

Mold Technologies Division



Division of Society of Plastics Engineers

Volume 42, Issue 1, Fall 2020

Message from the Chair

I am an energetic, passionate, problem solver who loves to get involved, create opportunities, introduce conversations, and make a difference. It is those qualities that I bring to the SPE MTD as its new Chair.

I am not a plastics engineer, so the people reading this newsletter have more knowledge and experience than me in this area. However, I have access to a network of talented, passionate plastics industry experts and the ability to make connections while bringing a level of excitement and positivity to your industry.

Meeting new people, hearing their stories, helping them problem solve and come up with solutions makes me feel fulfilled. As the President of Alliance Specialties and Laser Sales, I get to do these things on a daily basis for our customers and our employees, and now I have that same opportunity with all of you.

I am a husband, a father, a believer, and a person who knows that you only get out of something as much as you put in. That you should live your life in gratitude with an emphasis on relationships, full of integrity and tenacious in your endeavors.

It is such a weird thing to write about yourself and tell people who you are, because you hope that your actions and behaviors speak for themselves. Which is exactly what the goal is for this.

Every person on our board is honored to be serving our industry and takes great pride in what we do. We are dedicating this year to finding new ways to bring our members the information, training, experiences and mentorship that they are looking for.

So we encourage all of you reading this to do more than just gloss over these newsletter pages or scroll past "The Chain" posts and instead engage, challenge, comment and share so as a community and we can make a lasting impact.

Hopefully we can do that together.



Tony Demakis

SPE Mold Technologies Division Chair

Tony Demakis

Editor's Commentary

One of the most significant services a mold making business can provide to its customers is responsive engineering - the ability to add value beyond quoting to the specs. Many RFQs are straightforward—number of cavities, hot system preference, target tolerances...requiring an evaluation of geometry to calculate the material costs, machine hours and personnel hours. There are some quoting opportunities which are a bit more daunting—specifically New Product Development.

Because NPD is based on the exciting word, "New," these projects usually include several undefined areas. In the case of a multiple component product assembly, the tool shop must be prepared to react to the ripple effects of engineering changes to plastic molded parts, custom or purchased metal (plates, springs, bushings...) and possibly, high value elements/materials or sub-assemblies (PCBs, conductive elements, decoration...). If you've ever been directly involved in an NPD project, you likely have a few scars and a few lessons learned.

How about sharing some of those lessons? The SPE Mold Technologies Division is on a mission to bring greater value to our members. If you were designing the curriculum of a class called Best Practices for New Product Development for the Modern Toolmaker, what are some of the key experiences you would want to pass on to your students? For example, how would you recommend they evaluate the five plastic injection molded components in a 12-component product assembly? Which questions should they ask of the OEM/Brand-owner's design team? How do they handle grey areas regarding materials or specifications that are not fully defined—but a comprehensive proposal must be submitted? How do you quote a development project and how do you forecast and price resource needs that cannot yet be completely detailed?

Whether your answer is along the lines of a list of Top Ten Dos & Don'ts or a war story of a project that gave you experiences you still reference, your input is important. Help us out—help teach others how to be better. For inspiration and to get your writing juices flowing, consider starting with:

- The 5 most important questions to ask when starting a New Product Development project
- 3 things you must never agree to when starting an NPD project
- We won't even quote an NPD unless we know...what?
- Always put financial and/or time allowances for (name a circumstance/customer request) when submitting a proposal for an NPD

Please send your NPD Best Practices (or Worst Practices) to john.berg@alligatorcompanies.com.



John Berg

SPE Mold Technologies Division
2018/2019 Newsletter Editor



John Berg

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SPE Mold Technologies Division

Tony Demakis, SPE Mold Technologies Division Chair

For years the SPE and specifically The Mold Technologies Division has made it our mission to be a leading industry resource for technical information to advance the plastic mold engineering technologies, while fostering industry growth, education and leadership. We are here to build up our profession by providing resources to make our members better at all levels of what they do. We believe in providing training for moldmakers at the apprentice level as well as continued development for the more established journeymen tool makers. We believe in sharing our expertise to not only create better products, but to create better people who create better products and the process enhance an already amazing career.

