ETMM

EUROPEAN TOOL & MOULD MAKING

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Buyer's Guide 2017–2018

Annual Issue, International Sourcing Directory with Comprehensive Suppliers Database

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A time of growing business

Rosemarie Stahl
Editor
rosemarie.stahl@vogel.de

Associations across Europe report growing numbers for the last twelve months period. Investments, export, employment and sales are increasing in many countries. That is a very positive result and the prove that the European economy won't suffer breakdown after Brexit and the election of Donald Trump. Contrary to all gloomy predictions that have been uttered last year, Europe is entering its fourth year of upswing, KFW Research reports.

To secure your success in the future, it might be the right time to invest in new equipment. And for this decision, ETMM annually provides all information you need to find the right software, machine, component or hot runner. Each year we collect information on products, new releases and suppliers to give you an extensive overview about the latest developments for tool and mould making. This ETMM Buyer's Guide 2017/18 includes tightly packed information on a hundred products. Moreover, the Suppliers Directories for all important categories can ease your research and decision making. They are easy-to-use and help you find the right supplier for your demands.

Looking at what our readers have been interested in most during the last year, it is obvious that tool and mould making still has some battles to face. Interest in automation and Industry 4.0 remains high, even though the execution and implementation is still going slow in many manufacturing companies. Especially in tool and mould making, where companies are quite small by the number of employees, the digital transformation is still up in the air for many. But it can also be a chance for small companies: In the end, Industry 4.0 is about automating and optimising processes, enabling skilled and talented workers to handle increasingly complex customer demands. Smart products, machines and software can help here to exhaust all possibilities for your future success.

A horror scenario for many workers: A machine takes over their job and makes them obsolete.

Source: ©Sergey Nivens - stock.adobe.com / Fotolia.com

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TIP

Despite growing insecurities about political stability, development of target markets and digitalisation, the demand of tools & moulds is still strong.

Rosemarie Stahl
Editor

Source: Deutsche Edelstahlwerke

Deutsche Edelstahlwerke's Formadur 400 meets growing requirements for moulds (p. 18).

Source: Hasco

Hasco's A8500 and K3600 are a clever duo for small series production (p. 60).

Source: Männer

Side injection with Männer Edgeline prevents colisions with the mould core (p.72).

EDM EQUIPMENT & SUPPLIES

SURFACE TREATMENT & REPAIR

QUALITY CONTROL

TOOL & MOULD COMPONENTS

HOT RUNNER SYSTEMS, COMPONENTS & SUPPLIES

REGULARS

A horror scenario for many workers: A machine takes over their job and makes them obsolete.

Source: ©Sergey Nivens - stock.adobe.com / Fotolia.com

Industrial Revolution: Are machines taking over?

Rosemarie Stahl

While many manufacturers are already automating their processes, or at least some of them, they may have bigger problems inviting their employees on the journey towards Industry 4.0. Many workers in the industry fear for their jobs. But do they have to? And how can manufacturers prepare their workforce for digitalisation?

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INFO

The fear of losing jobs to machines is real. So real that a couple of media companies already offer online tools that calculate the risk of your job becoming obsolete. One example by the BBC can be found here: www.bbc.com/news/technology-34066941

While it is often relatively easy for manufacturers to implement automated processes, another part of manufacturing is harder to transform: Digital transformation does not only affect machines and their technical surroundings, it also influences the way we work. All in all, not every employee is looking forward to the future of manufacturing.

The greatest insecurity related to the topic of Industry 4.0 – besides data security – is probably the fear of jobs becoming obsolete. According to a recent survey by the International Data Corporation (IDC), many of the challenges companies have to face in their digitalisation process are related to the attitudes of employees. Besides technical and financial barriers like IT law and the lack of financial resources, many companies face real problems in connection with organisational structures.

One of these barriers is the cultural resistance to change. While 84% of European enterprise organisations are already on the path of digitalisation, 43% stated that the cultural resistance to change is a barrier to successful transformation, especially a disruptive one as this, the IDC survey states.

The fourth industrial revolution is called revolution for a reason. Its impact could be massive if it is carried out in full. Imagine an employee that has been operating machines for the last decade or two: How will he feel if he is assigned the task of monitoring a system that is able to operate more machines than he could have ever operated by himself? While he probably was proud of his expertise before, he now might feel like an assistant to a machine that does his job much better. Moreover, a couple of his colleagues might even have lost their jobs to the software behind it.

