal and external support groups.

The team is critical to success. A support team is crucial during a transition and getting a third-party perspective is essential.

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Business Management

Support outside of fatherly guidance comes from Burger & Brown's *Executive Team*—comprising the sales manager and general manager—that deals with the day-to-day operations, sales and new opportunities. In addition, Corey, with the support of a *Steering Team*, guides its culture and the decision-making process. This includes the human resources manager, general manager and sales managers.

Another critical layer of the team is one Mark and Corey have strategically developed over the past 36 months—the *Leadership Team*, comprising primary managers who understand the company's growth goals and hold monthly meetings.

"We value our team and what they do. We invest back into our team, either through training or new equipment and new technology. We want to ensure that they have the best tools to support our customers for the next 15 to 20 years. In addition, we want to maintain our reputation as a precision manufacturer who provides for our customers," Mark says.

Burger & Brown's critical third-party perspective is Vistage, a *global peer group* for C-level executives and business owners that offers perspective from other people in other industries that have potentially gone through the same things to aid in making better decisions. Topics include human resources, meeting structure and strategy.

"There are no competitors, avoiding any conflict of interest, but we are both very private, so sharing is difficult for us with people outside the company. It was a big deal to sit down and discuss business issues with the group and grow trust," Corey says. Regardless, they are glad they stuck it out. Both Mark and Corey say they have learned so much by leaning into support on the outside.

Further, two years ago, Mark and Corey were very deliberate in adding structure to the culture to help manage the growth in the workforce—with a team comes culture.

"When you are smaller, it's easier to have conversations to explain your culture, but as you grow in numbers, that gets watered down. So we hired a consultant to help us put our core values down on paper—launch a culture initiative," Corey says.

They didn't actually change anything. They just finally wrote down what the company was doing. They formalized the culture by posting the core values and purpose statement throughout the shop, so it is on everyone's minds daily.

Working On the Business

The final deadline is now 18 months away and although Mark still goes into the shop Monday through Thursday, they are transitioning that out. Mark is now there only as support and to help Corey understand the bigger picture. That is, financial matters to help him identify ways to improve.

"I'm working on those bigger picture items such as working with the banks and the books, and ensuring the leadership team is stable and strong as we move forward to support Corey's efforts," Mark says.

Corey continues to extract the information from Mark that he does not realize he has and waits for the date. "We'll be connected at the hip for the next 18 months," Corey says and smiles. "He's working **on** the business and helping me work **on** the business. We're growing our team to work **in** the business." **MMT**

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Business Management

By Dan Strader



All images courtesy of Getty Images.

Free Money! A Guide to Grant Funding

Understanding grants and identifying all available funding sources will help mold builders secure grant money.

Government or other agency grants are a source of money available to large and small mold builders.

Okay, so it's not free money. As several economists have said, "There is no free lunch." Even government stimulus checks ultimately are not free! However, a source of money, available to large and small mold builders alike, is the next best thing to free money, and that is government or other agency grants.

The Grant Groundwork

Grants are nice in that, unlike loans, they do not have to be paid back. But, of course, certain milestones usually need to be met to satisfy the grant requirements. In addition, a fair amount of corporate effort must often be exerted to apply for a grant in the first place. It should also be noted that grants are not automatically awarded to every company that applies. Instead, they are typically awarded competitively, even when there are several awards.

Grants can come from all levels of government and private or semi-private organizations. Each is trying to meet some perceived need that would not otherwise be met without some fiscal stimulus. At the same time, the grant providers often have specific financial and/or other requirements that must be met.

For example, two years ago, in response to the increased manufacturing capacity and modernizations needed to meet the COVID-19 pandemic, the state of Indiana created a Manufacturing Readiness Grant program that required a 50% cost-match along with other manufacturing-related stipulations. It was intended to stimulate manufacturing companies of all kinds within the state to invest in more modern manufacturing technologies and equipment to be better prepared to meet the next pandemic. Several of those grants went to injection mold builders and associated component manufacturers within the state. Those companies awarded the grants were then able to invest in newer, more updated equipment and technologies, such as computer systems, additive manufacturing (AM) equipment and machine tools, which they might not have otherwise been able to afford, at least not in the near future.

Consider All Your Grant Options

So, the question becomes, "How does a mold builder or associated supplier go about obtaining grant money?" First, remember that grants can come from all levels of government and other outside organizations. So, the initial order of business is to research all the various avenues of potential grants.

For federal government opportunities, realize that all federal grants, as well as upcoming contracts and other federal purchase instruments, must be posted in a product called FedBizOpps, (which may be in the process of once again changing its designation). The FedBizOpps is segmented by agency

and is quite extensive. The only problem with using it as your primary source of finding grants or other contracts is the adage, "Once you see it in the FedBizOpps, you are too late in the process to compete for an award."

However, when you search for the FedBizOpps online, you will likely come across the U.S. Grants Applications Organization. It explicitly addresses federal grants of all types, from business to personal. I have not personally signed up for this website to date, so I urge caution, but it will very likely prove worthwhile for those seeking federal grants. Remember, grants can come from all sorts of federal agencies, from NIST (National Institute for Science and Technology) to NASA, to the Department of Defense (DOD) and beyond.

Follow the Rules, Think Locally

I caution you that grants and contracts at the federal level are best left for those who engage the federal agencies regularly and are often the driver of such solicitations. However, if you persist in pursuing a federal-level grant, remember that it is imperative that when responding to those solicitations, you follow the federal rules and protocols explicitly!



Grants can come from all levels of government and other outside organizations. So, the initial order of business is to research all the various avenues of potential grants.

If you think following the rules is not necessary, ask the Russian airplane manufacturer who bid on the new U.S. Air Force tanker a few years ago. They arrived at the gate at Wright-Patterson AFB on the date specified in the solicitation before the time specified. However, they had not arranged for visitor passes to deliver the proposal on base to the specified contracting office. As a result, by the time they obtained visitor passes and delivered their proposal to the contracting office, they were past the time specified and their proposal was summarily not allowed to be submitted.

Usually, your state government is a more amenable level of government to consider. Many states have state-sponsored agencies that promote industry within the state. For example, Indiana has a group called Conexus that is established for just such a purpose and has member manufacturing and other company members from across the state. Your state likely has a similar advocacy group. Query your local state representative regarding any potential or upcoming state grants that would be pertinent to your business.

Also, states often have local economic development agencies or similar state-sponsored local agencies that should provide insight into upcoming grant opportunities from the state or local government entities.

At the same time, note that state and local government agencies and semi-private organizations do not necessarily have a requirement, like the federal government does, to pre-publish upcoming grant solicitations. So, it is easy for the solicitations to come and go without noticing unless you actively seek such information on a regular, ongoing basis.

Look into Private Sources

Finally, there are private associations that sometimes provide grants. For example, Cincinnati, Ohio-based Rumpke received a \$510,000 grant from The Recycling Partnership's Polypropylene (PP) Recycling Coalition this past year. Plus, they are expecting a second grant this year worth \$77,500. In addition, the Coalition has other grants available "designed to encourage Material Recovery Facilities [MRFs] to increase recovery of PP, which can be used in a wide range of products." According to The Recycling Partnership, Falls Church, Virginia, grant funding varies by MRF, depending on the needs and opportunities of each project.

Plastics recycling is currently fertile ground for obtaining grants and other types of financing. For example, the U.S. Plastics Pact was recently launched under the auspices of the Ellen MacArthur Foundation's global Plastics Pact

It's easy for the solicitations to come and go without noticing unless you actively seek such information on a regular, ongoing basis.

Business Management



Once you have identified a grant, be careful how you respond to the solicitation. State agencies and local governments and groups tend to be much more lenient in their rules than federal agencies.

network led by both the aforementioned Recycling Partnership and the World Wildlife Fund. They have recently announced its roadmap to 2025, supposedly in "close alignment with the U.S. Plastics Pact roadmap."

To date, about 10 companies have supposedly received grants from The Recycling Partnership. According to the Recycling Partnership, grants range from a few hundred thousand dollars to multiple millions of dollars depending on the number of pieces of new equipment purchases to be made or retrofit modernizations of existing equipment. In addition to equipment purchases, grants are for the

education of personnel and management improvements.

Recently, Maine and Oregon passed legislation to encourage plastic waste reduction via materials reuse. The new laws will tax certain producers and, in turn, are supposed to spend that money to mitigate the plastics waste problems with grants to local municipalities. Those municipalities, in some cases, may issue sub-grants to local companies that will make investments to help mitigate the waste disposal problems.

Other states are looking at similar legislation. What about your state? Are you engaging your state legislator or state industry associations (such as the Conexus organization in Indiana) to influence pending or upcoming legislation to encourage state or local grants?

Note that Congress recently passed the "Break Free from Plastic Pollution Act" that lays out national Extended Producer Responsibility (EPR) guidelines that include the creation of incentives (i.e., grants and other instruments) "for the development of environmentally friendly products."

A good way for moldmakers to create grants is to work with other companies in your local area or state to find common ground for a grant and then solicit either a local funding source or a state representative to find money to fund your group's grant request. Another way is to work with local or state manufacturing or workforce advocacy groups to create specific types of grants beneficial to your company.

Federal agencies, as well as private funding groups, are generally most interested in technology advancement or implementation, while state and local agencies are usually



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first and foremost interested in how many jobs the grant will create, which is what helps get politicians re-elected.

Another way to incite grants is to work with a local university or other schools to promote a state-sponsored grant program. For example, suggest something like the federal STTR

Are you engaging your state legislator or state industry associations to influence pending or upcoming legislation to encourage state or local grants?

(Small Business Technology Transfer) Program whereby private industry is provided contracts, in this case, to work with university research programs to create and/or transfer advanced technology from the university laboratory to industry. Also, state-sponsored programs often will underwrite the hiring

of co-op students from universities or even high schools or community colleges, particularly within manufacturing.

Perfect Your Proposal

Once you have identified a grant, be careful how you respond to the solicitation. State agencies and local governments and

groups tend to be much more lenient in their rules than federal agencies. That does not mean you can flaunt their rules, but you can generally work with them more interactively to meet their requirements.

Still, it is essential that your proposal team determine the drivers of importance to the soliciting agency and fully reflect those in your proposal within the specified limits (e.g., page limits, etc.) The less you had to do with creating the grant solicitation, the more critical it is for you to find out how to respond to the requesting agency's solicitation properly.

Writing a responsive proposal, of course, is a special and unique art form unto itself. So, don't be discouraged if you do not win an award the first or second time you submit a proposal. Consider yourself fortunate, as well as skillful, if you do win the first time. In either case, learn from it and determine how to write award-winning proposals in the future. **M.M.T.**

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5 in 5 with Best Tool & Engineering

By Christina M. Fuges



MoldMaking Technology Editorial Director Christina Fuges reveals five best practices in five minutes, including hire for work ethic, machining, molding, relationships and appropriate technology investment.

This special MMT Chat Series delivers five best practices in five minutes on ways to improve efficiencies. My guest today is Joe Cherluck, president of Best Tool and Engineering in Clinton Township, Michigan.

1. How do you create and maintain an employee-centered culture?

Ok, very simple: In one term, you live it.

2. What are your top three best technology investments and why?

Five-axis machining, wire EDM and people.

3. What is your latest process improvement?

Our latest process improvement is reviewing and documenting all of our platform floor processes to implement ERP system.

4. How do you measure success?

Currently, we gauge customer feedback and profitability. We're moving way beyond that and are in the process of developing metrics in all facets of the business. Starting with sales and marketing challenges, we're watching where the trends are going.

5. How do you stay competitive and take advantage of new business opportunities?

I make time to work on my business.

Joe explains his answers more in-depth at short.moldmakingtechnology.com/BTE5

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Universal CAD/CAM Yields Ultra Precise Micro Molds

Edited by Christina M. Fuges



Mold builder Heiligenstädter Reißverschluss uses CAD/CAM and IT software package to improve its micro mold tool design and machining. Without it, says the company, "the ever more complex construction and moldmaking processes are no longer possible."

The 100 employees at Heiligenstädter Reißverschluss GmbH & Co. KG develop and produce zippers for clothing, upholstered furniture, outdoor equipment in flame-retardant water-repellent and UV-absorbing designs. The company uses Pictures by PC universal CAD/CAM from German software developer Schott Systeme GmbH as their central product development and production system to accelerate product innovation, including mold tool and electrode design and machining.

Pictures by PC is a cost-effective, complete CAD/CAM and IT software package for design, construction, CNC manufacturing and technical documentation. Technical Development Bernd Kellner explains, "From planning to toolmaking to molding, we rely on one single software solution. The open system structure and the wide range of well-thought-out 3D modeling possibilities offer great advantages during design. In particular, the addition of sketches and photos and the import of external files leave nothing to be desired."

PKo plastic staple zippers are the smallest zippers that the company develops for baby and children's clothing. The teeth injected directly onto the surrounding textile tape are made from Polyoxymethylene POM plastics for extreme durability and flexibility. In addition, since it is made of plastic, it offers an infinite range of color combinations from the strap to staple color.

Even using the latest CAD/CAM, the entire design and development process for the PKO series still took 18 months. The zipper must meet demanding standards and the transverse strength is significant.

Learn more about this company's design projects at short.moldmakingtechnology.com/HRzippers





For this *MMT Chat*, I catch up with Bob Schiavone, the global marketing director for R&D/Leverage in Lee's Summit, Missouri. And although R&D/Leverage is an impressive mold manufacturer, he is here today to talk about his passion—plastics!

I've known Bob for a long time. He and I have had several conversations over the years about the war on plastics, which has only fueled his passion for standing up for this industry. Plus, as a seasoned marketing professional, he is very active on LinkedIn about the topic—posting, sharing and commenting on all things plastic.

Here is just a peek at three questions during this quick 15-minute chat:

1. What is going on in our industry? What do you see as the biggest threat to the plastics industry as a whole?

Perception and communication. We have a perception issue. Plastics has a horrible image. I am sure some plastic regulations need to happen; I am sure we need to review certain plastics and maybe make some changes to what we produce, but a broad-brush approach that the whole world's litter issue is a plastics issue is wrong.

2. What advice do you have for mold manufacturers facing this issue?

Don't be a commodity, stop selling on just price and get involved, speak up, speak out.

3. What are the types of things you see R&D/Leverage doing to help face the challenges?

We have always tried to stay ahead of the curve. We offer several tool types and a plethora of support services. We work with converters and brand owners up front and it helps elevate us to more than just a toolmaker.

For the full conversation, visit short.moldmakingtechnology.com/MMTChatplastics. This episode is brought to you by ISCAR with *New Ideas for Machining Intelligently*.



Bob Schiavone, global marketing director for R&D/Leverage has a deep passion for manufacturing, marketing and the mission to change the perception of plastics. "I love the community [and] I've worked with some of the smartest people," Schiavone says.



Like many part inconsistencies, these unwanted features are rooted in product design. Since you inject the material through a gate, it must flow through the cavity and around various features, such as holes or bosses. If a knit line is present in a screw boss, the boss will likely crack when a screw is driven into it, leading to part inconsistencies.

For automotive parts, this results in parts that bump, squeak or rattle. For electronics, the broken screw boss will not allow proper compression of a seal, damaging precious PCB (printed circuit board) with water. For plumbing parts, if these occur in an O-ring groove, there is a possibility that there will be a weeping of fluid, causing a slow drip. In the pipe fitting industry, if they do not manage this well, a fitting will not pass burst or crush testing, yielding product field failures.

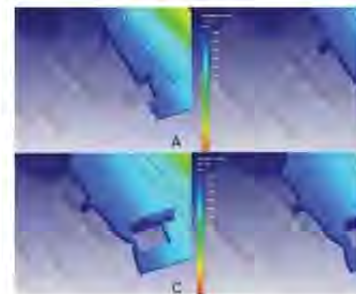
Think of this like water flowing down a river with a rock protruding through the surface. Once the water hits the rock, the flow must split, continue around and converge on the opposite side. What we want to focus on is converging to determine if it's a knit or meld line.

A meld line is defined as the remerging of two flow fronts after a feature within the part design splits the plastic flow. Visualize this as you're getting onto the freeway after a long day at the office—we are all going the same direction and have to figure out how to get there without damage. The image to the right shows how the flow front splits due to the rectangular core out and merges again on the opposite side. Since there is more space inside the mold cavity, the flow front continues onward, creating a new flow front.

Knit line, meld line and material selection are explained in more detail at short.moldmakingtechnology.com/RJGincBlog

What Is the Difference Between Knit and Meld Lines and Why Does It Matter?

By Jeremy Williams



Three terms that often get mixed up in the plastic injection molding industry are weld, meld and knit lines. Meld and knit lines are actually both different types of weld lines. Here is a look at the differences between them, the causes of meld and knit line imperfections and their impact on part durability.

Short **RUNS**

Access the related video or article at MMT online via the corresponding QR code.