In order to reach these lofty ambitions and expectations we need your help and participation. You are a leader in our industry whether you realize it or not and we are asking you to be a bigger part of the plastics and mold making industry. As a member of the SPE MTD you realize that there is more information that you want. You have decided that you don't simply want to go to work, but you want to grow and change the way things are done. By signing up to

this division you have expressed an interest in bettering yourself through training and information.

It continues to be inspiring to see more and more people join the organization each year and in order to continue bringing you value we want to better understand you and your needs. Please fill out this brief survey to help us gauge your level of satisfaction and your opinion on content. The better we as an organization know who you are as our member, the better we can meet your needs.

Thank you for being a part of the SPE Mold Technologies Division, and a leader in molding our future.



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The Value of Social Media, Part III

John Berg, Director of Marketing - Alligator Holdings LLC

Our last issue presented some of the basics for creating and maintaining a Facebook Page for your mold-making business. Facebook is a great platform for sharing the personal side of your company—your culture, your employee’s successes (personal and professional) and your community involvement.

LinkedIn is considered the professional’s social channel. Founded in 2002 and launching in 2003 (Facebook launched in early 2004), LinkedIn currently has over 260 million active users and a total user-base of over 575 million, of which the

US accounts for 133 million. Millennials account for 38% of LinkedIn users. If you have not already established a well-constructed company page, you should consider doing so.

The text and visual content needed for setting up your business page are similar to Facebook. You’ll need a personal page before you can launch a business page. Collect all the basic company info before you start. Name, address, phone, web URL, a brief business description (up to 120 characters), a more detailed business description (up to 2000 characters), a logo sized for the page and a banner image sized for the page.

I stress “sized for the page” because LinkedIn allocates a pre-defined area for the logo and the banner image (1128 x 191 pixels), with the logo stacked over the banner image in the lower left side. Rather than choosing a photo and trying to make it fit into the defined screen real estate, take the time to format and/or construct an image that works well in the space. Also, be aware that LinkedIn designates a square aspect ratio for your logo—so you may need to create an alternative version of your logo for this use. You can incorporate your logo into your banner image if you want a true-to-form version of it on your page—but the space specifically set aside for logos is a square and you will have to place some image in there to represent your logo.

Because LI is the professional’s social site, have no fear in speaking directly to your target audience in terms that they value. You are an injection mold builder—there is no need to explain what that is to someone who doesn’t understand,



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because they aren't buying injection molds. Does your shop build tooling systems for LSR? No need to delineate the difference between thermoset and thermoplastic materials to your buyer. Tell them, instead, about your on-time delivery performance, equipment, processes and experienced personnel.

Use POSTS to augment your company's description and to keep us up to date on new equipment, recent successes, new hires, employee achievements, facility expansions and the like. Use a little personality in your posts—have some fun, share some great news...show your audience some energy. Did you celebrate your company anniversary with a pizza party or a family event? Take pictures and share them. Use your social

channels to show-off your company culture.

Your company page is only one part of benefiting from LinkedIn—your interaction with the site and your audience are every bit as important. Along with keeping your followers up to date on your business, follow other people and businesses that are relevant to you. Your supply partners and their sales and customer service teams. Make it a point to check in on your customers' activities on social media—and let them know you are doing so by Liking and Commenting on their posts. Congratulate your connections on their promotions, new jobs, anniversaries and birthdays. Read the posts shared by your network. Stay connected and communicate!



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Amerimold Connects Completes Very Successful First Edition

Amerimold Connects completed its successful first edition, spanning from June 9th through June 19th after adding an impromptu second week of showtime. A second week was added after attendee and exhibitor demand. The show, the first of its kind for the industry, featured a virtual show floor with 38 participating exhibitors, a collection of live and on-demand educational content, and a live Moldmaking Community Forum to allow for networking among exhibitors and attendees.

Amerimold Connects is a remote event experience for the mold manufacturing community. The event, produced by the team that has hosted an annual live Amerimold event since 1999, was organized to provide the mold manufacturing industry a tradeshow experience in the wake of the COVID-19 pandemic.

The show attracted 1,527 total registrants over its two weeks. During the show's run, exhibitor showrooms were viewed over 12,000 times by attendees. The show's live and on-demand educational content drew over 7,200 total views from over 3,400 unique viewers. These numbers indicate an exceptional level of participation from remote attendees over the show's duration.