Understandably, the employee in this theoretic example will not welcome the digital transformation with open arms. If employees value their work today, it is a company's duty to enable them to be

proud of the way they work in the future, too. Companies have to react to the fears and insecurities of their employees early to keep them on board – especially skilled workers.

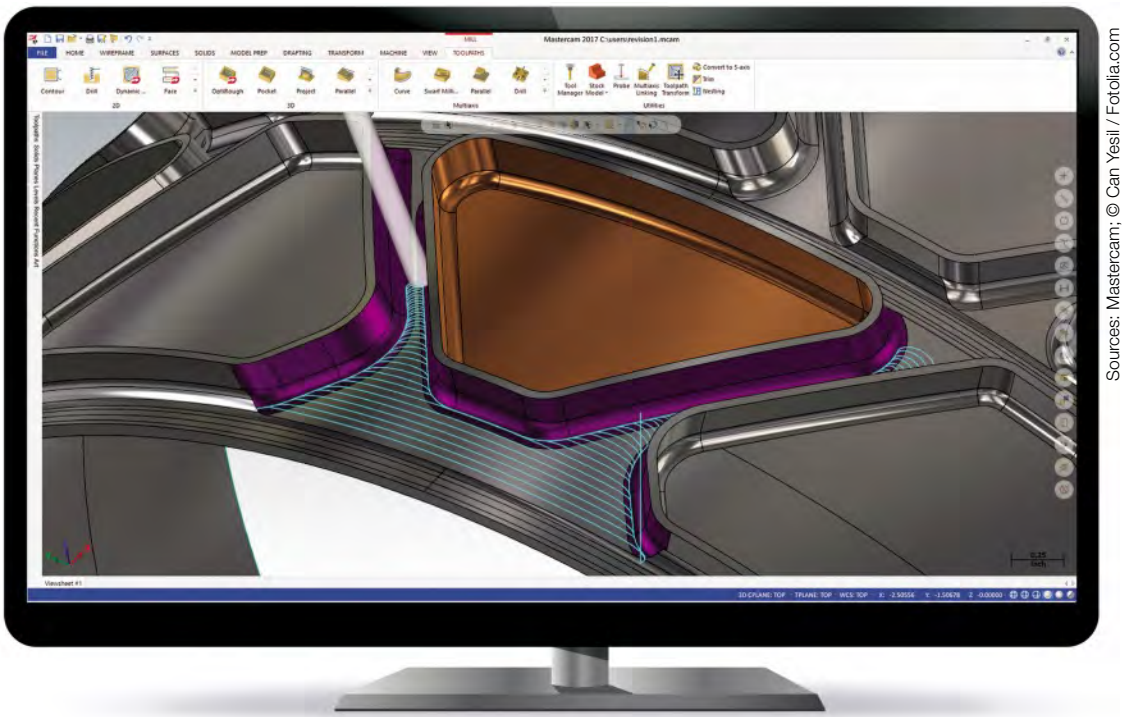
As for the fear of losing one's job: According to an analysis by McKinsey, 64% of manufacturing work today has the potential to be automated. That represents 237.4 million employees worldwide. The manufacturing sector has the second biggest potential of automation after agriculture, forestry, fishing and hunting. Those numbers sound devastating. But it is only one part of the truth. The biggest potential for automation exists in developing and emerging countries. The numbers are highest in countries such as China, India, Indonesia and Brazil. For European countries, the potential is much smaller. According to the McKinsey Global Institute, the manufacturing sector in Italy, for example, has 2.8 million jobs that can be automated; in Spain, 1.5 million. It is clear that workers need to look at numbers that apply to their own sector and nationality.

And those are numbers that do not take growth into account. Most companies that are able to automate their processes do not lay anybody off. Instead, they are able to receive and fill more orders. What they actually achieve is to invest in their own future and to take their employees with them, if they are able to.

A skilled and talented workforce is key

According to the IDC survey, further barriers to Industry 4.0 are the lack of know-how, the inability to keep critical talent and skills, and the inability to find and develop talent and skills. Roughly a quarter of the respondents to the survey said they have a problem with each of those barriers. According to manufacturing associations, many European countries face the problem of skills shortage.