Digital-only content you may have missed. Read full stories at links or QR codes provided.

A Look at the Acceleration of the Workforce 2030 Dilemma

By Christina M. Fuges



Human resources and marketing play a critical role in facing the dilemmas the pandemic has accelerated for the industry's 2030 workforce challenge in North America.

Marion Wells, the founder and managing director of Human Asset Management, chats with me about COVID-19's impact on the workforce and about the importance of succession planning.

Christina Fuges: First, what is Workforce 2030?

Marion Wells: I call 2030 the big disrupter. In 2030, a lot of economists have been talking about how population is going to change and what's going to happen with the Baby Boomers. The last Baby Boomer turns 65 in 2030. So, there's this notion that the intellectual property within your manufacturing companies is going to slip away. Plus, you have the onset of automation, AI and everything that comes with smart factory digitalization.

Christina Fuges: If there is one actionable item that you could give people who are watching this, what's the first step to taking on HR or marketing?

Marion Wells: Talent is going to be the key in 2022. I just recently got certified as a talent acquisition specialist with Predictive Index and shops NEED to have a talent strategy

to build a talent pipeline. So, think about what you want in your organization and think about succession planning, because those are going to be critical going forward within the next couple of years.

Visit short.moldmakingtechnology.com/Workforce2030 for the full conversation



Four Ways to Improve Multi-Cavity Molds

By Vincent Hua



Multi-cavity molds offer reduced cycle times and increased production volume, but they can be expensive and challenging. Here are a few strategies to consider when encountering moldfilling imbalances and temperature variations within the mold.

Multi-cavity molds are complex and come with unique challenges. Here are some tips for overcoming these challenges:

1. Adjust the gates

Gates control the flow of plastic from entry to the point of cooling and ejection. Using tab or edge gates can help improve flexibility which is essential with multi-cavity molds. In addition, tab gates reduce or control the stress to the tabbed area during the ejection. Gate location or placement depends on the specific production expectations. By clearly understanding the expectations early in the process, redesign and issues can be avoided.

Mold imbalances in multi-cavity molds can also be overcome by using hot runner valve gates. The gates shut off flow to cavities that are filling fast, which prevents flashing or overpacking. Simultaneously, slower filling cavities are allowed to continue filling.

A less expensive alternative is using a flow control valve system that is controlled by a worm-gear assembly. In this case, the molder can adjust each nozzle's flow by turning a knob and the setting remains fixed once adjusted.

Another similar solution available in the market is a real-time, closed-loop process control at each gate in the mold to deliver faster startups, easier mold changes and lower reject rates. This allows the molder to establish a pressure and time profile for each drop location which helps control the rate of fill and packing. Through the use of pressure sensors, the valve pins in the mold are controlled to ensure uniform pressure through the filling cycle. This adjusts the pressures at the nozzle to distribute pressure evenly throughout the flow path.

For the complete list of tips on multi-cavity molds, visit short.moldmakingtechnology.com/Tsfinatips





MoldMaking Technology's inaugural Top Shops survey was designed specifically for moldmakers. The survey incorporates input from moldmakers to make sure the questions are relevant and the benchmarking data useful.

By fully answering questions about your plant/business, operations, technology, human resources and business strategy, you will receive a report customized for your shop, plotting your values relative to other shops including Top Shops.

Here are the four steps to take advantage of the many benefits of MMT's Top Shops program:

1. Fully complete the survey for maximum value. It's in your best interest for benchmarking and scoring. It may take time to get some data—it's worth it. You may have reservations about answering certain questions. Don't worry, all responses will remain confidential.
2. Provide your email address to receive a report customized for your shop, showing where your shop is strong, on track and has opportunities.
3. Enter your contact info and submit your completed survey by **April 30, 2022** if you want a chance to be profiled in a fall issue of *MoldMaking Technology*.
4. Select "Submit Responses" on the final page once you do not intend to return to the survey again. If you get interrupted while completing the survey, you may close and return to it using the same device as many times as you like until you select "Submit Responses."

Note that the *MoldMaking Technology's* Top Shops benchmarking survey can be completed one time, any time throughout 2022. The sooner you complete it, though, the sooner you'll be able to act on the results.

Learn more about the benchmarking program at short.moldmakingtechnology.com/MMTtopshop



MoldMaking Technology Top Shops 2022

By Christina M. Fuges



MoldMaking Technology's inaugural Top Shops survey was designed specifically for moldmakers to help participants plot their values relative to other shops including Top Shops.



In this latest webinar, Westminster Tool Manufacturing Engineer, Eddie Graff, and Mantle Senior Application Engineer, Scott Kraemer, take turns presenting a new precision metal 3D printing technology and the results of testing Mantle's H13 and P20 tool steel materials—including stability, machinability and tolerances.

MoldMaking Technology's 2021 Leadtime Leader Award winner partnered up and performed rigorous testing on Mantle's tool steel materials via Mantle's 3D printing technology for tool building.

Results include the materials meeting industry requirements for stability and machining and that printed cavity set replacements can impact lead times and cycle times.

No surprise that this webinar provoked a lot of questions, including:

- Can you print threaded holes or do you need to tap after printing?
- If machining is required, anyway, what are the advantages (cost versus machining; timing)?
- Are you using inert gas during the sinter? If so, what gas and how much during a sinter process?
- Can these materials be welded if needed?
- If sintering is done post-printing, how do you counteract shrinkage and subsequent dimensional changes?
- Does the insert move or shrink during heat treatment?
- What is the print volume for this process?

Access this archived webinar short.moldmakingtechnology.com/webinar3Dptooling

WEBINAR: Test Results: Mold Builder's Experience with 3D-Printed Tooling

By Christina M. Fuges

<p>1 CONFORMAL COOLING (P2X+H13)</p> <ul style="list-style-type: none"> • Able to integrate conformal cooling planned for production mold into prototypes and pilot tools. • Reduces manufacturing time and cost for technology. <p>2 PROTOTYPING (P2X)</p> <ul style="list-style-type: none"> • Utilize Mantle's best tolerances and finish right off powder. • Cost and time effective iterations/changes. 	<p>BEFORE</p>  <p>AFTER</p> 
	

This free, archived webinar features the outcome of putting a new precision metal 3D printing technology to the tooling test.

GARDNER BUSINESS INDEX MOLDMAKING

Industry Accelerates Into 2022

January—58.0

Moldmaking advanced nearly two points in the first month of 2022 to close January at 58.0. The latest reading was supported by accelerating activity in new orders and production. January's supplier deliveries reading increased by seven points to its highest level since September 2021; however, in the present environment, rising readings indicate weakening supply chain performance. Backlog, employment and export order readings all moved lower for the month; among these three, only export orders registered below a level of 50, indicating a contraction in export order activity. The other measures, which fell, only indicated a slowing expansion in their respective areas of business activity.

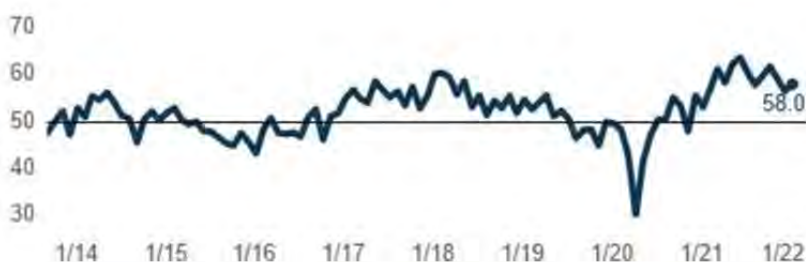
In recent months, moldmakers have learned to do more with less. This has been made apparent by the combination of historically strong production readings, the simultaneous slowing of employment levels and seemingly inescapable supply chain problems. Over the last four months production readings have averaged nearly 57.5. By historic standards, such readings only occur when the industry is in a cyclical expansion. However, the factors which feed production—labor and materials—over a similar period of time have generally worked against expanding production levels. **MMA**



ABOUT THE AUTHOR

Michael Guckes is the chief economist for Gardner Intelligence, a division of Gardner Business Media (Cincinnati, Ohio, United States). He has performed economic analysis, modeling and forecasting work for nearly 20 years among a range of industries. He is available at mguckes@gardnerweb.com

■ Gardner Business Index (GBI): Moldmaking



The Moldmaking Index reported a modest accelerating expansion in January thanks to an accelerating expansion in new orders and production activity.

■ Employment and Production (3-Month Moving Average)



Production activity has remained robust in recent months despite a relatively weak employment market and struggling supply chains.

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INDEX

Stay ahead of the curve with Gardner Intelligence.
Visit GBI's blog at gardnerintelligence.com.

*The further away a reading is from 50 the greater the magnitude of change in business activity.

BACK TO BASICS

For the complete article, visit the corresponding short links or QR codes provided.

Evergreen MMT content to assist with training, cross-training and upskilling.

With the lack of a skilled talent pool in addition to curricula and training missing the fundamentals of mold design, build, maintenance and repair, *MoldMaking Technology* can help. Each month we will highlight a few articles from our archives that are still searched often and stand the test of time when it comes to providing basic, how-to information. This month we are focusing on mold components.



For Better Mold Venting, Start With the Metal

Selecting the right material for specific mold components can help prevent a number of costly issues.

As part specifications and complexities continue to rise, proper mold venting is increasingly critical. Insufficient venting can lead to burning, shrinking and other costly issues (not to mention longer cycle times). Selecting the right material for certain mold components can go a long way toward preventing these problems.

short.moldmakingtechnology.com/DMEventing



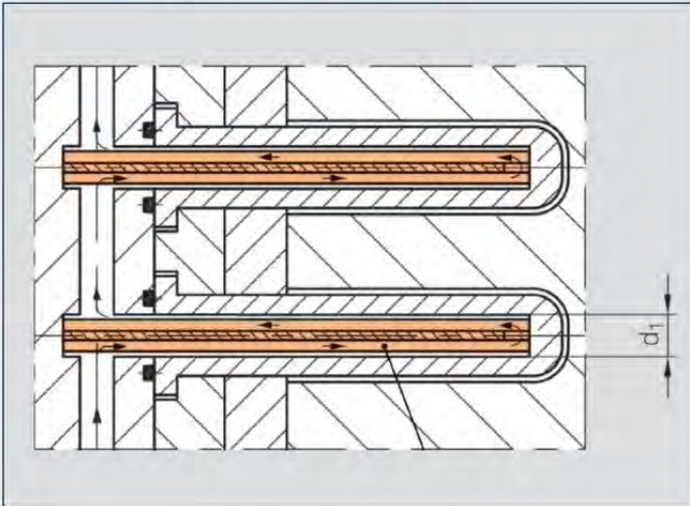
Fundamentals of Designing the Optimal Cooling System

The right mold components can help improve mold cooling and thereby produce higher quality parts.

From specialized cooling component materials and conformal cooling inserts to standard machining practices employing new mold components, mold cooling has evolved and increased in efficiency in recent years.

Historically, mold cooling systems were designed to circulate water or other media through the base plates, but not necessarily within the cavities. Newer technology creates optimized circulation throughout the mold plates and cavities.

short.moldmakingtechnology.com/moldcooling



Mold Side-Actions: How, Why and When They Work

Understanding the effects of injection on the core, slide and associated components is critical to selecting the best side-action methods for a given application. This first of two articles will discuss the basic physics underlying all side-actions.

As advances in technology have driven market globalization and shortened product life cycles, mold design and production methods have been pressured to keep pace. The success of future moldmakers will be defined by their ability to discern the advantages and disadvantages of ever-broadening options.

With a fundamental understanding of these various side-action methods, moldmakers can choose and apply the optimal solutions to today's applications.

short.moldmakingtechnology.com/sideaction101



For more Back to Basics content, visit moldmakingtechnology.com/hashtag/basics



MARCH 29-31, 2022

DONALD E. STEPHENS
CONVENTION CENTER
ROSEMONT, IL

**Q&A: Get To Know
Our Technology and
Service Suppliers**



Plastics Technology Expo (PTXPO) unites the entire North American plastics processing industry in a technology-driven tradeshow in the heart of the Midwest from March 29-31. This special Exhibitor Profile section is your chance to get to know some of the exhibitors within the Moldmaking and Injection Molding Pavilions showcasing products, equipment and services that matter to mold manufacturers. Simple Q&As on the following pages share booth themes, expert talent on hand, important company news, supply chain strategies, customer support and training initiatives and more.

This exhibitor list is subject to change. Current as of 2/9/22.

Get to Know Allied Machine & Engineering

Visit **Booth 1336** to discuss your holmaking challenges, learn about new product innovations and set up a holmaking consultation with the company's on-hand engineers. Be sure to pick up one of the promotional items too.



Attending PTXPO enables Allied Machine & Engineering to demonstrate how its tooling innovations excel in moldmaking. The company focuses solely on precision holmaking and finishing cutting tool solutions, providing end users with state-of-the-art tooling from the U.S. and Germany. Its partnership with Wohlhaupter, a German manufacturer that Allied acquired in 2016, allows the company to successfully produce boring tools, continue to grow and support boring applications and offer complete solutions for holmaking.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: With tool life being one of the top challenges that moldmakers face when drilling, the T-A Pro achieves phenomenal tool life at high-penetration rates, especially in situations where the balance of ideal chip formation at high penetration is critical. Not only does the T-A Pro have impeccable chip formation, but it also does not require a peck cycle, which is just one of the reasons why the cost per hole is better than competitive high-performance tools. With speed and cost per hole that averages 25% less than existing drills, the T-A Pro demonstrates to mold shops and high-production manufacturers that what was once known as a general-purpose tool is now the go-to for holmaking applications.

Q: What is your company's service philosophy?

A: Our field sales engineers touch base post-purchase to assure satisfaction and continuous improvement. We go to your facility and work through your challenges right at the spindle and our application engineers are always on hand to troubleshoot any problems.

Q: What is your company's training strategy?

A: Whenever you order new tooling, our field sales engineers are available to come to your shop and complete the first run off to make sure the tools are running properly. Our online training platform, Allied Tool Academy, offers various courses on products, online tools and more.

Get to Know the American Mold Builders Association (AMBA)

Visit **Booth 1335** to learn how the AMBA addresses the needs of U.S. mold manufacturers, particularly in workforce development. The booth will be staffed by the association's managing director, as well as business manager and strategic director.

Without access to the AMBA's network of domestic mold manufacturers and global suppliers, potential members are missing bottom-line impacting opportunities to access crucial information and make critical connections that could help them change the trajectory of their business operations.

Q: What is your company's service philosophy?

A: Every day, our staff walks into our office with the aim to impact our membership. Whether a member has been a part of the AMBA for one day or for decades, we strive to address each organization's core concerns through best-in-class, immediate customer service, as well as through our core initiatives in workforce development, benchmarking, strategic networking, partner relationships and industry advocacy.

Q: What is your company's training strategy?

A: AMBA's greatest strength lies in its ability to connect the members of its network so that they can benchmark their operations and discover new, efficient and impactful ways of doing business. In order to fully utilize that network, members need to be invited and connected with one another. AMBA achieves this by first reaching out to new members and familiarizing them with its internal resources and processes, then providing frequent communications so that members stay in constant contact with the opportunities for their business.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: To address one of the most critical challenges in workforce development, AMBA has most recently developed its 2022 "Employee Attraction and Hiring Playbook - A Best Practices Guide." Developed in conjunction with its 2021 Workforce Development Task Force, this 65+ page playbook encompasses best practices and industry insights related to the attraction, hiring and retainment of high-quality, high-performing employees. AMBA also works to give U.S. mold manufacturing a voice on Capitol Hill on topics concerning trade, taxes, COVID-19 protocols and more, through its partnership with Washington D.C.-based, bi-partisan lobbying firm The Franklin Partnership.





PLASTICS TECHNOLOGY EXPO 2022

Get to Know Bales Metal Surface Solutions

Visit **Booth 1215** to discuss all things surface finishing with Bales Metal Surface Solutions' technical experts. Bales proprietary coatings, including diamond chrome, hard chrome, electroless nickel, electroless nickel/PTFE, electroless nickel/boron nitride and electroless nickel/Diamond (nano-sized) are used in essential industries including medical equipment and supplies, defense and food production and packaging, among others.

Since 1978 Bales has been making customers shine! The combined 55 years of



manufacturing experience between Technical Services Managers Rich Wozniak and Rich O'Brien will be on display at the Bales booth to help attendees work through their mold finishing and surface treatment challenges.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We offer testing for plating-bath control operations in-house, allowing us to analyze impurities and implement corrections the same day to better support our customers and their plating needs. We also have an in-house X-ray machine that makes it possible for us to certify to even the tightest tolerances.

Q: What is your company's training strategy?