Glenn Starkey, President of Progressive Components and an Amerimold Connects exhibitor, said, "Each year Progressive greatly

looks forward to Amerimold, so we were happy when we learned the event was being reconfigured to be a virtual event. We found there to be great content in so many presentations, but most importantly, this event helped maintain the interconnectivity of relationships throughout our great industry."

Amerimold Connects also featured some classic features of the traditional Amerimold

experience, including the presentation of the 2020 MoldMaking Technology Leadtime Leader Award to Precise Tooling Solutions and the unveiling of

the 2020 Top 10 Reasons To Be A Moldmaker t-shirt. Videos of this ceremony, as well as the other live educational sessions, can still be viewed at www.amerimoldexpo.com.

Currently, the Amerimold team is planning on holding a live Amerimold show on June 23rd and 24th, 2021, in Rosemont, IL.

About Amerimold Connects: Amerimold Connects is a remote event experience catering to the moldmaking and mold manufacturing industry. Presented by Gardner Business Media, in partnership with MoldMaking Technology, Plastics Technology and Modern Machine Shop, Amerimold Connects unites global and domestic technology leaders involved in all aspects of mold manufacturing in a digital space. www.amerimoldexpo.com





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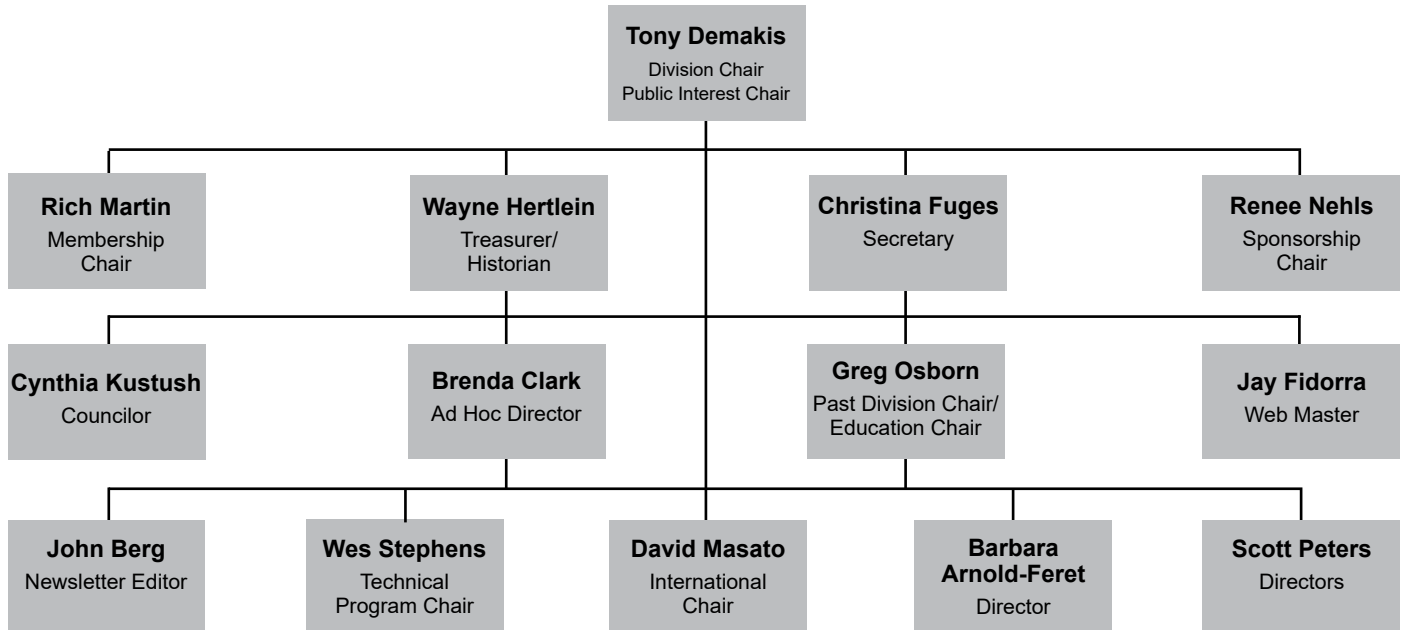
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OUR MISSION: *To be the leading industry resource for technical information and to advance plastic mold engineering technologies, while fostering industry growth, education and leadership.*

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Split molds

Richard Perger, Werkzeug & Formenbau

Parameterized reliability

For demolding injection moldings with complex geometries, the moldmakers at Bruno Eugster AG of Au, in the Swiss canton of St. Gallen, prefer to make use of Split molds. Given the high reliability of the splits that run along the base, the systems from HASCO, the Lüdenscheid-based standard component manufacturer, are their first choice for this.