The number of young professionals choosing a career in the industry is not sufficient to fill empty positions, or at least not those that are offered. In the UK, for example, the Royal Academy of Engineering estimated that they would need to train 75,000 professional engineers every year until 2020 to meet the demand. At the time of this calculation, they were only creating 22,000 graduates annually. According to recent numbers from the Association of German Engineers, the number of unemployed engineers was only a third of the vacancies. The IDC survey concludes that, to overcome those barriers to Industry 4.0 rooted in the minds of industry employees, HR departments everywhere have to act without delay. If there is a skill shortage, it is inevitable that companies will have to make sure to keep the motivated and skilled workers they already have on board, even if it means that the employees might have to adapt to new roles. Skilled or talented employees are the ones that companies can build their future growth on. Companies cannot afford to ignore one of their biggest potentials for digitalisation, that being their current workforce. Instead, they should invest early to make sure their workforce is as ready for Industry 4.0 as their machining equipment.



Sources: Mastercam; © Can Yesil / Fotolia.com

“Many of our more powerful tools were underused because customers did not know where to find them,” says CNC Software President, Meghan West.

Additional function package for machining software

Rosemarie Stahl

CNC Software has released the latest version of its machining software, Mastercam 2017. It features 3D machining enhancements, Multiaxis improvements and so much more, the company says. Also, there is a new Mastercam 2017 package for Solidworks.

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Founded in 1983 in Massachusetts, CNC Software is one of the oldest developers of PC-based CAD/CAM software. Today, it is located in Tolland, Connecticut.

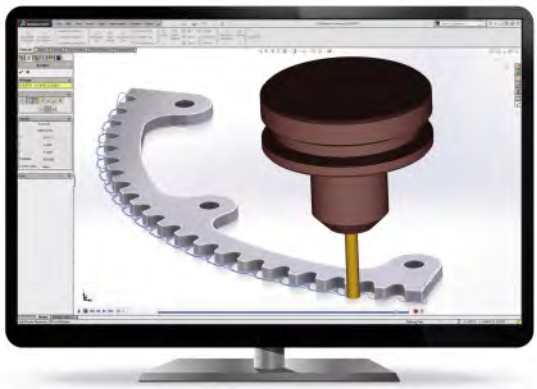
The Maximum Stock Engagement allows the customer to select a previously made stock model and set the maximum depth so that he can limit how deeply the cutter engages uncut materials, especially useful when semi-finishing a part. Perpendicular fill for the raster toolpath makes it possible to limit raster passes and then fills in the limited area with perpendicular raster motion to create a more consistent finish. And, for quicker toolpath regeneration, the processing time for High Speed Scallop has been decreased, Mastercam says.

Research showed that many of Mastercam’s powerful tools were being underused because busy shops did not know where to find them. Mastercam 2017’s CAM programming tools are brought to the forefront and their organisation has been enhanced. According to CNC Software, this improved workflow makes it easier for users to take better advantage of such things as Mastercam's breakthrough Dynamic Motion toolpaths to improve machining cycles and reduce tool wear. Mastercam 2017 Beta testers reported an average of two days to become comfortable with the new interface, with the majority reporting substantial productivity gains, the company says.

For the purpose of reducing confusion, the Multiaxis toolpaths have been consolidated. In the latest version, they are grouped by either a Pattern or Application toolpath to make them easier to find. The 4-axis toolpath, Rotary Axis, allows for more control over the tool motion through the selection of walls, hubs, and shroud surfaces. And, Multiaxis Drill has additional features, Mastercam says, including using a line length for the drill depth and recognition of the stock model for depth and top of stock purposes.

Mastercam 2017 features a ribbon interface that makes it easier to find the functions you need to complete your tasks, the company says. “Many of our more powerful tools were underused because customers did not know where to find them,” says CNC Software President, Meghan West. “We spent a lot of time with users determining the best way to simplify this, and the response has been overwhelmingly positive.” The ribbon tabs group similar functions and display them in order from simple to more complex. Each tab relates to a type of activity, from creating wireframe geometry to generating toolpaths. Editing functions are on the same tab as creation functions so you have all the tools you need, when you need them.