A: We offer flexibility and convenience to our customers when it comes to training and service via live webinars, video chats and instant chats on our website. We offer one-on-one webinars covering preventative maintenance (PM) in the molding industry and tailor the content to the customers' needs. We also offer downloadable coatings comparison and mold finishing reference charts and an FAQ section on our website covering topics such as selecting your finish, reducing job cost, reducing lead times, prepping parts, determining the amount of plating required, choosing coatings and more.

Q: What is your company's service strategy?

A: A specific service is the Bales Virtual Mold Doctor—an application expert with whom you can quickly schedule a virtual meeting to work through that unexpected tooling problem. We also offer free pick-up and delivery within 50 miles of Bales' location in Downers Grove, Illinois.

Get to Know Beaumont Technologies, AIM Institute

Visit **Booth 813** to meet with Beaumont Technologies and American Injection Molding (AIM) Institute regional sales managers, the director of molding operation, vice president and president about injection molding technology solutions and training options.

The Beaumont team will be doing a drawing to win a high-quality travel laptop bag for any attendee inquiring about the company's new workforce development program.



Q: What is some current company news?

A: In 2022, Beaumont Advanced Processing LLC will be organized into three divisions to better meet the needs of our current and future customers. This reorganization will be made possible through acquisitions and expansion.

For example, a Tooling Division in Sugar Grove, Pennsylvania, with over 7,000 square feet of space for the design and development of precision injection mold tooling. A new 10,000-square foot facility in Cranesville, Pennsylvania, dedicated to material characterization is coming soon that will include Autodesk Moldflow material characterization, test specimen molding and ThermoFlo material characterization. Last but not least, a headquarters facility will be dedicated to increase production capacity, streamline workflow and improve lead times.

Q: What is the new Workforce Development Program through Beaumont Technologies' subsidiary AIM Institute?

A: Our new Workforce Development service is designed to help employers turn their valuable employees in plastic injection molding companies into top talent—turn employees into an elite workforce. The main goal is to determine an individualized educational pathway to ensure employees are proficient at their current role and prepared to take on additional responsibilities in the future. The AIM Institute will do all the education and training so the employer can focus on developing and retaining their loyal and productive staff.

The new program includes four simple steps: (1) submit a list of employee names, email addresses and job descriptions, (2) each employee takes an assessment analyzed by the AIM instructor team, (3) provide a customized development plan for the company's workforce and (4) assess students before and after the class.

Get to Know Boride Engineered Abrasives

Visit **Booth 1019** to meet an expert sales team and receive product recommendations on your specific application. Grab a free combination sharpening stone with stoning oil before you leave. Boride Engineered Abrasives is a manufacturer of bonded abrasive products for industrial and consumer applications whose commitment to customers is set in stone.

Boride is here for face-to-face meetings to support and enhance customer relationships. Customers define their complete needs for products including quality, performance, service, price and after-sale support.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: As the manufacturer of our polishing stones, diamond compound and dressing sticks, we have been able to maintain appropriate levels of raw material to avoid any delays in our manufacturing process. We have also thoroughly reviewed and adjusted inventory levels to ensure items that are in high demand are fully stocked.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Mold polishing and repair isn't the most exciting part of moldmaking, but it is essential. Our mission is to manufacture and distribute a well-rounded, high-quality product to support an efficient polishing process. We supply an extensive line of made-in-Michigan polishing stones for any type of material or size of mold, along with many other products to save time and money, including diamond compound, detail polishing stones, diamond files, carbide burs and equipment.

Q: What is your company's training strategy?

A: An important part of Boride's foundation is fact-based problem-solving and extensive product training. We also work with expert suppliers with training on new products and who are always available as valuable resources.

Get to Know CAE Services/ Mold Vac

Visit **Booth 1531** for support in predicting, identifying and solving molding problems. CAE Services' Tim Lankisch, Carlie Cronin, Jason Bonanno, Mark Solberg and Nick Laurenzana will be manning the booth, and will be putting on Moldflow demos every hour.

With one of the largest expert-certified Moldflow staff globally, CAE Services is here to illustrate how it solves problems even before "cutting steel," from part feasibility, to Moldflow, morphing and windage analysis.



Q: What current moldmaking industry problem is your company solving with its products/services?

A: Cycle times and part warpage are always a concern for molders as cycle times and part-to-print issues impact profitability. CAE Services has demonstrated that morphing and windage analysis is an accurate predictive tool when tolerance issues are a concern. In addition, we have proven that cooling analysis, when done properly, will reduce cycle times on average 3-5%.

Q: What is your company's training strategy?

A: In terms of Moldflow software training, we have two facilities—one with analysts (and molding machines) and the other dedicated to training courses led by Autodesk-certified trainers. In 2021 we added support staff, educators and analysts, with analysis capacity now up to 250-300 projects per month. We also added part design and part feasibility to our analysis portfolio and created an "Ask the Moldflow Experts" webinar series and a "Problem Solved" video series to demonstrate how potential problems can be resolved prior to mold construction.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: In terms of meeting on-time Moldflow analysis delivery, we have a scheduling and analysis process. This starts with our estimating team and leads to scheduling online meetings as well as our customer follow-up protocol.



PLASTICS TECHNOLOGY EXPO 2022

Get to Know Cambrio, Cimatron

Visit **Booth 1312** for a sneak peek at the latest developments in version 16 of Cimatron's CAD/CAM software specifically dedicated to mold builders and designers. Product experts will be on hand to answer questions.

The U.S.-based CAM software subsidiary, Cambrio, was recently acquired by Sandvik, and will now be reported in the Design & Planning Automation division within Sandvik Manufacturing and Machining Solutions. Cambrio's product portfolio includes Cimatron for mold and die design and manufacturing, GibbsCAM for production milling, turning and mill turn operations and SigmaNEST for sheet metal fabrication.

Q: What is your company's service philosophy?

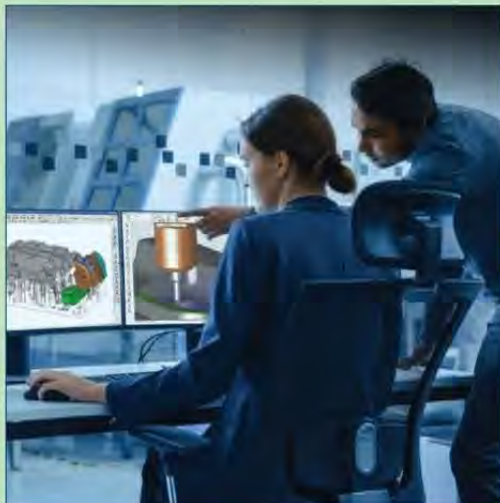
A: It all starts with high-quality product training and having industry experts who understand the industry perform it. This ensures new users understand how new products are applied back at their facility and guarantees higher productivity.

Q: What is your company's training strategy?

A: The Cimatron philosophy is simple: The software is only as powerful as the user's ability to maximize its potential. It is imperative that Cimatron delivers expert training and prompt, quality support to ensure minimum downtime, which allows users to solve their issues as quickly as possible.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: With a growing skills gap, and with companies finding it difficult to employ new talent with experience, we have developed our products to try and capture industry best practices. We have changed our training courses to address this issue.



SPONSOR



Get to Know Canon Virginia (CVI)

Visit **Booth 207** to learn about Canon Virginia, Inc.'s (CVI) moldmaking services and next-generation Shuttle Mold System. Product demonstrations will show how the system can run two injection molds on one injection press. During the event, Canon's engineers and molding experts will be on hand to answer questions about production efficiency gained by using the system, product specifications and ideal applications.

CVI is known for its manufacturing—specifically injection moldmaking and medical device manufacturing—making products for both Canon in the Americas and serving the broader U.S. market with contract manufacturing services. CVI is excited to help sponsor the first-ever PTXPO. The second half of 2021 signaled the return of in-person events and they are thrilled about the timing of this event.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Canon has the capability in most cases to perform all processes in-house, including mold bases, machining, heat treating and hot runner manufacturing, allowing customers to consolidate their supply chain, reduce lead time and bundle costs.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We have been taking a number of countermeasures including, but not limited to: increased safety inventory, expanded discharge ports to include NY and SAV, increased lead times for part ordering, port pre-release of urgent containers, air freight to support production requirements, truck rerouting to ensure timely delivery, trucks from the U.S. west coast, sourced alternative materials and alternate suppliers to improve manpower/capacity/operational issues.

Q: What is your company's service philosophy?

A: As part of our tooling value proposition, we offer startup support at the customer's facility to help transfer our molding process to a customer's machine as well as the mold. We help train toolroom personnel on proper disassembly/reassembly and maintenance procedures, which is especially important to our customers with highly complex molds. We also offer mold repair services and tooling updates from engineering changes.

Get to Know Cavalier Tool & Manufacturing

Visit **Booth 1013** to fill your need for speed! Speed is a foundation at Cavalier Tool and Manufacturing. President Brian Bendig says, "Know what needs to be done. Do it right the first time. Do it better tomorrow." Come meet this lean, mean plastic injection moldmaking machine known as the The Cavalier Way: People. Process. Equipment.

Cavalier Tool is at PTXPO for visibility, networking and knowledge. The team looks forward to showing not just telling how they help customers succeed. The sales team along with Sales Manager Tim Galbraith and Head Coach/President Brian Bendig will be on site to discuss Cavalier's onboarding process and how, by completing some milestones prior to build launch, they can effectively reduce tool build time—sometimes up to 25%.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Cavalier has addressed any capacity issues with expansions. We purchased Mold Service International in Oldcastle, Ontario, as Cavalier Plant 2. We recently bought the building next door in Windsor, opening as Plant 3 this spring. We opened our second and third Cavalier Tool India (CTI) office for engineering support, including a dedicated feasibility group and in-house MoldFlow team. We also work closely with a select few steel and manifold vendors to manage our business and modify our build process to minimize impact on build time. Our three-step onboarding process is another key factor in maintaining our speed to market position.

Q: What is your company's service philosophy?

A: Cavalier believes: Take action first, assign responsibility later. If a customer calls with issues, we activate our Warranty & Engineering Change Group, which does nothing but product support.

Q: What is your company's customer training/support strategy?

A: We have a "no surprises" mentality; our tool design process includes moldfilling and molding simulation virtually in the customers' press. We also live broadcast all tryouts, so designers, production personnel and maintenance personnel can also watch tool tryouts, modify parameters and see results in real time.



Get to Know CHETO

Visit **Booth 1522** to discover how to increase the accuracy and decrease the costs of complex mold production. Meet a deep-hole drilling with milling machine manufacturer that developed its product line with mainly the mold and die industry in mind.

CHETO developed a tool changer for gun drills that automates the change between milling and drilling. Now, moldmakers can set up the part on the table, equip the drilling tools on the ATC (up to 250 tools) and the gun-drills on the gun-drill ATC (up to 5 tools) and then mill and drill without the need for an operator's action.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Deep-hole drilling is a critical step in moldmaking, yet it has long been a big gap on everybody's Gant chart because it's traditionally an area with many problems and few solutions. Usually, everyone focuses their investments on finishing operations like milling, but 50% of the production process can be drilling, especially on really big molds.

One big problem CHETO solves is the instability of long drills that limits the depth that can be drilled—particularly for small-diameter holes. CHETO systems are known for the drill's steadiness and balance.

Q: What is your company's service philosophy?

A: Apart from the teams who provide technical assistance when requested, CHETO has a preventive technical assistance service that helps prevent machines from stopping and ensures maximum quality and efficiency in the production process.

Q: What is your company's training strategy?

A: Our company's philosophy is to continuously invest in training and technological research. For example, we are developing software that can analyze the machine's performance to predict the need for operator intervention.

We are also testing a digital platform that securely maintains a database of the equipment purchased by a customer for easy access when remote assistance is required, including FAQs or assistance manuals. In addition, this new digital tool, complete with augmented reality glasses, offers real-time assistance, with the ability to show the part of the machine on which an operator is working and remote edit an image.



PLASTICS TECHNOLOGY EXPO 2022

Get to Know COAST Systems

Visit **Booth 325** to learn how to better manage your tooling assets via COAST System's Global Mold Management. President Jerry Sherman and VP of Business Development Bill Cunha will be on hand to share strategies for reducing supply chain risks, improving and extending asset life, reducing downtime and increasing productivity, as well as demonstrating the new COAST Capacity and Demand function.

COAST Systems is a global software and manufacturing consulting company that specializes in the plastics industry. By

combining people, process and technology, COAST enables users to better manage, maintain and control valuable tooling assets as a standardized, global solution.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Some tooling and mold asset challenges we address with our global mold management system include location of assets, condition of assets, risks, maintenance costs and access to a plastics and tooling supplier.

Q: What are some product highlights and enhancements for 2022?

A: A few product highlights include a new mobile app, smart tooling, capacity and demand function, project management, asset score cards and self-assessments.

Q: What is your company's service philosophy?

A: The COAST implementation team will train customers and their vendors during the implementation process and continue support as needed.



Get to Know Craftsman Tool and Mold Company

Visit **Booth 1417** to meet a custom mold base manufacturer that stands by its "Built Right Made Tight" motto. Craftsman Tool and Mold specializes in large, close-tolerance custom mold bases including unscrewing, rotary spins, stack frames, bolster plates and die sets. Additional services include custom machining, gundrilling and surface grinding.

Many of the mold base programs Craftsman Mold Bases spearheads directly target in-mold labeling (IML), in-mold assembly (IMA), medical device manufacturing and thin-wall packaging.



Q: How is your facility set up for mold base work?

A: All of our custom mold base work is done in our climate-controlled, 40,000-square-foot facility. We also have 30,000-pound lifting capacity and machine capacities up to 87 inches in width x 167 inches in length.

We achieve stringent tolerances and precision machining for critical alignment components in the manufacturing of our mold base programs. Cavitation requirements often exceed 144 cavities and have micron tolerances.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Scheduling. We constantly update our capacity requirements planning (CRP) software to simplify and document procedures and processes, which makes production as easy and effective as possible. It currently is the heart of Craftsman's production.

Q: What company news do you have to share?

A: Craftsman has invested over \$2 million in new equipment over the last few years—from new bridge machine and large precision surface grinders. We also created project management and shop floor teams, which has drastically improved our culture.

Get to Know CUMSA

Visit **Booth 1422** to better understand how CUMSA's standard components for injection molds function through display parts attendees can touch and feel, hands-on demos and product animations.

CUMSA boasts more than 40 years in the moldmaking industry and over 25 years focusing on standard components. A new headquarters in Barcelona, Spain, is under construction, equally expanding production, storage and the engineering team.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Our products are made in Europe, using materials and components made in Europe.

Q: What is your company's service philosophy?

A: We support our customers with maintenance, guidance, repairs, spare parts, etc.

Q: What is your company's training strategy?

A: We continually dedicate time and resources to improve customer education. Recently, we added demo videos—with the false cut and 3D CAD files—for most of our products on the website and a YouTube channel.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Our company focuses a lot on undercuts solutions and ejection systems, which are two of the more challenging situations for today's mold builders and molders.

Get to Know Custom Mold & Design

Visit **Booth 1331** to hear all about the experience, state-of-the-art equipment and superior talent that enables Custom Mold & Design to produce best-in-class molds and components. Custom Mold & Design is here to help people solve their complex tooling problems and to find people/companies that are looking for high-quality molds that produce high-quality products.

Custom Mold & Design recently added a second Yasda YBM Vi40 five-axis machine to its arsenal, giving the shop a total of 10 Yasda machines.



Q: What current moldmaking industry problem is your company solving with its products/services?

A: We take the risk out of the plastic professional's mold build decisions by giving them the confidence to expect quality and repeatability in our molds.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Custom Mold & Design has developed long-term relationships with our suppliers. These relationships ultimately benefit our customers through enhanced communication and a greater understanding of our business. This allows our suppliers to meet our schedules more effectively. We also have multiple suppliers, where possible, to give us greater flexibility to meet customer needs.

Q: What is your company's service philosophy?

A: Our philosophy is simple—if we built it, we stand behind it. Our team remains available as a resource long after a tool is shipped. In fact, we are frequently asked to solve issues with problem tools built by other tool shops.



PLASTICS TECHNOLOGY EXPO 2022



Get to Know DME

Visit **Booth 1214** to take in DME's theme focused on new ways to improve mold design and processing for lower part cost. On-hand technical engineering staff will guide attendees through several new innovations and provide samples that highlight the benefits of these technologies.

DME has made recent investments and expansions, including new steel converting capabilities combined with an expansion in CNC machining capacity to support customer growth in North America. The company also introduced new hot runner thermal management systems to reduce cycle time, scrap and increase molding capacity, a 3D modular molding system that reduces time to market and other new products with immediate off-the-shelf delivery.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Leveraging its manufacturing capabilities in Michigan and Windsor, Ontario, DME is ensuring customers receive reliable deliveries through local supply. DME carries the industry's broadest range of mold technology products, all of which are available through its eCommerce platform, which enables 24/7 service.