Ninety-nine percent of the molds manufactured by Eugster are used in the company's own injection molding shop.

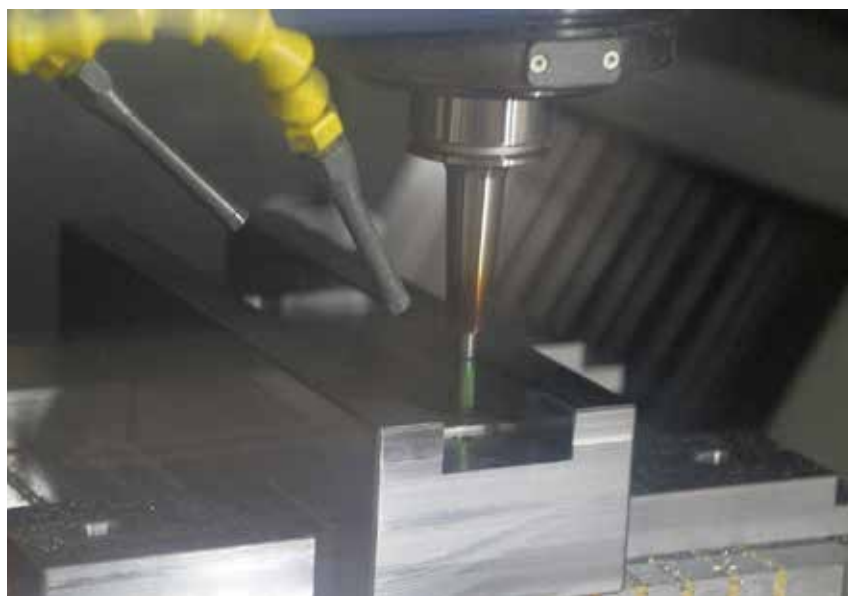
"Seventy percent of the parts we produce are for general mechanical engineering, 20 percent go into medical technology applications. The remainder are spread over a very wide range of industries", explains Thomas Felber, design engineer at Bruno Eugster.

"Most of the molds have dimensions of 100 x 130 mm to 496 x 496 mm, and, with five employees in our moldmaking department, we produce between 20 and 30 molds per year."

Broad mold portfolio

The molds generally have between 1 and 16 cavities. Typical batch sizes are between 100 and 100 000 injection moldings, and the moldmakers guarantee up to 500 000 shots for their molds. "We process a very wide range of plastic grades—from high-temperature materials, like PEEK, right through to filled materials", Felber explains. "Our portfolio includes molds for almost all the different plastic materials, including multi-component molds and injection molds with inserts."

The machines we use for moldmaking are all considerably less than ten years old. They are primarily machines from GF Machining Solutions. In virtually



The moldmaking department at Bruno Eugster AG works with relatively new machines—primarily from GF Machining Solutions.



The angle pins reliably in their guides. The HASCO mold bases have already proved successful in many projects at Bruno Eugster.