According to the company, Mastercam’s Dynamic Motion technology can slash machine time by as much as 75% or more. This is supposed to max-



Source: Mastercam; © Can Yesil / Fotolia.com

Mastercam Simulator Auto Start is a new feature, which allows Mastercam Simulator to immediately begin to play once a sufficient amount of data has been transferred.

imise material removal rates, extend tool life, reduce cycle time, save wear and tear on machines, and cut hard materials more easily. New to 2017, micro-lifts now use a line-of-sight approach to move the tool where it needs to go through unobstructed areas. This results in reposition moves that are more efficient, less complex, and travel a shorter distance, resulting in shorter cycle times, the company says.

Multiaxis Improvements

According to the company, with Mastercam, users get support from resellers, many of whom have been supporting Mastercam for over 25 years. From tech support and training to curriculum and rollouts, Mastercam wants to make sure its customer's shop is running.

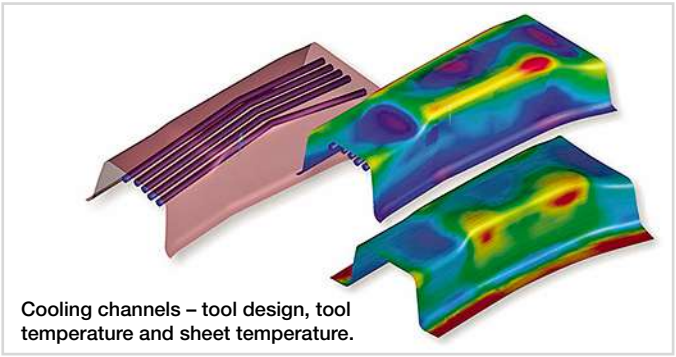
According to Meghan West, Mastercam 2017 had the most comprehensive testing in the company's history, including rigorous on-machine tests in Mastercam's Machining Lab, feedback from the Mastercam network of resellers, product evaluations by shops in their global Beta Testing Program, and live user analyses of new workflow. With the new software, CNC Software hopes to address a broad spectrum of mission-critical CNC manufacturing issues to help users move models onto machines sooner, parts out the door faster, and develop their workforce to maintain a lasting competitive edge. "Our customers are very much our partners in Mastercam product development," adds West. "In our Machining Lab, we replicate conditions they report so that our software can deal with issues they face every day. We're eager to understand their challenges and add value to their investment by continually making Mastercam as comprehensive and easy to use as it can be."

mastercam.com

Source: Mastercam

To view real-time operation data about selected toolpaths, the Display toolpath statistics option can be chosen.

Source: Auto-Form



Cooling channels – tool design, tool temperature and sheet temperature.

Next level of process simulation for progressive dies

Process simulation – Auto-Form Engineering, a supplier of software solutions for the sheet metal forming industry, has unveiled its latest software version Auto-Form Plus R7. This release brings tangible benefits and enables users to reach the next level of process simulation, the company says.

Auto-Form Plus R7 enables users to reach the next level of process simulation through a new set of powerful enhancements and functionalities, the company says. As a result, users benefit from higher flexibility and efficiency in process set-up and final validation for all forming processes in general and in particular for progressive dies and hot forming.

Auto-Form Plus R7 is aimed at bringing advances in process modeling for hot forming as this release allows users to take cooling channels into account. Cooling channels can now be easily modeled with 3D curves and their corresponding diameters. Different cooling channel layouts lead to different temperature distributions on the tool surfaces. Hot spots on the tool surface can be easily detected and controlled depending on the selected layout of the cooling channels.

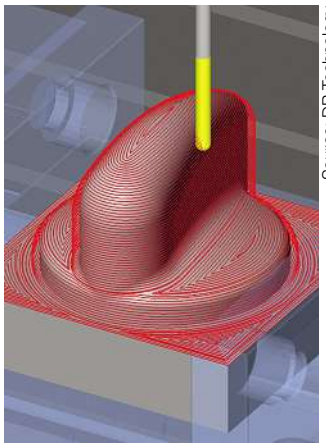
According to the company, one of the major highlights of Auto-Form Plus R7 is the improved planning and simulation of progressive dies. Auto-Form Plus R7 supports the following use cases: import of CAD-designed tool geometry for the final process validation, part import for the planning stage and part import for full process engineering.