Q: What is your company's service philosophy?

A: A team of knowledgeable, field-based engineers and salespeople are on hand to assist and train customers on how to best take advantage of DME's wide range of products and technologies. They are supported by an experienced customer service and engineering (mechanical and engineering) staff operating from our global technology center in Detroit, Michigan. Before launching any new product or service, a complete internal training of associates is carried out to ensure product knowledge and ability to service customers. Follow-up training sessions are scheduled on more complex engineered products to expand their knowledge base.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: With the broadest breadth of products in the industry and the continued addition of new and innovative products, DME provides solutions and eases the demands on moldmakers in a complex and ever-changing market.

Get to Know Edro Engineering and Specialty Steels Inc.

Visit **Booth 1537** to learn how Edro means much more than RoyAlloy. Edro manufactures and distributes tooling materials for plastic/rubber injection molding, blow molding, extrusion and thermoforming, and tight-tolerance custom plastic injection mold bases, 3D-printed steel molding components and PVD/DLC coatings.

The Schaumburg facility is adding a vertical and horizontal mill to do six-side processing this year, which will complement its current saw-cutting capabilities.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Edro is positioned to treat most tooling issues in plastics processing and can do so quickly and efficiently. We have a very robust supply chain for RoyAlloy stainless holder using both domestic and European sources. Raw material ingots and slabs are staged for rolling and backed by a continuous supply to ensure maximum flexibility and a quick response to requirements that is unrivaled in the industry. Also, rigorous stock management is in place for our Böhler tool steels, aluminum and copper alloys to prevent any gaps in inventory.

Q: What is your company's training strategy?

A: Edro insists on being involved with any additional heat treating that may be involved. Having the correct heat treat instructions (when applicable) is vital to getting the best properties from our materials. Edro has several metallurgists on staff to help with these types of technical discussions.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Edro has materials for virtually any tooling issue in plastics production—whether it is a problem with wear, corrosion, cracking or wanting to improve cycle time (thermal conductivity).





Get to Know Engel

Visit **Booth 106** to see where efficiency meets liquid silicone rubber. Engel will be producing an S-shaped duckbill on its e-mac 145 all-electric, multi-purpose machine out of U.S. LSR. Roembke Mfg. & Design developed the two-cavity mold for this medical/automotive application. Nexus Elastomer Systems provided the LSR dosing system ServoMix X20 and an Engel viper 20 linear robot takes the part out and deposits it on a conveyor belt.

Attendees will also see a quick mold change system using the QMC mechanical clamping system from Staubli and cost-efficient fast mold change on Engel's small hydraulic Victory 330/80 machine with 800-kilo-newton clamping force for which Roembke provided the salad tongs and fruit bowl molds.

Engel is taking the opportunity to show its capacities at PTXPO in the small-size injection molding machine market in an area that has been void of trade shows since 2009. Engel is proud that both partners Staubli and Roembke will be in its booth to discuss the solutions shown.

Q: What is your company's service strategy?

A: Engel is proud to employee over 70 expert service technicians across the U.S. and Canada who are quickly available for on-site assistance at your production facility. Also, Engel provides smart factory solutions for remote service, our customer portal enable fast access to expert support and, if needed, spare parts. Engel also introduced its Apprentice Program in the U.S. to educate a new generation of specialists to support customers (second program is starting in 2022).

Q: What is Engel's training & support strategy?

A: Engel has been offering state-of-the-art, standardized training classes as well as customized trainings for more than two decades. Well-trained operators and maintenance staff are key to making best use of equipment, regardless of new or existing. The help functions directly on the machine controller make access to on-demand information easy. Smart machine software supports the operator and helps avoid scrap and downtime. We also offer solutions for maintenance support on site and a nationwide network of applications engineers.

Get to Know Fast Heat by Spark Industries

Visit **Booth 621** to see the benefits of automation and smart work cells, including Fast Heat hot runner controls with auxiliary I/O communication, smart diagnostics, SmartMold boxes with active thermocouple protection, cables, machine nozzles and sprue bushings.

Also, for the first time, Fast Heat by Spark Industries is showing Root Industrial's automation solutions including a ReadyCobot demonstration, and information about Wittmann 4.0 injection molding cells and Fanuc integrator Great Lakes Machinery and Automation.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We are focused on new product development and component updates, including a weekly search for interchangeable components specifications and the engineering and sourcing of new hardware solutions. We have also made a commitment to keep hot runner controllers in stock for our customers. We have 12-zone, 24-zone, 30-zone and 60-zone hot runner controllers in stock at all times along with spare modules and parts. Our sister company, Root Industrial, has arranged for seven-day lead times of collaborative robots (cobots) to Elkhart, Indiana.



Q: What current molding industry problem is your company solving with its equipment, products/services?

A: Collaborative robots (cobots) are an ideal solution for machine tending in a mold shop. They can also be used for other repetitive activities like drilling, polishing, assembly, bin picking, inspection, packaging, part presentation, palletizing and more. We pulled out our old Fast Heat catalogs and put a system in place to fulfill replacement orders. We also encourage mold shops and molders to use our hot runner controls, mold boxes and diagnostics to protect their tooling and optimize performance.

Q: What is your company's training strategy?

A: Our hot runner controls are designed to be intuitive and ready to run so there really is not much of a learning curve. The built-in help screens also answer any questions that may arise. Even still, we provide in-field training for every new customer and as requested by existing customers who may have new staff or just want a refresher. For Root Industrial's automation solutions, we provide initial programming and at least a day of on-site training.



PLASTICS TECHNOLOGY EXPO 2022

Get to Know Fisa North America

Visit **Booth 1219** to be introduced to labor-free mold cleaning and guided through the advantages of ultrasonic mold cleaning machinery from Fisa North America.

With 40 years in the industry, Fisa is looking forward to presenting its equipment to those who have not yet discovered ultrasonic cleaning. Fisa works hard to ensure each machine sold is running at an optimal level, so they visit customers whenever they are in their area. Whether it's in between sales meetings or service calls, we want to



make sure any issue—reported or not—is addressed. During these visits, we often discover issues customers have either forgotten to report or didn't realize something was inoperable.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Thanks to innovations and investment in our manufacturing process prior to 2020, Fisa has been able to supply customers with ultrasonic mold cleaning machines without ever compromising on quality or extended manufacturing times. Being able to get a machine out the door is only the first battle, but the quicker we can get a machine in the hands of the freight forwarder, the better for the customer.

Q: What is your company's training strategy?

A: For every machine installed by Fisa, we spend the day training each operator on how to use the machine, and even return to train operators on additional shifts. After training, we put their knowledge to the test by supervising our customers using their machine and won't leave until everyone understands how to use it. Upon our departure, we also leave detailed training guides that can be used for reference.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: The moldmaking industry's main focus is to build and supply critical tooling to their customers, and dedicating manpower to manually clean molds shouldn't be a strain or a headache. Ultrasonic cleaning eliminates the manual labor needed for mold cleaning. Given current labor shortages as well, the value of skilled workers is even higher and shouldn't be wasted on scrubbing a mold.

Get to Know Haimer

Visit **Booth 1027** to experience product solutions for Industry 4.0 that increase moldmaking productivity, including shrinking, balancing and presetting machines available for live demonstrations as well as displays featuring toolholders, cutting tools and 3D sensors.

Haimer is a German-based company that designs, produces and sells innovative, high-precision products for mold machining and metalcutting with exceptional customer and technical service. They recently opened the Haimer Application Center 360, a place for individuals to learn more about

the company through more than 40 interactive stations and various 360-degree video demonstrations via a Haimer expert-guided or self-guided tour.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: To achieve efficient mold machining we offer extended length, slim profile toolholding that provides a flexible, accurate and consistent tooling solution each time, as well as our Mini-Shrink tooling and extended-reach Duo-Lock modular cutting tool system.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Haimer USA assures that our product pipeline continues to be filled from Germany and maintains a large inventory in our North American headquarters near Chicago.

Q: What is your company's service philosophy?

A: We offer Haimer CARE that includes maintenance, installation, training, individual service and repairs, as well as available Customer Service and Tech Departments.



SPONSOR

Get to Know Hasco

Visit **Booth 1207** to see new product innovations and learn about newly released online and offline design, purchasing and build assistance for your projects from Hasco's North American team. Designers and moldmakers will benefit from a complete range of ready-to-install, modular, high-precision system components and available intensive specialist advice.

Live demonstrations of Clean Break multi-coupling cooling manifolds, metal powder for additive metal printing and Hasco's Loc Check device for keeping track of molds on display, to name a few, will be performed.

**Q: What current moldmaking industry problem is your company solving with its products/services?**

A: Hasco is your complete mold building supplier for metric worldwide use in plastic injection mold design and building. We have taken this further this year with the introduction of supplies for the metal additive manufacturing sector of mold building. Our products cover every aspect of the mold design process from prototype to production and are available online and offline.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Hasco has been on top of all supply lines pre-pandemic and continues to work closely with all aspects of our internal European manufactured products. We've increased stock levels at our U.S. and Canada locations, increased local stock by 30% and use sea freight to minimize costs.

Q: What is your company's training strategy?

A: Hasco's philosophy has always been to offer customers complete training programs styled to their specific requirements for the products they purchase. We work closely with our own engineers and the customer's engineers to make sure every product is fully understood in its intended use. Over the last decade, Hasco has offered what we call "Designer Days," which are tailored from a lunch-and-learn, virtual demonstrations or facility visits with additional supplier support. Every month the company's web portal also has live, online training that customers can attend called "Focus on Solutions."

Get to Know Heidenhain

Visit **Booth 1118** to speak with a Heidenhain five-axis milling expert about machine monitoring and connected machining in mold manufacturing, as well as features and functions to look for in a control to take full advantage of machining capability and deliver precise, well-finished molds.

Heidenhain is a leader in motion control solutions that adheres to a "customers first" philosophy. Experts from its Schaumburg, Illinois, team will be at PTXPO to help attendees select the right CNC on their next five-axis machining center.

**Q: What current moldmaking industry problem is your company solving with its products/services?**

A: Heidenhain tackles the challenges of today's manufacturing floor such as hard-to-machine materials, complex geometries and employee training with attention to constant process improvement via CNC machine controls and touch probes that improve part quality, shop floor efficiency and return on investment.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We produce a majority of our components locally in the U.S. or in-house.

Q: What is your company's service strategy?

A: We monitor our customer response time on phone calls and emails. Our target is two hours during the work week. We consistently beat this goal and respond to customers between 1.2-1.6 hours on average.

Q: What is your company's training philosophy?

A: For on-site training, we call the customer in advance to determine knowledge level and customize training topics accordingly. All of our trainers send training surveys as a class follow-up, and we measure results and make adjustments, if needed. We currently have a 98% satisfaction level for our TNC classes.



PLASTICS TECHNOLOGY EXPO 2022



Get to Know iD Additives

Visit **Booth 4209** to check out iD Additive's new Cool-EX, a high-performance coolant with inhibitors designed for use in closed-loop systems to prevent microbiological fouling, corrosion and scale caused by poor water quality. Most users opt to restore their systems with a descaling acid, then will use the Cool-EX coolant in place of their facility water.

iD Additives believes in being partners with customers to help them reach their goals. Technical managers for foaming agents, purge compounds and MRO product will be at the booth to discuss the benefits of coolants in closed-loop extrusion.

Q: What is your company's service philosophy?

A: Our company slogan is "Unmatched Technical Support for Innovative Products." Technical managers with years of hands-on experience in their specific product areas are always available for support in person or via remote (Facetime and WhatsApp).

Q: What is your company's training strategy?

A: When it comes to training, we hold 101 Classes for all of our products, which involve our technical managers on site at customer facilities for training employees on all three shifts. We also offer remote classes via Zoom where our techs can answer questions.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: With our Eco-Pro product line we can offer customers an easy and safer solution to flush out molds.

Get to Know iMFLUX

Visit **Booth 517** to see iMFLUX's low, constant-pressure injection molding platform that works on virtually any machine, material and mold. They will equip your team to simplify and optimize your molding operations—unlocking your ability to deliver more adaptive, reliable and predictive processes. You'll produce higher quality parts, reduce costs and lower capital—all while advancing your sustainability efforts.

They are running a live demo in Japan Steel Works America Booth #531. Tell them we sent you!

After the last two years, the iMFLUX team is excited to be here, interact with the industry in person and share the advantages of low, constant-pressure molding.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Sustainability is a major opportunity for the plastics industry. The iMFLUX technology changes the injection molding process through closed-loop feedback that maintains low constant pressure to produce with less energy, wear and waste. iMFLUX puts your operation on a journey to autonomous molding by adding intelligent control that automatically adapts to large, even massive viscosity variations, down cavities, leaking check rings and other shifting environmental conditions.

Q: What is your company's service philosophy?

A: We'll empower you and your team to a new level of understanding, capability and performance. We get you up and running, and we keep you there, increasing your uptime, quality, throughput and results. Service is an integral part of iMFLUX's culture and together with our OEM partners, we're ready to help whenever and however you need us. You'll receive assistance promptly from our Service and Support team, available by email and phone. We are also launching a Learning Management System this month to provide videos on demand, when you need it.

Q: What is your company's training strategy?

A: Education is always at the forefront. We are here to educate and empower your teams to deliver all the advantages of iMFLUX. Education is available in person, digitally and on-demand/online. Our Learning Management System will be live this month and will provide continuing education and a wealth of learning materials, right at your fingertips. And of course, our Service and Support team is available by email or phone, and will be happy to assist you in any way you need.





Get to Know INCOE

Visit **Booth 1026** to gain a better understanding of innovative, cost-efficient hot runner solutions and the sustainable future of plastics from INCOE technical experts.

INCOE has added six additional machines to its 138,000-square-foot Auburn Hills, Michigan, facility in 2021, including but not limited to pin grinding, plate surface grinding and machining centers. The facility also offers state-of-the-art hot runner training and a material test molding area.

Q: What is your company's service philosophy?

A: INCOE's strategy includes stocked inventory, 24/7 capability, complete system manufacturing and engineering at its Michigan location and 24/7 available service and support.

Q: What is your company's training strategy?

A: Free, eight-hour class on hot runners and hands-on training are offered at our Auburn Hills facility, and field service specialists are always available for customer support.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: INCOE's five global manufacturing facilities help to avoid common overseas shipping/logistics delays and additional, unforeseen charges. INCOE is a U.S.-based, family-owned business that designs, engineers and manufactures hot runner solutions for North American mold builders at its Auburn Hills, Michigan, facility.

Get to Know International Mold Steel

Visit **Booth 1115** to find plastic mold solutions from International Mold Steel. The company offers a unique line of pre-hardened mold steels, tool steels and cold work die steels and matrix high-speed drill steels to improve the quality and reduce the cost of creating molds, dies and tooling.

International Mold Steel recently added a large Amada pulse saw to improve lead times for its customers.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: International Mold Steel provides a high thermal conductivity powder called DAP-AM HTC 40/45 to meet the growing demand to print conformally cooled inserts for plastic molds.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: International Mold Steel maintains a healthy inventory of tool steels to meet the needs of the plastic mold community. We also continue to invest in our team and equipment to ensure each member maintains focus on delivering a quality product.

Q: What is your company's training and service philosophy?

A: We try to follow up with customers to confirm satisfaction. We support our customers with guidance on machining, heat treating and coating our steels. Our team is provided continuous training on each of our tool steel grades and the value-added services we offer. When the technical level of questions increases, we have internal experts, including from the mill, ready to help.





PLASTICS TECHNOLOGY EXPO 2022

Get to Know Kenmold North America

Visit **Booth 1424**, where Kenmold's entire sales team, including account managers, the director of sales and the VP of sales will be highlighting capabilities, showing off certifications and conducting sign-ups for a daily drawing for thermos giveaways and bourbon!

Kenmold is a ISO 9001:2015-, ISO16949- and ISO 13485-certified manufacturer of high-performance, cost-effective custom plastic injection, die cast and rubber molds for the automotive (interior and exterior), appliances, electronics, packaging, medical and food industries.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: To meet increasing customer demands and run a non-stop production cycle, Kenmold plans to invest in additional injection molding machines and laboratory equipment within the next two years. Kenmold is here to introduce itself as a reliable, high-quality manufacturer to help overcome production capacity restraints. Our global logistics team is working diligently to find the fastest and most affordable logistics companies for our customers.

Q: What is your company's service philosophy?

A: Our philosophy is to keep projects "On time, on target." Our account managers are trained to assist customers through every step of the project cycle, from quotation to the weekly manufacturing schedule. When you begin a project quote with Kenmold, you are assigned an account manager to help through each step of the process. Our goal is to make sure that customers are involved in every single step of the project. We also travel to review samples with the customer and provide excellent customer service when shipping the tool and/or parts.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Kenmold concentrates on helping customers realize the opportunities and possibilities of cleanroom molding. In circumstances where our customers don't have the expertise regarding the medical laws and regulations required, Kenmold has the knowledge and capabilities to handle these processes. Our account managers assist customers through every step of the project cycle. We provide accurate quotations, materials, engineering designs, product assembly and packaging options and assist with required testing to obtain medical certifications such as FDA, CE and GMP.