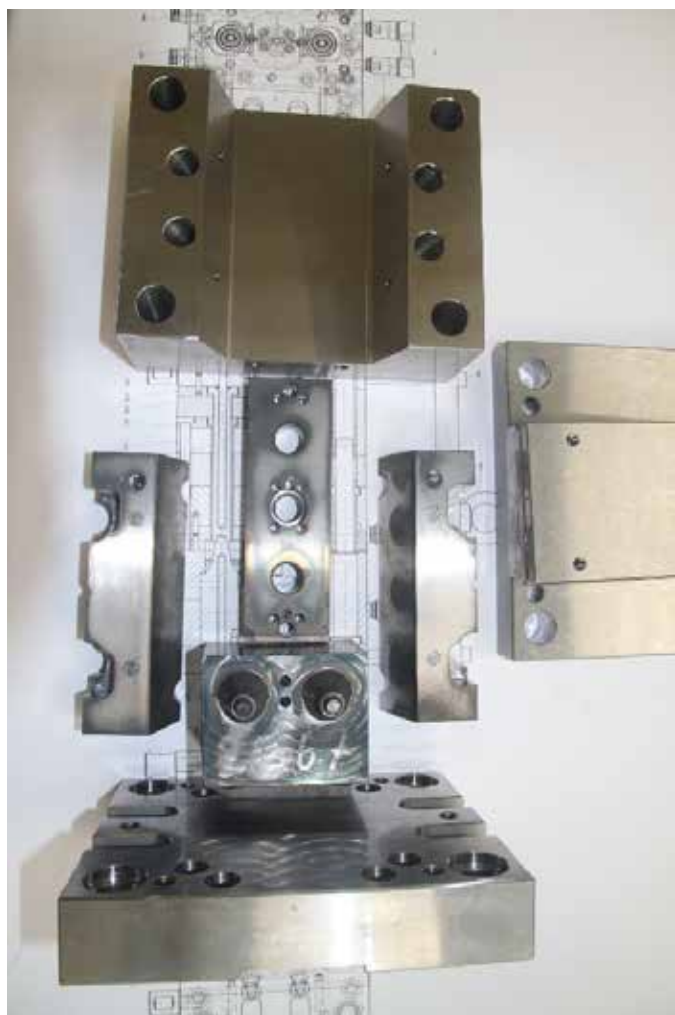
all cases, highly stringent requirements are placed on the surface and erosion is performed almost exclusively with copper electrodes. In the injection molding shop, our plastics experts use Sumitomo-Demag machines.

Longstanding, close cooperation

Bruno Eugster's moldmakers have been working with standard components for a long time. "Due to the high quality of their products, we worked with standard-component specialist HASCO in Lützen-

scheid right from an early stage", Felber reports. This was also the case for the bases and components of the Split molds, which we value for their high reliability.

As a result of the lengthy delivery times and a web shop that was "not very user-friendly" from the design engineer's point of view, the company has also had to use mold bases from other manufacturers in the past. "We repeatedly had major problems with these, however, since the molds did not run properly", Felber recalls. "We were therefore



The individual components of a split mold. Design engineer Thomas Felber has parameterized this moldtype under Cimatron and made the data available to all users.



The mold bases are in warp-free steel—HASCO obtains the material stress-relief annealed from the steelworks.



Special feature: the plastic is injected into the mold from the ejection side. This has proved to be the most efficient design for these injection moldings.



Clear to see: the guides for the angle pins at the base of the splits. This reliably protects against lining up and tilting during operation.

delighted when HASCO was able to considerably shorten its delivery times a few years ago in conjunction with the introduction of its innovative web shop, and we were once again able to place orders with our preferred standard-component supplier with a clear conscience.”

Reliable guidance of angle pins

The problems encountered with molds that incorporate standard components from other standard-component manufacturers are caused by their design: “Other suppliers have the angle pins running through holes that extend right through the split. With this design, the splits tend to line up and tilt during operation”, the moldmaking expert explained. “At HASCO, the angle pins are located inside separate guides at the base of the splits, ensuring a highly homogeneous and linear distribution of force and a harmonious movement.

The HASCO system has obviously been well designed and has repeatedly proved successful for us in practice. Therefore, we now only use solutions from HASCO for our Split molds.” By way of an example, Felber shows the split mold for a hot water bypass—



Eugster generally performs erosion with copper electrodes, as most workpieces require a high surface quality.

the splits are guided by the angle pins in a way that ensures reliable operation, since the guides at the base do not transmit a tilting moment to the splits. This prevents any malfunctions due to tilted splits right from the start.

The molds at Bruno Eugster are designed with the Cimatron CAD/CAM system supplied by 3D systems. “Standard mold bases are available in parameterized form in the software, but not the Split molds”, Felber explains. “This means that each time I wanted to change just the size of a mold, for example, I had to start from scratch again with the design.” This was highly inconvenient, and the design engineer initially decided to parameterize certain individual elements of the split mold and their interaction. This made the work of designing Split molds considerably more efficient. And these individual elements were rapidly added too.

“It ultimately continued to the point where I had constructed the entire split mold as a parametric model”, the design engineer reports. “Size changes to a mold, which previously necessitated a completely new design, can now be performed at the push of a button. The model is fully scalable.



Over a period of several years, Thomas Felber parameterized individual components of the mold until the entire mold base had been completed.

Parameterization is highly time-consuming

This involved a great deal of work, which naturally took time—since the parameterization was conducted in parallel to Felber’s day-to-day business and, in most cases, was triggered by the actual needs of the project being processed on his computer.