autoform.com

Smarter CAM for improved programming, faster machining

Finishing – DP Technology has announced the release of Esprit 2017, the latest version of its pioneering flagship product. This version delivers a smarter, simpler, faster machining process with expert toolpath, streamlined user control and accelerated processing power, the company says. It features a new 3-axis Global Finishing cycle that allows for the steep/shallow milling of complex part geometries by applying an appropriate toolpath to complex parts based on model analysis and a single threshold angle. Z-level cutting passes are applied to steep areas and boundary offset passes to shallow areas that give priority to toolpath continuity between steep and shallow areas for smoother finishing.

A time-saving option constructs toolpath to machine over openings and holes in the CAD model without stopping or retracting the tool. A redesign of the Esprit facing also reduces several steps needed to face a part. Up-to-the-minute intelligence about the shape of in-process stock is now built into facing, pocketing and contour milling for faster, more reliable programming. The stock automation engine in this version underwent a refactoring to reduce calculation times from minutes to seconds. The same refactoring was applied to Esprit's 3-axis roughing to compute in-process stock in much less time. Awkward profiles in wire EDM parts are now cut more efficiently with its open profiles in EDM pocketing.



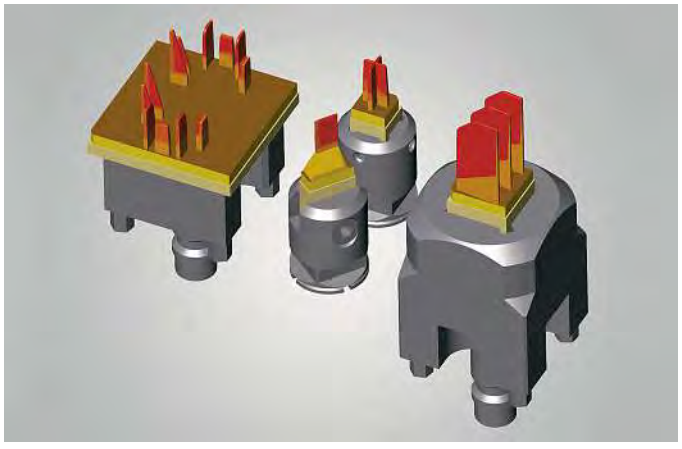
Source: DP Technology

Global Finishing in Esprit 2017 provides steep/shallow milling of complex part geometries.

Advancements in Profit-Milling improve performance inside closed cavities for better chip evacuation and coolant access and faster programmed feed rate. Lathe contouring has now more options for accurately positioning the tool edge.

dptechnology.com

Upgrades programme more quickly and provide greater flexibility



Source: Open Mind

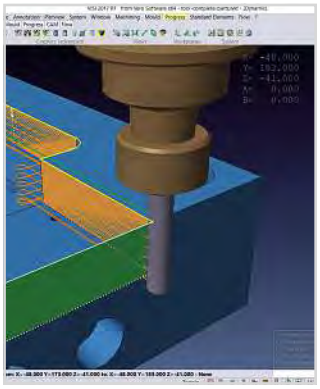
The Hyper-CAD-S electrode module enables electrodes to be derived and programmed in only a few steps.

CAD/CAM – Open Mind Technologies has recently released its new Hyper-Mill 2017.2. Several new functions and upgrades to the CAD/CAM suites will enable faster programming and with greater flexibility, it notes. These include the new electrode module, upgrades to 3D and 5-axis machining and the Hyper-Mill Maxx Machining performance package. Electrodes for die-sinking EDM have to be designed, programmed and milled – a time-consuming process. To speed this up, the Hyper-CAD-S electrode module enables electrodes to be derived and programmed in a few steps. The design process is largely automated in Hyper-CAD-S. The faces to be eroded on the components have to be selected, after which the module generates the corresponding collision-free electrodes. Thus, the electrode faces are extended and blanks and holders are derived automatically. Technology and component transfers in Hyper-Mill then ensure fast, reliable programming in a few, short clicks.

openmind-tech.com

Developments in CAD/CAM functionality

Source: Vero



Vero Group technology is creating a new profiling strategy for 2D milling.