Get to Know Kruse Analysis

Visit **Booth 1515** to enter a raffle for three Oculus 2 VR Headsets to promote Kruse Analysis' new VR training tool. Expert booth personnel will be on hand to discuss CAE simulation design services, analysis demonstrations and simulation consulting and software options.

Kruse Training and Kruse Analysis Founder and President Torsten Kruse with his 30 years of experience in the injection molding industry, Director of Product Development & Marketing Nathalie Fischer and Office Manager Wally Klee will be working the booth.



Q: What is your company's service strategy?

A: At Kruse Training, we pride ourselves on timely and accurate responses to any questions. Our customers engage with us via our feedback section, which is viewable to any of our registered users, allowing them to see any previous challenges or questions. Our Kruse Analysis services do not end with a simple written report. We provide CAE molding simulations to ensure they continue to benefit from our services once the project is complete. Then, after our analysis, we offer recorded, real-time online simulation reviews for future access to results, in-depth evaluation, discussion and recommendations.

Q: What is your company's training philosophy?

A: After providing CAE simulations to a broad range of clients over 25 years, Torsten Kruse saw the need for training that was accessible, relevant and affordable. Since our launch at NPE in 2018, we have been consistently innovating injection molding training, such as our VR Training Tool.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Kruse Training was launched to address the need of cost-effective, current and easily accessible training for the injection molding industry.

Get to Know Mantle

Visit **Booth 1319** to view high-quality, precision 3D-printed parts. Tooling engineer Scott Kraemer, with more than 30 years of experience in the plastics industry, will also be giving a run-down of Mantle's new 3D printing technology used to make the displayed components, which delivers practical value with reduced lead times and lower costs while opening new possibilities for value creation with conformal cooling.

New company investments include shipping and installing its first systems in 2022 and greatly expanding its customer engagements and support.



Q: What current moldmaking industry problem is your company solving with its products/services?

A: Our technology helps reduce lead times, lower costs and enable unique geometries (like conformal cooling) for tooling inserts while addressing the skills gap for experienced toolmakers.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Mantle is building as much redundancy into our supply chain as possible for our materials and printers. We retain responsibility for quality control to ensure everything meets our standards.

Q: What is your company's service philosophy?

A: Our customer success is delivered directly by Mantle (not distributors) and includes customer service (to answer calls and resolve issues), field service (to fix equipment and perform preventative maintenance) and training at our facility and at our customers' facilities when they get our equipment. Our engineering team also works closely with customers.

Get to Know Mastip Inc.

Visit **Booth 1325** for a display of Mastip's latest hot runner product offerings presented by three expert team members, including hydraulic actuation for its Unitized Nexus Systems, gate cooling inserts for thermal and valve-gated systems, solutions for abrasive polymers, tipless nuts and pin guidance for cylindrical valve gates, LSR solutions and close pitch valve-gated nozzles.

Mastip looks forward to industry events to discuss upcoming projects in person, putting its more than 30 years of experience designing, manufacturing, installing and maintaining hot runner systems to work.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Our manufacturing facilities have increased our component and spare part stock holdings. Our procurement teams have identified and vetted multiple suppliers for critical items to ensure continuity of supply globally.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Optimizing part filling with glass- and carbon fiber-filled engineering resins. We use advanced MoldFlow analysis to configure the optimal gate location for the flow of reinforced materials. This takes into consideration any complex geometries of the final part, including its effect on filler materials.

Another challenge is system wear and increased maintenance when processing abrasive polymers. Mastip's hot runner systems design is geared toward withstanding abrasive materials and staying in production longer, increasing maintenance periods. This includes stainless steel components, carbide tips and wear-resistant, long-life nuts.

Q: What is your company's service philosophy?

A: We offer post-sale support in the following areas: installation (on site for hot runner installation), mold trials (technical sales team on hand for review), in-market spare parts availability and our service team comprising a service manager dedicated to each region and who works closely with the local service and support teams.



PLASTICS TECHNOLOGY EXPO 2022



Get to Know Melt Design Inc.

Visit **Booth 1430** to see what personalized service and quality results are all about when it comes to hot runners. At Melt Design they follow a "We Listen... We Think... We Solve" motto and its president and chief innovation officer will be on hand to show attendees how his patented hot runner technologies work to provide failure-resistant performance for millions of molding cycles. Support staff will also be on hand to assist visitors.

Melt Design believes it is important to participate in industry events like PTXPO and Amerimold where the moldmaking and molding industries can connect, learn what's new and help each other to reach goals and discover new opportunities through relationship building.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We are a U.S. company employing U.S. craftsmen and U.S. suppliers. This helps to keep lead times lower and ensure the manufacture of high-quality hot runner systems and components, as well as molding machine nozzles and shut-off devices for our customers.

Q: What is your company's service philosophy?

A: Accessibility. We work very closely with customers on everything from designs and quotations to the finished product, and then beyond to ensure continued satisfaction. We have several large OEM customers whose engineers know they can call anytime to speak directly with Panos Trakas about various projects, even if 30 years have passed since delivery of a hot runner system or component. The MDi website also provides a multitude of resources to help guide customers with ordering and use of our products.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Supply chain accessibility and lead time issues. We offer quicker turnarounds on projects and replacement parts or maintenance. We are a small company, but very skilled at what we do... and very responsive. MDi builds manifold systems and components that run for millions of cycles without failure. Plus, they are easy to maintain, which is another time-saving benefit.

Get to Know Meusburger US, Inc.

Visit **Booth 1316** to see technology solutions for ejection, temperature regulation, demolding, guiding and mold change, as well as locks and marking stamps. Meusburger has over 55 years of experience in working with steel.

The company's product portfolio includes high-precision standard parts and products in hot runner and control systems, making Meusburger a reliable global partner for manufacturing molds, dies, jigs and fixtures.

High-quality standard parts from Meusburger provide the reliable basis for moldmaking. At Meusburger, the plates and bars are heat treated for stress relief, thus reduced plate warping during machining is guaranteed.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Meusburger maintains a vast stockpile of raw steel from multiple steel suppliers. Our stockpile availability is part of our routine proactive measures to ensure that we can still support our customers' needs during times of supply chain crisis. Our steel supply enables us to maintain our large-scale inventory parts warehouse for standard metric parts and plates. We also continue to drop-ship directly to customers, which reduces lead times.

Q: What is your company's service philosophy?

A: Our sales team provides our customers tracking information the same day their order ships. After delivery, we follow up with each customer to ensure their satisfaction and offer support on any new or ongoing projects. Technical Engineer Philip Harrison, who has over 25 years of mold design and engineering experience in injection molding, helps customers troubleshoot and find solutions. Meusburger also has a Product Support Department that supports customer inquiries.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Meusburger has expanded its comprehensive range of ejector pins, sizes and finishes. We offer through-hardened ejector pins with and without DLC coating, nitrided pins with oxidation coating, ejectors from HSS, stainless ejectors with anti-twist lock, as well as contour core pins. All are available in various materials for any application.





Get to Know National Tool & Manufacturing Co.

Visit **Booth 1519** to see National Tool's steel and mold base manufacturing process displayed in the booth and explained by the company's steel processing expert and a mold project engineer. Make sure to stop by to enter a giftcard giveaway from Home Depot or Amazon.

At the beginning of the year, National installed several new machines to increase steel process efficiency, including new milling technology for increased output with decreased downtime, and added personnel in all facets of National Tool's operations (machinists and engineering project management staff).

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: National consumes hundreds of tons of raw material annually—we have ample supply of stock both in inventory and consistently arriving from steel mill partners. Balancing both customer needs and the current production flow ensures that the office team gives accurate lead times to our customers. This communication also gives the shop team enough time to make quality products in the most efficient manner.

Q: What is your company's service philosophy?

A: With National being a small business, our philosophy has been to build relationships with customers to learn their needs. Our sales personnel are also our customer service personnel, enabling our employees to work with our customers as a team to find a quick solution.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: By offering both steel and steel mold bases with customization at any step, our goal is to provide a one-stop shop service to our customers. Having both processes performed under one company speeds up the customer's timeline and provides a consistent, quality product without relying on outside vendors. A single-source solution reduces freight from outside vendors while eliminating valuable production time.

Get to Know Next Chapter Manufacturing

Visit **Booth 1119** to discover the latest advancements in mold cooling and venting using advanced additive manufacturing technologies. The Next Chapter Manufacturing team of moldmaking and mold processing experts are on site to educate attendees on ways to solve their molding challenges and talk about their million-shot guarantee on all of the company's tooling.

Next Chapter Manufacturing is also launching a new product called Mold In A Day (MIAD). They will be giving away Yeti Tumblers as well as their metal-printed hats, pencils and bottle openers.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Our Conformal Cooling technology reduces cycle time 20-80% so molders can run the orders of molded products in a fraction of the lead time as in the past. Our InnoVent technology enables perfect quality parts to exceed customer expectation on cosmetic requirements.

Q: What is your company's service/training strategy?

A: We are the only additive tooling company to offer a faster cycle time or free guarantee on all of our Conformal Cooling tooling. We are a group of molding experts so we are able to offer support during the mold startup and processing to optimize cycle time and a smooth validation process. We also offer articles, videos and one-on-one training and support for customers to ensure the products are successful in the customer's production environment.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Our technology addresses sustainability, processing of difficult PCR resins, reducing operational costs with conformal cooling and reducing mold lead times. In the last year we invested over \$1 million in the latest technology and expanded our facility size by three times to handle customer needs in the most efficient way.





PLASTICS TECHNOLOGY EXPO 2022

Get to Know Oerlikon HRSflow

Visit **Booth 217** to hear the Oerlikon HRSflow technical team present the new S Series hot runner line suitable for low-shot weights, multi-cavity and thin-walled applications, FLEXflow Evo servo-driven valve-gate system and MRS, the company's mechanical stroke regulator for hydraulic actuators which avoids surface defects.

Acquired by the Swiss Group Oerlikon SpA last June, the company's hot runner systems are now offered under the Oerlikon HRSflow brand. Oerlikon HRSflow has also been integrated into the Oerlikon Flow Control Solutions Business Unit, which is part of the Oerlikon Polymer Processing Solutions Division.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Our suppliers are divided into different categories based on their probability of causing a "business default" and thereby minimizing their impact on the company.

In addition to the usual company procedures—such as official agreements or a check of suppliers' financial strength—additional actions have been performed with the pandemic including insourcing components normally delocalized in other countries characterized by low production cost but longer lead times; insourcing components where the technology is the core and internal production costs are competitive; increasing stocks to face issues related to lead time and reduced supply chain reliability; and forecasting to make our needs clear to facilitate our suppliers' organization.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Prompt 3D layout design to speed up the tooling design and 24/7 full-service support including rheological simulations and technical analysis/feasibility to avoid tooling design mistakes.

Q: What is your company's training strategy?

A: We support our customers with customized technical training courses about the injection process optimization, process control, system operation and maintenance. Training can be held both at the customer plant or at Oerlikon HRSflow's local service tool shop. The training plan is mainly based on Oerlikon HRSflow systems installation and maintenance, system integration and control unit best practice and injection process optimization.

Get to Know Omega Tool Inc.

Visit **Booth 923**, which will emphasize the company's ultra-high precision, high-cavitation, packaging, medical and light industrial tooling, along with mold trial services within its Enhanced Technology Center for Omega Tool customers and other tool shops.

As a privately held organization, the company is nimble in its decision making and making necessary changes. Omega Tool plans to take advantage of networking with existing and new customers as they navigate the PTXPO show floor.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We rely strongly on our ERP system to monitor real-time and future workforce and machine capacity, which allows us to be proactive rather than reactive.

Q: What is your company's service philosophy?

A: Our goal is to partner with our customers. We invite the customer to attend every mold sample at Omega Tool or at their facility. We also invite the customer's toolroom representative for post-sample mold tear down and follow up later to ensure customer satisfaction.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We have been using more servos to actuate mold movements and positioning, enabling us to offer clever solutions that our customers appreciate.

Get to Know PCS Company

Visit **Booth 1330** to see PCS Company's latest products and innovations targeted directly for molders and mold builders. PCS industry experts will be on site to answer any questions about applications and products, including regional and national sales personnel and product managers. The team will also be handing out its PCS merchandise including hats, tumblers, notepads, pens and flyers.

PCS Company is here to collaborate with new and existing customers about its latest products as they continually improve and expand their product lines. This past year PCS has partnered with Molder's Choice, resulting in a larger inventory of molding supplies.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Over our 60 years of successful sourcing, PCS remains strong with the supplier and vendor relationships we have built. Collaboration with our providers helps us stay ahead of supply chain issues and keep a very high level of inventory on hand for our customers.

Q: What is your company's service/training strategy?

A: Our mission and policy is to be a full-service provider, which means providing support during the entire sales process. Our expert team also explains the advantages of our goods and services using our extensive training materials for each product.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We have invested in our manufacturing department to lower delivery times for our customers with new machinery. We have also expanded our technology with our mold base configurator that is designed to assist customers effectively and efficiently for their standard mold base needs.

Get to Know PLASTICS Industry Association

Visit **Booth 2535** to talk about resources and tools available to Plastics Industry Association (PLASTICS) members to help people come together and help positively shape the future of the industry with networking, advocacy, educational programming



and business opportunities. Members of the executive leadership and NPE show management teams will be working the booth and will be available to discuss opportunities and challenges. They are especially excited

to fill attendees in on everything they can expect when welcoming them back to Orlando for NPE2024.

Advocacy, communications, engagement and sustainability are four new goals for the PLASTICS team. They have developed strategies to support each of these pillars and assigned board-level sponsors and staff-level champions to oversee progress.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We've been able to bring in some of the industry's leading experts to talk about and help event attendees understand the changing face of the plastics supply chain. For example, Bill Sullivan, executive VP of Advocacy with the American Trucking Association, joined us at last year's Plastics Packaging Summit to discuss how brands and processors have shifted procurement to more local suppliers, as well as the increased use of virgin stock in response to COVID-driven shifts in both materials supply and demand.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: In addition to allowing us to supplement the training and support offered by equipment manufacturers, our role as an ANSI-accredited standards developer is key to identifying and solving problems. The plastics industry depends on high-tech machinery to manufacture the products and materials that make modern living possible. This machinery should be built to standards designed to ensure the safety of our industry's most valuable resource: people. Through our Machinery Safety Standards Committee, we can provide professionals throughout the industry a venue to work through ANSI procedures, helping to ensure the standardization of plastics machinery to protect workers and achieve efficiency in productivity.

Q: What is your company's service philosophy?

A: As a membership organization, our focus is entirely after the sale. We are dedicated to the long-term success of our members and the ongoing health of our industry.



PLASTICS TECHNOLOGY EXPO 2022

Get to Know Precision Laser Technology (PLT)

Visit **Booth 1414** for assistance with etching precision details, logos and surface textures using proven laser solutions. Precision Laser Technology's (PLT) five-axis laser technology improves pattern design versatility, mold placement accuracy and repeatability for multi-cavitation tools, with texture options ranging from



industry-standard VDI and matte finishes, to custom-designed 3D patterns. Texture capabilities have also been extended to the reproduction of functional microstructures within molds, allowing molded parts to diffuse light reflection, increase flow rate or stimulate tactile senses.

PLT's presence on the show floor reinforces its support of global mold builders through

values in exceptional quality without compromise, responsive technical support, on-time delivery and cost-efficient service. Nothing is set in stone, but PLT is currently aggressively looking toward business expansion, including another location and additional services.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Lasers have become an alternate micro machining source for mold construction. The beam size and reach, approximately 0.0015 inch and 12.0 inches, respectively, allows for more intricate, finer details to be ablated that conventional machining methods would be difficult to deploy. In exchange for cutters or electrodes, an enclosed volume file representing the tool's metal removal is generated and uploaded to the laser. After the mold block is stabilized and indicated similar to any machining platform, the laser will strictly ablate the defined volume area within 0.0005 inch. This process may be extended to electrodes or to capitalize on setup time, and incorporate a secondary operation, such as texturing and/or engraving.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: In response to supply chain issues, PLT turbocharged its Program Management System (TPM), which helps us maintain a thorough record of all active projects with complete, up-to-date progress reports. Our TPM system is an internally shared, simple program, but prepares us for immediate launch of any job.

Q: What is your company's training strategy?

A: Our approach consists of meeting ideal customers, sharing relevant content to address manufacturing gaps, collaborating and providing continuous feedback/samples. Much of the laser technology we utilize is commercially available. However, the workmanship and practical use of lasers is valued knowledge beneficial to mold builders and designers.