“I started the parameterization project in Cimatron Version 13 a few years ago and it’s now fully completed in Cimatron 14.” And it’s not just available to Felber and for the design work at Bruno Eugster but for all HASCO customers—the data for the entire mold base can be called up by all users via the HASCO web shop.

So much work—and then you simply make the result of all your hard work available to everyone, including your competitors?

“Well, it’s a matter of give and take”, Felber explains. “An increasing number of moldmakers are realizing that working together is much better, for all the companies concerned, than the rigid competition approach adopted in the past. This view is gaining increasing ground amongst those with responsibility in the industry. This type of exchange can only be of benefit to us all.”

Jointly promoting the industry

In his opinion, it also makes little sense for each individual moldmaking shop to set up its own database. “It’s not only the compilation of the same database several times over that ultimately involves a lot of superfluous, demanding work”, he stresses. “My data has been taken over by HASCO and the experts there are now maintaining the model of the assembled mold and keeping it up-to-date. That is something that can only be done on a centralized basis.

Felber reports that the working relationship with the experts at both HASCO and Cimatron is very good. “They are prepared to listen to the wishes of us users,” the design engineer explains. In this way, projects can be run on a partnership basis for the benefit of the industry as a whole.”

(Continued on next page)



The entire structure of the split mold is now available as a parameterized dataset for all users of the HASCO webshop.

Profile: Bruno Eugster AG

As development partners and manufacturers, those in charge at Bruno Eugster contribute their application engineering and process technology at an early stage.

Drawing on their core competencies—plastics injection molding from the design stage, via mold/die making and material selection, right through to component assembly and logistics—they aim to achieve developments and improvements for their customers in terms of functionality, quality and costs.

The company, which is located in Au, Switzerland, near Lake Constance in the region where four countries meet, has 15 employees (including one trainee) and generates annual sales of some 2.5 million Swiss francs.

Bruno Eugster AG is certified to ISO 9001:2015.

Micro-precise trends- Split molds

If injection molded parts are difficult to demold, because parts of the plastic product are still located on the parting plane in the form of “undercuts,” trapped behind the metal of the mold half, the section of the mold that is in the way has to be removed before the part can be demolded. This part is then usually constructed as a slide and moved to one side, releasing the undercut and allowing the part to be completely demolded. On Split molds, this slide extends over the entire length of the mold—therefore these molds are used particularly for parts with relatively big undercuts. Standard-component manufacturers supply prefabricated mold bases for these Split molds, with the split ready to use in the form of a functioning slide.

Quote

“An increasing number of mold makers are realizing that working together is much better, for all the companies concerned, than the rigid competition approach adopted in the past.”

Thomas Felber, Design Engineer at Bruno Eugster



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What the editorial team has to say

Together, rather than against each other! If everyone attempts to re-invent the “philosopher’s stone” for themselves, then this leads to a great deal of valuable capacity being wasted in companies. Why not share your knowledge? A good approach, naturally, must not be a one-way street. Anyone channeling their know-how into a network—whether this be an association, the community of users for a standard-component manufacturer’s catalogue or a loose association in the region, ought to be able to benefit from others in the network too. That’s not just a matter of fairness. And, in the meantime, the mentality prevailing in companies has also undergone a change. The idea of sharing knowledge is gaining an increasing number of supporters. Cooperation makes sense in an environment where companies’ customers are often many times larger than the companies themselves. And it is also possible to achieve this without a company violating its own USP. Because, on closer inspection, the other company is frequently much less of a competitor than one might think...

Richard Pergler, W&F

Photos: Werkzeug & Formenbau

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The new HASCO stainless steel temperature control range

Effective mold cooling is one of the most important aspects of the production process for technical plastic parts. Only with an optimally designed cooling system is it possible to run production in a cost-efficient and highly profitable manner. The requirements on present-day mold cooling have risen not only in terms of functionality but also with regard to the maximum temperatures and flow

volumes employed and the effectiveness of the cooling system.

The constantly growing demands on mold cooling are accompanied by an ever-increasing need for stainless steel components. Applications in the fields of medical technology and cleanroom environments call for a clean and reliable temperature control system.