Get to Know Progressive Components

Visit **Booth 907** to learn about Progressive Component's roots in the mold industry, and how they work to have all they do result in the efficiency and profitability of mold builders and molders. With an in-house team of designers, they survey customers and industry friends for input as to how they can provide time-saving tools to mold designers. New at Progressive is the development of best-in-class CAD geometry in multiple formats (SolidWorks, NX, VISA, STEP, Parasolid, ACIS and IGES).

Progressive is here to meet mold buyers, mold builders and those who maintain injection molds on a day-to-day basis. The new booth features acrylic demos so attendees can truly have a first-hand feel for how mechanisms operate rather than just viewing an animation.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We've been on a mission for over three decades to standardize products to assist mold building companies and provide molders with products that have long-running performance and simplified maintenance. Then, monitoring the tool's productivity and making access to a mold's information effective and affordable.

Q: What is your company's service philosophy?

A: For the mold component aspect of Progressive, there's rarely a need for post-sale support. For the mold monitoring aspect, the initial sale is just that, "initial." Customers tend to test drive Cve Monitors before they transition to live monitoring their fleet of tools. With ProFile asset tracking, they'll load info on a couple dozen tools before finalizing the decision to input all tools. The Pro team has training materials and will actively handhold to help a company progress and implement change.





Get to Know R.E.R. Software

Visit **Booth 1314** to experience R.E.R. Software's redesigned exhibit that features live displays of various CNC control simulators, a small CNC machine and touch monitors to allow for interaction with the software.

R.E.R. Software is here at PTXPO to grow its brand and build new relationships while providing solutions to manage and increase throughput for mold builders. The company is excited to announce Randy McDonald, a new addition to the team who has years of manufacturing experience to help expand the team and company's footprint.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We are releasing a new PM module to our InFocus suite of products later this year that will help mold manufacturers maintain logs/checklists for all maintenance required at their facilities.

Q: What is your company's service philosophy?

A: We have recently added a 24-hour technical support phone line and created new internal processes to log and monitor each case requiring support.

Q: What is your company's training strategy?

A: During the past few years we have developed a thorough and detailed rollout process. Through the different stages of each rollout we dedicate visits or web meetings strictly focused on training. Above and beyond that we are always available to help answer questions or to dedicate time for additional training at no cost. R.E.R.'s business model is to build long-term relationships and partnerships with our customers. Our customer's success is our success!

Get to Know Rey Technologies

Visit **Booth 1021** where the theme is "All About Grinding." The open booth design features two vertical TV screens (kiosks) operated via touch screen tablets to access product pictures and video libraries, and three display pedestals to showcase ancillary grinding equipment from Rey Technologies.

The booth will be staffed with experts with 50+ years of combined manufacturing experience in grinding and precision finishing. Rey Technologies believes the products it offers provide significant costs savings in the mold building process and PTXPO is targeting that audience.

Q: What current moldmaking industry problem is your company solving with its equipment, products/services?

A: We provide highly automated surface grinding machines to effortlessly achieve the next level of accuracy demanded by the high-end mold builder. Set-and-forget grinding allows the operator to tend to other tasks while the machine processes mold plates. The patented EBEN Fix device eliminates shimming and/or turning plates multiple times to achieve sub-micron parallelism and flatness.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: The majority of the machine tool builders represented by Rey Technologies have always had a healthy level of inventory with raw materials and parts to build machines. With that said, inventories are running low now too, prompting some builders to start building machines and components prior to receiving the final purchase order to keep deliveries at bay.



Q: What is your company's training strategy?

A: We are currently in the early stages of implementing Augmentir software, the industry's only AI-Powered platform that connects workers. The objective is to make a tool available that guides workers with augmented work instructions, supporting virtual communication and remote work scenarios. This is in addition to the existing, traditional service capacity currently available. Augmentir is an excellent tool to train and educate workers on simple and/or highly complex tasks. It is highly customizable, easily accessible and available anytime a new worker needs to be trained.



PLASTICS TECHNOLOGY EXPO 2022

Get to Know Roembke Mfg. & Design Inc.

Visit **Booth 106** to hear all about Roembke Mfg.'s partnership with Engel and Staubli to highlight a quick-change molding cell. The team will help demonstrate Staubli's unique system for rapid change-over throughout each day. The two molds will be producing a fruit bowl and tongs, so make sure to grab your complete set after a change-over occurs. Roembke Mfg. has a second machine running with Engel highlighting its brand-new electronic valve gate controller. This cell will be producing a medical-grade LSR duckbill valve.

Roembke is here to demonstrate its capabilities and show how collaboration is critical to success. Roembke Mfg.



& Design and Diversified Manufacturing Technology (DMT) launched a joint venture: Roembke DMT and last year Roembke DMT moved into a new building in Corona, California. Each company brings with them new capabilities that translate into more tooling options.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We increased our safety stock on our purchased materials to insulate customers from the delays we are seeing. We also revamped our scheduling system to squeeze as much efficiency as we can out of our departments.

Q: What is your company's training strategy?

A: Since we test all of the tools we build in-house, our process engineers must be up to date on all new and existing equipment. This is doubly true for our turnkey molding cells. When customers request that we build them a complete molding cell, they expect to have all of the latest equipment included and fully integrated before it lands at their facility. Along with that comes process development and training to allow them to hit the ground running on delivery day.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We are constantly being asked to push the limits of what is possible when building molds for liquid silicone and rubber products. Year after year, parts get smaller, more complicated and combine the functionality of what was once split into multiple components.

Get to Know RUD Ketten Rieger & Dietz GmbH u. Co. KG

Visit **Booth 1434** to learn how RUD lives up to its motto "Tradition in Dynamic Innovation" with its mold-handling equipment that can save you time and allow you to handle your molds safely.

This family-run company manufactures integrated chain and component solutions at its sites in countries including Germany, Australia, Brazil, China, India, Romania and the U.S. Its product ranges include not only attachment fittings and non-skid chains but also hoist chains and conveyor systems.



Q: What is some current company news attendees will care about?

A: With our RUD Tecdos mechanical engineering product portfolio, we are constantly improving production processes. In 2021, we introduced our new Tecdos TMB workbench with turnover device. It turns molds weighing up to 5,500 pounds. It completes our product portfolio, which includes the Tecdos TM turning table and the Tecdos TS tool separator.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Our equipment with RUD Tecdos mechanical engineering solves mold-handling challenges by saving time and improving the safe handling of molds weighing up to 140,000 pounds.

Q: What is your company's service philosophy?

A: Our service team is always there for you. RUD customers worldwide expect the highest quality of service at all levels of business with machines. After all, ensuring quality as well as increasing productivity and strengthening the competitiveness of customers is our top priority. For us, machine service is not limited to commissioning, statutory warranty services, spare parts supply or inspections. With our range of services for our RUD Tecdos TM and RUD Tecdos TS machines, we support the customers' market success in the long term.

Get to Know SelfLube

Visit **Booth 1230** for a display of SelfLube's precision mold components. Attendees are able to see samples of self and conventionally lubricated components, as well as speak with knowledgeable customer representatives.

SelfLube strives to support customers in every way possible, from high quality, shipping on time, customization and stand-



ing behind what it sells. SelfLube also continues to develop its solutions, including a high-mix robotic cell that can transition between running several different parts all day. This keeps cost down, but more importantly, provides variable capacity, which allows the company to quickly adjust to changes in demand without pushing out lead times.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We are a domestic manufacturer selling directly to end users. This makes for the shortest, fastest and most reliable supply chain possible, in a time when long global supply chains are becoming slower, less reliable and less cost-effective.

Q: What is your company's service philosophy?

A: We are in business to help our customers be successful in what they do. We provide quality products, ship on time and we stand behind what we sell. We have proved this through our own actions. For example, we have received 12 ISO audits in a row with zero nonconformances to back it up.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: In addition to a very short supply chain, SelfLube offers its customers mass customization. If a standard part won't do, we make a variation of it, saving customers time and money. The alternative, having a custom part made, or ordering a standard part and having it altered, burns up a lot of unnecessary time and money.

Get to Know Solution Tools Mold & Die

Visit **Booth 1024** to find out about Solution Tools Mold & Die—a high-precision medical tooling and mold manufacturer serving every stage of the product life cycle, including design development and component manufacturing.

The Solution Tools team has gained international recognition in the plastics industry through years of experience and continuous investment. They focus on precise tooling and plastic components for the most complex clinical applications.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Our strategic locations in the U.S. and Mexico allow us to provide high quality cost-effectively. We can monitor the entire supply chain from material availability to just-in-time (JIT) delivery, maintaining our production line's effectiveness and guaranteeing reliable logistics to our customers.

Q: What current moldmaking industry problem is your company solving with its products/services?

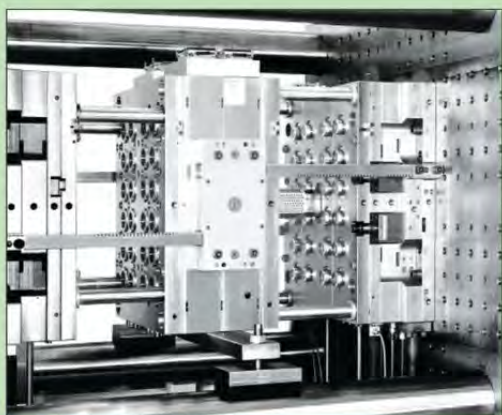
A: We use our industrial 3D scanner to offer high-precision, non-contact 3D measurement of small to large objects, which allows us to manage complex projects reaching further than conventional CMMs, generate data the engineering team can use to create functional solid models and reverse engineer (quickly convert a cavity scan into a 3D solid model).

Q: What is your company's service philosophy?

A: Daily project meetings with the production team using a process sheet that circulates throughout each department and a work order sheet that tracks the work throughout the shop. Our production manager, manufacturing supervisor and quality control lead work together on each project to manage lead times and customer deliveries.



PLASTICS TECHNOLOGY EXPO 2022



Get to Know Swiss Steel USA Inc.

Visit **Booth 1220** for Swiss Steel's All Stainless Mold Steel Program that provides a solution for the trend in completely stainless steel molds. To combat the need for high machining, parent organization Deutsche Edelstahlwerke, together with tool specialists, developed its Corroplast specialty steel, increasing the efficiency, productivity and quality of products using this material.

Swiss Steel is here to support its customer base and the plastics industry while providing direct access to the company's commercial and technical support teams. They are in constant contact with customers throughout the entire tool building process (design, machining, finishing) and additional support is available once the tool is in production.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We are enhancing our portfolio of pre-hardened stainless grades to reduce our customer's costs and lead time related to the rough machining, heat treatment and finish machining process.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Close coordination with customers, customs brokers and shipping companies to ensure a consistent supply. Updating machining capabilities and capacities stresses Swiss Steel's focus on offering high-quality mold materials and value-added services and support, with the intention to exceed customer expectations.

Q: What is your company's training strategy?

A: We provide thorough technical support when launching new products. In addition to specific product characteristics (mechanical and physical properties, compositions and corrosion-resistant properties) we also provide recommendations on machining (cutters, speeds and feeds), heat treatment, surface treatments, polishing and welding. Our technical support is available to consult with customers before delivery and after product is shipped.

Get to Know Swoosh Technologies & Solutions

Visit **Booth 1131** to go beyond the basics of key product life management (PLM) software strategies. This information stems from Swoosh's combined 185 years of experience with Siemens PLM and its focus on software-based training.

Swoosh is here to enhance the efficiency and productivity of companies in the plastics and machining industry through its software solutions. The company remodeled its headquarters for more staff and increased services and product support with NX, Teamcenter, Solid Edge, the newest addition of TDM software and a daily support team.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: The company's NX software enables users to streamline mold development processes to shorten lead times and reduce costs. NX assists with tool assembly layout, tool design and tool validation so productivity is increased while decreasing downtime. Swoosh also offers NX mold training and serves the community with mold-related webinars so users can learn new skills.

Q: What is your company's training strategy?

A: We offer process-based training classes, along with an open support line for immediate contact. Swoosh class training provides customization for companies that need a specific course or approach to software, such as NX, Teamcenter and Solid Edge. Once a year, Swoosh also offers NX University, which is a group of 8+ national in-person events (and one virtual event) that allows NX users to gather for free hands-on training with their team of expert engineers.

Q: What is your company's service philosophy?

A: Swoosh Technologies has a large team of territory representatives (PLM solution consultants) and engineers that work closely with customers via phone call and/or email and support tickets. The marketing team also shares weekly email newsletters, blogs and webinars so customers can stay updated on recent news.





Get to Know Synventive Molding Solutions

Visit **Booth 1412** to meet expert teams from six companies that continually innovate polymer processing solutions. Synventive, männer, FOBOMA, Thermoplay, Gammaflux and Priamus are part of the display's Connected Brands, Complete Solutions theme. On display will be eGate sync, a simple, reliable and sustainable, all-electric valve-gated hot runner system that is a direct replacement for pneumatic or hydraulic at a competitive price point. Also showcased will be Gammaflux G24 temperature controller and Dynamic Feed for real-time, closed-loop process control.

The new director of sales and the regional sales manager will guide you through the companies' consultancy services, customer partnerships and technology solutions. This team is focused on relationship building and believes in trusting people, product and performance.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: The use of biodegradable and recycled materials to support sustainability initiative; lightweighting for BEV platforms; family molds to improve throughput and reduce program costs; talent loss and the need for education and support at mold building facilities, Tier 1s and OEMs.

Q: What is your company's training strategy?

A: We believe in consultancy, and partnering with our customers on the application and process, not just the system. All of our in-field technicians have years of hands-on experience and processing knowledge. Our expert level Moldflow team provides invaluable upfront support in tool design and part processing. Our Innovation and Product Management teams have developed industry-leading technology that is simple to set up and use when needed.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Synventive has had a global manufacturing and supply chain strategy in place for over 10 years. Having the ability to design, manufacture and support our customers in all three regions has allowed us the flexibility to react quickly and ensure our customers' needs are met.

Get to Know TopSolid USA

Visit **Booth 1526** to see TopSolid USA demonstrate how using automation can significantly increase the speed at which you generate designs and programs while reducing mistakes made with manual work. The sales and technical director for the U.S. market will be on hand to share their 20 years of CAD/CAM experience.

TopSolid is manufacturing-centric software that helps your organization capture and streamline their manufacturing process. New in 2022 TopSolid are several fully integrated product lines, including a cost estimating product called TopSolid Part Costing, allowing quick, efficient creation of accurate bids. We are also introducing TopSolid Shop Floor with which you can organize and track all of the assets in your manufacturing process such as tooling, fixtures, etc. Other improvements include support for robotics programming and the addition of CNC grinding.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We believe in developing turnkey applications that are specifically developed for each manufacturing industry we serve, such as our fully automated mold design platform that can speed up the mold design process by as much as 80%. TopSolid continues to excel in manufacturing by automating the design and documentation of electrodes, saving time by staying in the same common platform. TopSolid can then be used to fully automate the programming of mold plates, cores, cavities, inserts, electrodes, etc. by applying company best practices. Automatic version tracking completes the process with a fully integrated PDM platform that oversees everything and ensures all users are always working with the most up-to-date information.

Q: What is your company's training strategy?

A: We currently offer 36 unique web-based, instructor-led classes delivered in a maximum of four hours at a time, allowing the student to spend part of their day learning and the other part of their day still being productive for their employer. Portions of the training are included with the purchase of the software. Additional training can be purchased a-la-carte per class or via a six-month unlimited training pass.





PLASTICS TECHNOLOGY EXPO 2022

Get to Know TST Tooling Software Technology LLC

Visit **Booth 1125**, to discover world-class CAD/CAM and ERP software solutions. TST's well-trained and knowledgeable staff will be on the show floor ready to demonstrate company products and answer prospective questions. The company is particularly excited about TSTracker 11.0 released in January. The ERP tracking system features a new interactive shop floor map, customer invoicing and improved multi-currency.

TST Tooling Software is here to highlight its CAD/CAM and ERP products. The company is designed to help system administrators, engineers and designers streamline the packaging software process and hardware applications for delivery to end-users.



Q: What is your company's service philosophy?

A: TST offers a variety of support services to help businesses, engineers and designers. We provide our customers with computer support, solutions and advice to help solve any problem that may arise. TST also retains technical support specialists with tooling and programming backgrounds to aid in software, hardware and processes. Our technical resources are not just software people; they are die and mold toolmakers and machinists.

Q: What is your company's training strategy?

A: TST understands the necessity of being able to bring your staff quickly up to speed. Our training staff will boost your technological competitiveness, allowing entry-level users to quickly become productive, while enhancing the high-power analysis of engineers. Our Michigan training center is the perfect launch point for your new investment, with state-of-the-art training aids in place. However, all of our training aids are mobile, and we can train at your site, or at a site nearby.