The new HASCO cooling range in stainless steel ensures the reliable cooling of injection molds when using hot or cold water or heat-transfer oil. Manufactured entirely from high-quality 1.4305 material, the robust, safe and easily coupled HASCO system guarantees reliable, absolutely leak-proof and durable temperature control applications, including in clean room environments.

The standard temperature components in stainless steel are equipped with optimized FKM quality seals and can be used at temperatures of up to 150°C for water and 200°C for oil.

With high-temperature applications, in particular, the different coefficients of thermal expansion of steel and brass result in small leaks from time to time, which are offset by the new stainless steel range. There is no need for time-consuming additional sealing and the safety of the process is guaranteed throughout. HASCO additionally offers stainless steel HT components specifically for the high-temperature range, which are equipped with special FKM seals allowing permanent maximum operating temperatures of 180°C for water and up to 220°C for oil.



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The new HASCO temperature control range in stainless steel includes more than 30 product groups offering the greatest possible flexibility for customers and their applications. Its compatibility with the standard range allows the optimization of existing molds, switching from brass to stainless steel, and enables combinations with standard components, where required.

The component selection has been specially adapted to market requirements. It includes products such as hose clips, sealing plugs and diverting bridges, as well as couplings and connectors. The proven Push-Lok range and the safety couplings established on the market round off the extensive HASCO portfolio.

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Standardized HASCO color table for tolerances in 3D models - Clearly marking and transferring tolerances by means of colors

In the course of further standardization, defined colors are being employed in 3D CAD design to permit easy identification of tolerances in mold and tool making.

Aiming to use color schemes that are as uniform as possible and create an easy-to-implement standard, HASCO, as the inventor of the modular standard parts system, has worked with various partners of the VDWF (German Tool and Mold Mak-

ers Association) in a joint project to find a solution. A uniform color table has now been developed for tool and mold makers which allows easy identification of tolerances and models in 3D design.

Since there has been no standard color table to date, the project team collected more than 70 different versions during the project. Overlaps were determined in the many effective approaches that had been adopted for the different tables, and the

The result is a standardized color table (VDWF Guideline 2020-1) for tool and mold making which is now available on the HASCO website and makes it possible to clearly identify tolerances through defined colors. The CAM systems in standard use can read in 3D models directly, automatically recognize the colors and derive the tolerance from these.

This constitutes an efficient means of avoiding any misinterpretation when performing conversions from 2D drawings. ACTUAL dimensions can be automatically compared with the 3D model through the use of appropriate measuring systems. This then simplifies process automation. This tool can similarly be used for the easy exchange of models for production at other locations.

HASCO colour table for tolerances

Colour code	R	G	B	Tolerance [mm]	Position tolerance for holes
	255	217	102	$\pm 0,002$	
	255	175	175	$\pm 0,005$	
	255	128	0	$\pm 0,01$	
	128	128	0	$\pm 0,02$	
	64	255	64	$\pm 0,05$	
	183	183	220	$\pm 0,1$	
	95	0	0	$\pm 0,5$	
	0	0	255	H7	$\pm 0,01$
	0	255	255	H5	$\pm 0,01$

	255	255	0	Metric standard thread	$\pm 0,1$
	255	175	0	Metric fine thread	$\pm 0,1$
	211	45	96	Inch thread	$\pm 0,1$
	255	95	0	Special thread	$\pm 0,1$
	0	175	175	Hole $\pm 0,1$	$\pm 0,1$

	252	228	214	Specification definable according to drawing or PMI	
	242	242	242		
	226	239	218		
	51	153	102		
	102	0	51		

	0	164	164	Reference surface for aligning the component	
	200	150	150	Adjustment area	$\pm 0,1$
	255	230	153	Contour area	
	204	236	255	Sealing surface	

	255	0	0	Contour change	
	190	0	0		

This colour table has been developed in cooperation with the VDWF (German Tool and Mould Makers Association).
VDWF Guideline 2020-1: Colour table for CAD-supported transmission of tolerances in mould and tool making
To permit a clear distinction, threads are to be designed with the core diameter as per DIN/ISO.
Surfaces without assigned attributes for the basic body are designed with tolerance field DIN/ISO 2768mH.
For the HASCO products, the tolerances specified in the HASCO product information apply.

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For information on sponsorship of future issues, please contact:

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Publication Release Dates

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October 2021

Winter Issue
January 2021

Spring Issue
March 2021

Summer Issue
June 2021

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