Q: What current moldmaking industry problem is your company solving with its equipment, products/services?

A: The TSTracker ERP was solely developed to solve mold and die makers' problems by improving on-time delivery, increase quality and enable informed management decisions to drive predictable profits. Quotes in minutes, elimination of duplicate entries, instant status for the project manager and job scheduling removes the "What should I do next?" questions constantly posed to managers.

Get to Know UNISIG

Visit **Booth 1323** where you will go deep with deep-hole drilling for moldmaking. Experienced application engineers will be on hand to walk you through the powerful and intuitive capabilities of UNISIG deep-hole drilling technologies. Be sure to pick up a UNISIG tumbler while you are there.

UNISIG is here to learn about the specific needs of the moldmaking market and discuss machine solution options. Customers are also invited to visit our facility to learn more about our engineering and manufacturing process. We also offer a process development package that can be purchased to ensure that your application will be drilled to your specifications.



Q: What current moldmaking industry problem is your company solving with its products/services?

A: Mold manufacturers are faced with the challenge of handling large workpieces that require deep-hole drilling as well as machining with maximum precision. UNISIG's mold drilling and milling machines are specifically designed with market input to combine operations, reducing setup time and effort, increasing accuracy and eliminating design restrictions of traditional machining centers.

Q: What is your company's training & support strategy?

A: UNISIG has a dedicated service team available for technical support. If a problem cannot be solved by telephone or email, we are able to provide remote diagnostics service for the many machines equipped with our Secure Remote Maintenance system.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Upon receipt of the purchase order, your new deep-hole drilling machine is refined in engineering, and enters the manufacturing process, which includes a majority of components that are manufactured in-house. Upon completion, we typically host customers for a run-off in our facility, allowing operational training and a detailed understanding of the equipment and tooling. New machine owners leave with the knowledge to begin production as soon as installation is complete, and the skills to develop their manufacturing processes for maximum efficiency. For customers in need of an expedited lead time, Express Delivery machines are available to start your drilling production sooner, with some customizability for your application requirements.

Get to Know Wepco Plastics

Visit **Booth 1315** to view a 3D-printed tool for plastic injection molding alongside sample parts. Wepco Plastics will be giving away that 3D-printed tool, too! Company CFO and Director of Manufacturing Support will be available for questions.

When working with Wepco, customers can expect collaborative, highly communicative service, quality parts, competitive pricing and lead times twice as fast as the industry standard.



Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We make it a point to encourage our customers to place orders even before a need is immediately present, so we can continue to meet their needs on time despite supply chain issues. Given the current climate in our industry, we always want to be transparent with our customers if lead times cannot be met and provide details as to the reason and how we are working to improve timelines. For example, we maintain close relationships with an intimate circle of vendors as opposed to sourcing our materials from all over the place with little to no consideration of our end goal.

Q: How do you employ continuous improvement?

A: Our continuous improvement efforts include a special focus on data collection and visualization. This enables us to better analyze our operations to optimize efficiency reducing customer costs, invest training dollars in where we get the most ROI, hire for the right positions and continue to seek out our ideal customers and partners.

Q: What is your company's service philosophy?

A: As a manufacturer of end-use products, there is no room for error. Once an order leaves our facility it is completely finished, so it must meet the customer's quality standards and specifications. We get ahead of issues by educating ourselves as much as possible on the products we make and our customers' specific needs prior to kicking off a project. We also overcommunicate with customers throughout the entire timeline from concept to finished part.

Get to Know Westfall Technik

Visit **Booth 1121** to experience an "All In" one-stop shop for all things injection molding. Sales professionals who are moldmakers with combined experience of over 100 years will be on hand to review the company's capabilities—a differentiated, integrated plastics company to best serve the needs of leading medical and consumer brands.

The Westfall leadership team has launched or acquired 18 companies in less than four years. Westfall enjoys a leading

roster of medical and CPG customers, high-performing operators and a world-class sales team.

Mark Gomulka has assumed the position of CEO of Westfall Technik. He joined Westfall as senior VP in January 2020. He looks forward to furthering the company's focus on flawless execution, integrated sales and new capabilities, to attract the best new plastics technologies and talent to the Westfall family.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: Runner-less micro molds/molding. Our patented M3 micro machine with ISOKOR technology tackles this issue head on. Westfall Technik provides a sustainable solution to the massive amount of runner waste that comes with traditional micro molds/molding.

Q: What is your company's training strategy?

A: Training and support go hand and hand with our customer service model. Westfall Technik is not looking for a one-time sale but rather a satisfied customer who will return for the spectacular service they receive.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Westfall Technik has partnered with the right companies who have navigated this issue so that deliveries are not an issue.





PLASTICS TECHNOLOGY EXPO 2022

Get to Know Westminster Tool

Visit **Booth 1317** to see how Westminster Tool and partner Mantle Inc. are pushing the boundaries of 3D printing's role in moldmaking, including using metal 3D-printed cavity inserts for real production injection molding environments and providing insights to develop Mantle's TrueShape technology even further.

Currently, the Westminster Tool team is working with Mantle's TrueShape technology on 3D-printed cavity inserts for a complex medical part that will allow them to test different approaches to conformal cooling ahead of time before cutting any metal.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Strategic partnerships are our number one resource for tackling supply chain issues. By opening up the channels of communication with our vendors, suppliers and our partners, we find more transparency regarding delays. This allows us to plan ahead for any kind of inventory or timeline obstacles in advance so we can

kick off projects earlier. We have also improved our own inventory and purchasing methods. Last year we kicked off an entirely digital purchasing process using an internal Purchasing Requisition Form that covers ordering everything from paperclips to workholding.



Q: What is your company's service philosophy?

A: We've built risk assessment into every step of the process, starting from the time we build a quote. First, we do a full-scale dimensional risk analysis and flow simulation at the start of the design process before any production starts, so we can anticipate problems before they happen. After shipment of the tool, we require an immediate follow-up with the customer. Then we host what we call a "Lessons Learned" session, where we internally complete a full-scale review of the design, production and assembly of the mold with our team. Finally, we do an additional follow-up with the customer after one month to ensure satisfaction and to offer support where needed.

Q: What is your company's training strategy?

A: Last year we started a six-month revamp of our entire internal cross-training program, known as Westminster Academy. We started by completing a two-month pilot to add more digital resources to the training process, eliminating hours spent on training documentation. We made several improvements to the online proficiency tracking tool that employees use to track, update and follow their own personal training guides. We also updated Global Orientation, our onboarding program within Westminster Academy for all new employees.

Get to Know Wisconsin Engraving Company Inc.

Visit **Booth 1439** to connect with Wisconsin Engraving owner/president, sales manager and marketing manager who combined have texturing, engraving and laser technology experience to share. The company is an independently owned texturing, engraving and specialty company located outside of Milwaukee, Wisconsin, that has been around for 100 years and has more than 600 years of industry experience under one roof. Other services include mold polishing, CNC machining and graphite machining.

Pete Kambouris recently took over the company as sole owner and president and Jon Carlson is a new marketing/sales manager who comes to the company with a strong background in advanced manufacturing technologies. The team is here to (re)connect with old and new faces, while staying on top of new trends in the industry and promote its services to the industry.

Q: What is your company's service philosophy?

A: Before a product ever leaves our building, everything goes through our QC department to ensure the best quality out the door. Additionally, we stay in constant contact with all of our customers to ensure everyone is on the same page to avoid any surprises throughout the whole process.

Q: What is your company's training strategy?

A: We hire people who are from the industry which gives them the chance to utilize their industry knowledge and ensures easy and smooth conversations with customers.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We are constantly working to improve our technology and processes internally to ensure that we can be a complete solutions provider for all of our customers.





Get to Know Wittman Battenfeld

Visit **Booth 706** to see the Innovations Roadshow Truck! That's right, this truck, which brings the company's products directly to molders' doors throughout the nation, will be parked in Wittmann's booth! Also, for the first time on exhibit, experience the new R9.1 robot controller, featuring the new Quick New Wizard programming tool. Last but not least, see a wide range of auxiliaries, including the new Temprow plus D250M dual-zone temperature controller.

And don't forget to say hello to Wittmann regional managers, vice president of sales and robot national sales manager who are ready to show you the innovative and complete line of injection molding machines, robots, automation and auxiliaries.

Wittmann plans to invest in a large plant expansion to support existing growth, numerous internal software upgrades including a barcoding system, developing a virtual sale and training system and continuing to enhance its 4.0 integration technology.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: We are using our engineering and development staff to find alternate suppliers and components on a daily basis. We are also paying premiums from brokers and existing supplier, to ensure Wittmann's supply chain stays unbroken. We are the only company in the industry that can offer a complete, fully integrated molding machine workcell all manufactured by us.

Q: What is your company's training strategy?

A: We offer scheduled classes in one of our five training facilities across the country and custom field training from basic to advanced. We also have online and web-based training, including through our YouTube Wittmann USA page: [youtube.com/user/WittmannUSA](https://www.youtube.com/user/WittmannUSA)

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We have various process technologies through our HiQ package that allows a variety of specialty molds to run on our injection molding machines.

Get to Know Xact Metal

Visit **Booth 1506** to get started with metal 3D printing. With accessibility and affordability at the core of the Xact Metal business, booth experts, from concept to sale, will be available to touch on the value of additive manufacturing (AM).

Xact Metal is interested in introducing the complimentary benefits between plastic and metal manufacturing technologies, particularly now that the company has made the process more efficient.

Q: How is your company tackling supply chain issues to ensure product quality, timely deliveries?

A: Xact Metal has been able to navigate an unpredictable supply chain by making strategic stocking decisions supported by sales and operations planning, and using engineer-approved part supplementation with multiple approved vendors in order to continue manufacturing high-quality machines within the time frame promised to customers.


Q: What is your company's training strategy?

A: Xact Metal takes a hands-on approach to training at the time of machine installation. This process usually takes about three days, but the schedule remains flexible if more time is needed by the customer. On the first day of the installation customers are generally printing before lunch time. This initial print will be guided by the Xact Metal technician on site but is run by the customer. The first print will be a small feature test to ensure the machine is performing correctly, and all subsequent prints done with the Xact Metal technician are those designed by the customer. By using customer geometries, we can teach customers how to troubleshoot any issues that may arise, as well as help them understand why they have occurred.

Q: What current moldmaking industry problem is your company solving with its products/services?

A: We are reducing the cost by designing and printing complex internal geometries to make moldmaking and tooling far more cost-effective. The recent launch of the XM200G series expanded Xact's product line, a highly configurable single- or dual-laser metal laser powder-bed fusion system that introduces industrial speed and performance at an affordable price. To increase print speeds, the XM200G provides the option of using two lasers at one time with either a 66% or 100% overlapping work area. The 3D printer's build volume also makes it highly configurable to match different applications.






PT XPO PLASTICS TECHNOLOGY EXPO 2022

Don't forget these companies also exhibiting in the Moldmaking Pavilion:

- AES Moldes Lda: Booth 1232
- Agathon USA: Booth 1532
- Anova: Booth 1518
- Amaero: Booth 1423
- Aero Cryogenics: Booth 1218
- Bole Machinery: Booth 913
- Cincinnati Process Technologies: Booth 921
- Creative Technology Corp.: Booth 1133
- Decatur Mold: Booth 1143
- Diamond Tool & Engineering: Booth 1427
- EPS FloTek/Moldex3D: Booth 1213
- Minco Tool & Mold Inc.: Booth 1418
- Pleasant Precision Inc.: Booth 1414
- SIGMASOFT Virtual Molding: Booth 925
- Simoldes Tools: Booth 1041
- Smith Enterprises Inc.: Booth 1530
- Standex Engraving Mold-Tech: Booth 1242
- Vincent Tool Technology Corp.: Booth 1117
- XMD Synergetic Eng & Manufacturing Services: Booth 1313
- Yudo Inc.: Booth 1416

 This exhibitor list is subject to change (current as of 2/9/22). Visit plasticstechnologyexpo.com for the most current information and full exhibitor list.

MMT ENGINEER / BUILD / MAINTAIN

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moldmakingtechnology.com

MoldMaking TECHNOLOGY.

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Technology Showcase

Edited by Grace Nehls



Access the related video under the Videos tab or the related article at MMT online.

MACHINING

Six-Axis Universal Machining Center Accommodates Mold Machining

Soraluce, part of Danobatgroup, the Machine Tool division of Mondragon Corp., introduces the Soraluce TA-D 25, a six-axis universal machining center. It is available with a 49" x 49" full contouring integrated B-axis rotary table, enabling a maximum part swing of 82" with maximum load capacity of 17,600 lbs. The Soraluce TA-D 25 is part of the company's compact product line of bed-type universal machining centers and offers travel of 98" in the X-axis, 47" in the Y-axis and 59" in the Z-axis.



The TA-D 25's table achieves high-precision, simultaneous and continuous four axes machining with a continuous positioning of 0.001° and rotational accuracy of $\pm 2.5''$. Additional flexibility is delivered through an optional universal stepless head offering indexing increments of 0.001° in both the vertical and diagonal joints, permitting 4+2 axis machining. Alternatively, the TA-D 25 can be equipped with vertical high-speed continuous positioning heads (torque motor, C-axis) for five-axis continuous machining. Its ISO 50 BIG Plus spindle is said to be capable of speeds up to 6,000 rpm and is driven by a 40-horsepower direct drive spindle motor with a built-in cooling system with 457 lb-ft torque (SI-100%).

The TA-D 25 also features the Accura Heads technology by Soraluce, which makes it possible to compensate the head articulation positioning deviation for one particular position of the head. It enables compensation of the head's kinematic values in specific angular head positions.

Further, the machining center is equipped with Soraluce's exclusive DAS system, a smart system that monitors the machining process and, in the event that chatter arises, selects the best technological alternative to eliminate vibrations.

The DAS system is said to guarantee optimal stock removal capabilities, achieving an increase in productivity of up to 300%. DAS also improves the quality of the surface finish of machined surfaces, extends tool life and reduces wear on internal machine components.

Soraluce / 34 943 76 90 76 / soraluce.com



Enhanced Remote Monitoring, Data Evaluation Platform Boosts Manufacturing Efficiency

In answer to requests from machine tool users, **Heidenhain Corp.** introduces version 1.4.0 of its StateMonitor software platform enabling remote monitoring and data evaluation during real-time manufacturing. First introduced in 2019, the company notes StateMonitor has become an important option with its TNC controls to digitally connect and evaluate machine tool data on company networks as part of the Industry 4.0 initiative to boost efficiencies. Connected devices could include CNC control systems of varying brands as well as PCs and web-based mobile devices such as tablets or smartphones.

Designed to highlight data usage and encourage time-saving workflow methods using clear-cut charts and graphs, StateMonitor version 1.4.0 offers several new features. One often requested and now available with the updated platform is the ability to monitor tools within a connected machine. According to Heidenhain, this now allows users to collect current tool usage data and avoid unnecessary costs due to premature tool replacement. The software can now also view countdowns for any programs running.

Additional functions include the ability to view monitored signals on the Machine Status page, as well as String Signal data. Also, users are able to customize the machine status by adding additional ones, or changing to their preferences when the machine is considered "Productive."

Further, an interested customer now has the option to purchase a single machine license, with the ability to add on the more common five-machine license (StateMonitor Option 1) later if desired. The StateMonitor Single Machine license contains the "OPC UA Interface" so machines with third-party CNCs can be connected as well.

The StateMonitor Software Maintenance and Support plan offering enables customers the ability to easily upgrade the software each time a new release is available, and a new direct international email support line is also available for highly technical or development questions at digitalshopfloor@heidenhain.de.

Heidenhain Corp. / 800-233-0388 / heidenhain.us

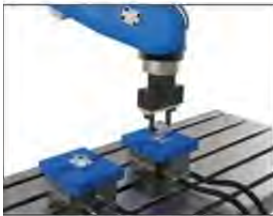
Hydraulic Vise Acts With High Holding Forces and Quick Clamping

Jergens Inc. highlights its new 130-mm double-acting hydraulic vise with high holding forces, quick clamping and repeatability for improved speed and part tolerance. The vise comes standard with multiple mounting patterns, different jaw options and easy access to plumbing and maintenance ports.

Jergens' hydraulic vise offers users the ability to position the jaws just outside of the dimension of the workpiece to minimize travel when clamping. This, in combination with the speed of hydraulic workholding, reduces clamping and unclamping operations to about one second.

The vise features a steel body and internal hardened (low-friction process) components for greater performance and enhanced durability, even in harsh environments. Only low operating pressures are needed. Quick-change soft jaw sets and case-hardened jaw inserts extend the range of holding options. For a complete solution, Jergens also offers hydraulic pump kits.

Jergens Inc. / 877-486-1454 / jergensinc.com



Product Brochure Details Various Machining Offerings

Suhner, has expanded its product offering, detailed in a new brochure, the Machining Division, including flex shaft multiple drive system, QUILLmaster Drilling Units, TAPmaster tapping units, stationary and self-feed, flexible-shaft driven drilling units, POLYdrill multiple spindle heads, SPINDLEmaster machining spindles and SLIDEmaster. All are designed for high-production work, Suhner says.

For example, the flex shaft multiple drive system works with MULTImaster drilling units. It offers up to eight driving units, a motor rating of 5 horsepower (3.7 kW) standard and an output speed between 46-9,320 rpm. Optional features include a larger motor and a right-angle drive.

POLYdrill multiple spindle heads include adjustable and fixed spindle heads. Drilling capacity ranges from 0.06-1" (1.5-25 mm). Minimum hole spacing is 0.27" (7 mm), while maximum hole spacing is said to be limitless.

Suhner Industrial Products Corp. / 800-323-6886 / suhner.com



SOFTWARE

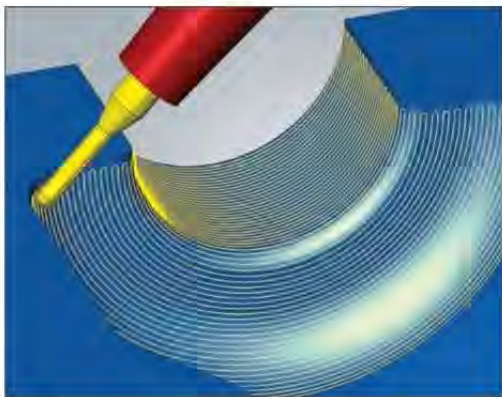
Software Suite Optimizes Machining Quality With Tool Programming Enhancements

Open Mind Technologies unveils the *hyperMILL* 2022.1 CAD/CAM software suite which gives users increased convenience and faster programming tools. Highlights include a break-edge function for contour milling, combined pocket milling together with a finish path allowing cutter compensation and increased efficiency for 3D plane machining.

In addition, tool data such as length, radius, corner radius and tool number and name, can be transferred directly from *hyperMILL* to a Heidenhain TNC640 control using the *hyperMILL* Connected Machining module.

Five-axis radial machining strategy for blow molds has been enhanced to better handle steep areas and undercut regions, and to adapt to three-axis machines as required, and optimized linking logic in *hyperMILL* Virtual Machining Optimizer for five-axis table-table machines is now offered. Moreover, a new Virtual Machining capability for additive manufacturing processes, where machines often have limited axis ranges, is available.

Open Mind Technologies USA Inc. / 888-516-1232 / openmind-tech.com



Standardized Color Table Simplifies CAD Design

Hasco America has worked with various cooperation partners to produce a standardized color table (VDWF Guideline 2020-1) for mold and toolmakers to easily identify workpiece tolerances in 3D CAD design. Conventional CAM systems used in production are able to recognize the clearly defined colors and automatically derive tolerances. The table is available on the Hasco website.

According to Hasco, misinterpretations can be effectively avoided when performing conversions from 2D drawings—the actual dimensions are automated through corresponding measuring systems and compared with the 3D model. This simplifies process automation. Furthermore, this tool can be used for easy exchange of models for production at other locations.

The standardized color table can be downloaded at hasco.com/en/hasco/cad

Hasco America Inc. / 877-427-2662 / hasco.com/en

Technology Showcase

CUTTING TOOLS

Octagon Milling Cutter Delivers Maximum Process Reliability

Walter USA has introduced the Xtra-tec XT M5004 octagon milling cutter, a versatile milling tool that combines productivity with stability. It can be used for face milling (roughing and finishing), ramping, pocket milling and circular



interpolation, as well as chamfering and back chamfering of steel, stainless steels, cast iron, non-ferrous metals and materials with difficult cutting properties.

As Part of Walter's generation of Xtra-tec XT tools, the M5004 octagon milling cutter combines efficiency and process reliability while also extending tool life, resulting in maximum productivity. Process reliability is enhanced, the com-

pany notes, due to the tool's high stability, and tool costs, time and labor are reduced because it requires no additional finishing operations.

The use of Tiger-tec cutting tool materials, a high number of teeth and low cutting tool material costs further maximize efficiency. The eight-cornered positive indexable inserts with eight cutting edges and two indexable insert sizes, with corner radius or facet variants, come with fully sintered circumference (ODMT or ODMW) or fully ground circumference (ODHT or ODHW).

The Xtra-tec XT M5004 can be adapted to specific machining operations due to different indexable insert sizes, corner designs and geometries. The tool has a 43° approach angle, a depth of cut of 3 or 4 mm, three pitches for different applications, diameters of 32-170 mm or 2.00-3.00", ScrewFit, cylindrical-modular interface, cylindrical shank and shell mill mount. It is finding ready acceptance in the energy and die and mold industries, as well as general metalworking.

Walter USA LLC / 800-945-5554 / walter-tools.com/us

Carbide End Mills Developed for Micromachining Applications

Cutting tool manufacturer **Guhring** reports that its microtool offerings, including the RF100 Micro-Diver, are an answer to the challenges imposed by the creation of small or miniature molds.

The Micro-Diver carbide end mills deliver plunging, 60° ramping, and high-performance milling at tool diameters at or below 1/8". With a focus on stability in the cut, the Micro-Diver was designed with an innovative flute form and specialized geometry for the transition from flute to neck. A symmetrical drilling geometry helps to optimize ramping and drilling operations.

Guhring's new HIPIMS coating, called Durox, also provides the end mills with an optimized surface finish for chip evacuation and wear protection. Micro-Diver end mills are made from an ultra-fine carbide grade developed for micro machining applications.

What Guhring says is the smallest diver in the world is stocked in diameters from 1/32" to 1/8", with inch and metric sizes. Series 6808 is able to mill at depths of 2.5xD, and features four or six GuhroJet peripheral cooling ducts, depending on the diameter. Series 6809 can mill at depths of 5xD, and also features four or six GuhroJet peripheral cooling ducts, depending on diameter.

Guhring Inc. / 800-776-6170 / guhring.com



Internal and Face Grooving Tools for Small Hole Diameters

Sandvik Coromant has launched CoroCut QI, a range of internal and face grooving inserts designed for smaller diameters. Optimized to enable a lighter cutting action and reduced cutting forces, CoroCut QI is



said to ensure high-process security, reliable grooving operations and precise chip evacuation, resulting in high surface quality grooves. All inserts fit both internal and face grooving toolholders.

CoroCut QI is divided into internal grooving and face grooving application areas, and is an upgrade of the T-max Q-Cut 151.3 program. The improved design allows for greater chip control, a 10% productivity increase, 20% improved tool life aided by tighter edge-rounding tolerances and internal coolant for both internal and face grooving tools.

Key features of the CoroCut QI include an optimized tip seat angle for lighter cutting action and cutting forces that aid vibration-free machining, as well as a rail insert seat for a stable and precise insert position, ensuring minimal insert movement. In addition, screw-clamped toolholders ensure stability and high-process security, and inserts with high edge line quality increase tool life and surface quality.

The minimum hole diameter for internal grooving with CoroCut QI inserts is between 12 and 60 mm, with a cutting depth of 2 and 11 mm. Face grooving inserts can be used in a first-cut diameter between 16 and 102 mm, with a cutting depth of 5.5 to 20 mm.

The insert geometries include -GF, a ground sharp insert for internal grooving; -TF with direct pressed geometry for face grooving and internal grooving and turning; and -RM, ideal for non-linear turning such as internal and face profiling.

Sandvik Coromant Co. / 201-794-5000 / sandvik.coromant.com

CUTTING TOOLS



High-Feed Milling Tools Apply High Feed Rates and Steep Ramping

The NuMaxHF line of new high-feed milling tools from **Ingersoll Cutting Tools** offers extreme ramping capabilities versus traditional high-feed milling tools, the company says. The thick, tangential insert features a diamond shape with a large inboard angle, providing high feed rates and steep ramping angles.

The insert pocket is designed with dovetailed seating over a large contact area, which extends cutting edge life, cutter body life cycle, stability and support under aggressive cutting conditions. Inserts are offered in two styles: economical pressed complete and a precision ground profile. NuMaxHF inserts are offered in the latest carbide grades with post-coat treatment technology applied at Ingersoll's in-house facility.

Ingersoll Cutting Tools / 815-387-6600 / ingersoll-imc.com

Multi-Purpose End Mills Are Effective Across Multiple Job Shop Applications

Emuge-Franken USA has significantly expanded the range of Top-Cut VAR, the company's multi-purpose, high performance end mills featuring a distinctive geometry and coating. The variable helix carbide end mills are effective across multiple job shop applications, including challenging production cutting operations.

The Top-Cut VAR line is now available in 4.5- and 6-flute configurations, with or without corner radius and ball nose, stub, standard and long lengths in inch sizes, with more than 300 SKUs in total. In addition, Emuge-Franken USA says it can provide custom variations or tool modifications as needed.

All end mills under this line are manufactured at the company's West Boylston, Massachusetts, facility to stringent German specifications and standards.

Top-Cut VAR end mills feature flute and profile geometries optimized for long tool life and high performance in both roughing and finishing applications. Variable helix angle flutes provide extensive vibration dampening and are precision ground with advanced edge preparation to maximize chip evacuation. A chamfer feature protects cutting edges to prevent chipping, and end mills with fully blended corner radii extend tool life, while providing improved surface finishes. All Top-Cut VAR end mills also have an ALCR PVD coating, extending life in high operating temperatures, and a proprietary sub-micro grain carbide for maximum abrasion resistance and durability.

Emuge-Franken N.A. / 800-323-3013 / emuge.com



AUTOMATION

Turnkey Package Enables Optimized Automation Integration

Kurt Workholding and its distribution partners at **Absolute Machine Tools** have created an automation package featuring a Mitsubishi Electric Automation LoadMate Plus plug-and-play cell, Kurt 3600A Pneumatic Vise



and Kurt RV36 Robotic Gripper working in tandem with a Tongtai VP-10 mass production high-speed vertical machining center.

The Tongtai VP-10 has X-, Y- and Z-axis travels of 40.2" x 20.1" x 23.6" (1,021 mm x 510 mm x 600 mm). High-power servo motors produce 1,890 ipm (48 m/min) in X and Y, and 1,417 ipm (36 m/min) in Z. Acceleration in X, Y and Z is 1.18G, 1.0G and 0.7G respectively. A standard 10K rpm 20-horsepower direct drive spindle, and tool changer is able to hold as many as 30 tools.

Also featured in the demo package is the Kurt 3600A VersatileLock pneumatic vise and RV36 Robotic Gripper. Designed for precision clamping, the vise's "Pull-type" action and AngLock jaws reduce stationary jaw deflection by at least 80%. A one-piece body and stationary jaw design reduce weight and increase strength while providing repeatable 0.0005 clamping capabilities.

Absolute Machine Tool customers can purchase Kurt Vises and RV36 Grippers as part of a package with the Tongtai VP-10 and Mitsubishi LoadMate Plus. The LoadMate Plus also packages as a stand-alone robot cell.

Kurt Workholding / 877-226-7823 / kurtworkholding.com

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Technology Showcase

INSPECTION, MEASUREMENT

Large-Format Inspection Metrology System Maximizes Large Sample Flexibility

Zygo Corp. announces the launch of the Nexview 650, a large-format metrology system designed as an inspection tool for the automated measurement of injection molding tooling, PCBs, glass panels and other samples requiring an extended work volume up to 650 x 650 mm. The system provides 2D and 3D measurements of a variety of surface features with sub-nanometer vertical precision and sub-micron lateral precision.

The Nexview 650 production-oriented tool combines Zygo's Nexview NX2 3D microscope head with a robust production platform, delivering micro- and nano-scale surface features and capturing millions of data points in seconds.

At the heart of the Nexview 650 is Zygo's coherence scanning interferometry (CSI), a technology that uses specialized optical microscope objectives that not only provide the imaging and magnification of a surface, but also measure its 3D topography. CSI profiling is completely contactless.

The systems' large work volume accommodates both large and heavy parts including any standard PCB substrate panel sizes, custom-defined sample holders for flexible sheets and large, high-mass injection molding plates.

Zygo / 800-994-6669 / zygo.com



Linear Gages, EJ Counters Target Real-Time Measurement, Data Management for All Environments

Mitutoyo America Corp. adds EJ Counters and LG100 Series Linear Gages to its lineup. They are designed to be used inline or in measurement cells, and enable real-time measurement and data management in any type of work environment. Notable features include:



- **Environmental resistance:** Sliding durability of more than 50 million cycles with a protection level of IP67G.
- **Reference point detection:** Reference point signal output functions are featured throughout this series. When incorporating into a device, the master setting value is easy to set and is retained after shutdown.
- **Combines compact size and ease of use:** Offers high-speed and compact size, delivers production site visualization, improves productivity and information feedback.
- **CC-Link connection, USB connection:** Data is able to be output through an industrial interface (CC-Link) by linking a compact EJ Counter with an interface unit.
- **Calculation function:** Enables sum difference operations between two gages connected to the same counter.

Mitutoyo America Corp. / 888-648-8869 / mitutoyo.com

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TIP

HOT RUNNERS

Five Ways a Hot Runner Is Key to Processing Reinforced Materials

By Tony Brodzeller

Here are five considerations that a hot runner supplier and a moldmaker/molder should discuss when using fiber-reinforced materials, such as those with glass filler, wood fibers (lignite in biomaterials) and wool fibers:

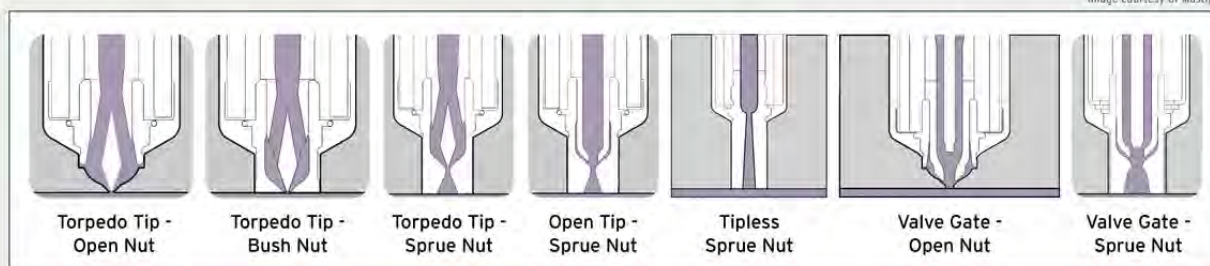
1. **Tip selection:** The key with tip selection is maintaining appropriate heat as close to the gate as possible, while maintaining a reasonable pressure drop through the tip and balancing the gate vestige requirements. In addition, tip composition can greatly impact tip durability and longevity. For example, some carbide tips are warranted for five years (regardless of shot count) against normal wear caused by contact with abrasive and corrosive polymers.
2. **Nut selection:** The nut detail is how the hot runner interfaces with the tool design. Does the gate detail have to be in the tool steel or can it be in the nut of your hot runner system? If you can live with the witness line on the part (from the temperature variation on the face of the nut relative to

the surrounding tool steel), keeping the gate detail in the nut will allow much easier gate size adjustments or future service. If a molded sprue is allowed, consider tipless nuts.

3. **Valve gates:** Valve gates are frequently used, so it is important to consider service-friendly designs, pin hardness, parallel/cylindrical gate detail and premium guided carbide tips for durable systems that guide the valve pin before it enters the cavity, ensuring long gate life and clean vestige.
4. **Gate size and gate land:** An important relationship exists between the tip and gate detail, along with the cooling in the mold design. A long gate land will lead to high pressure and gate processing issues. A short gate land can leave a thin

It's important to manage the expectations of supporting the specification, tool design, installation and service of a hot runner system.

Image courtesy of Mastip



Examples of tip and nut configurations.

Nozzle Selection and Specification

Get your hot runner supplier involved early in the discussion and know the answers to these questions:

- How are you planning to gate: directly to the part or with a short cold runner?
- What is the exact material grade, total shot weight and material flow length?
- What is the recommended processing temperature and is the material residence time-sensitive?
- Does the molder/moldmaker understand gate size, expected fill time and allowable gate vestige?

For high-temperature applications, use a larger nozzle body to get more steel mass in the nozzle body and a higher watt density heater to help maintain the higher temperature if you're running PEEK at >700°F, for example.

steel condition and fast gate wear. Discuss gate life, cosmetic requirements and resin concerns.

5. **Manifold design and construction:** The flow channels distribute the molten plastic to the individual nozzles, so carefully consider precise heater control and balanced flow, especially with an engineered-grade application. If long glass fibers are involved, keep the fiber orientations in the same direction and allow a larger, smoother radius from the flow channel into the nozzle body. [MMT](#)

FOR MORE INFORMATION

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