Speed and quality – The latest release of Visi by Vero Software includes new features that are said to give users additional speed and quality throughout their design and machining processes.

CAD updates in Visi 2017 R1 are focusing on the user experience and adding enhancements to allow customers to speed up their design process.

And for CAM, an update to geometry management means individual pieces are no longer limited by a specific project.

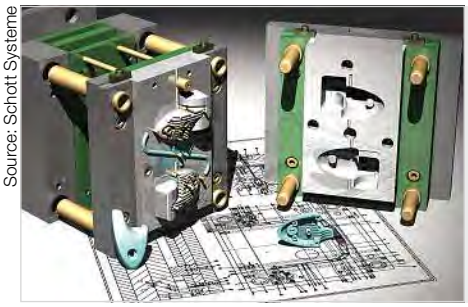
According to Vero, several auto-ballooning enhancements have been made within the Assembly Manager, providing additional control when adding BOM ballooning within the plotview. The creation of manufacturing drawing data has been improved by the addition of a number of additional view property settings. More functionality has been added to the Mould Design module, allowing the user to validate the effect of a cooling channel circuit.

For Visi Flow modules, the precision of warpage calculations has been enhanced by adjustments within the filling & holding algorithms.

visicadcam.com

Software for easier separation

Source: Schott Systeme



Additional modules for example for wire cutting are also available.

Mould design – German software developer Schott Systeme uses the next generation of their Pictures by PC CAD/CAM software to help further streamline the mould tool design and machining process.

The company has extended their existing hybrid 3D solid, surface and mesh CAD modelling suite to facilitate easier form separation. Automatic Splitting tools now help to detect regions of a part (part edges and silhouette curves) to separate the form in the associated core and cavity halves. The creation of moulds from scanned mesh models (STL) is also aided by Mesh Offsetting which can be used for the creation of part wall thickness's, the company says.

The latest developments within Pictures by PC focus on the implementation of more dynamic machining strategies for mould making. HPC (High Performance Cutting) Trochoidal 3D Roughing offers reductions in the machining times of harder tooling materials. Dynamic Offset Roughing takes offset pocketing and roughing toolpaths, and implements rounded corner movements.

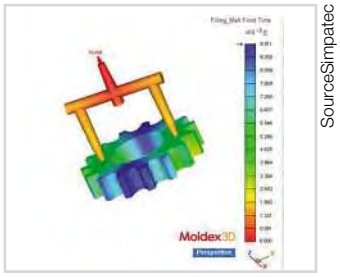
schott-systeme.com

One application for simulation and pre-post operations

CAD/CAM – After the release of Simpatec's Mouldex-3D, more changes and developments are expected from Moldex-3D R15. These will improve the speed, robustness and reliability of simulations, the company notes.

One is the Moldex-3D Platform – Studio. The necessity to use two applications to perform a simulation is a feature of the past: Simulations and pre-post operations can now be completed in one application. Another advantage is the extremely reduced file size.

Source: Simpatec

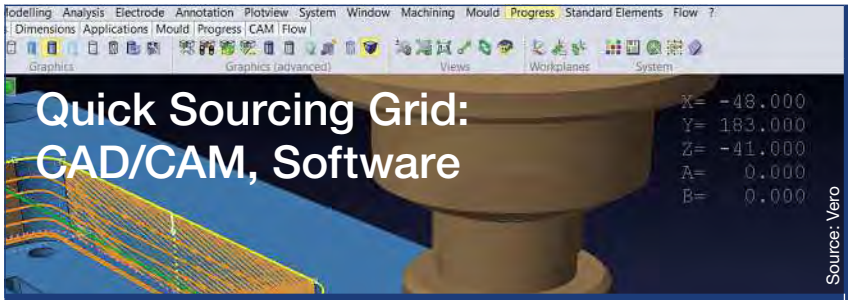


Platform Studio allows simulations and pre-post operations to be completed in one application.

Moldex-3D R15 will take the Boundary Layer Mesh (BLM) generator to a new level. BLM 3.0 will allow using fewer meshing elements, which reduces the meshing time whilst keeping up the maximum wall thickness resolution

With R15, tiger strips, surface defects and the jet flow can be displayed. The more detailed the surface structure, the easier it is to detect possible defects and to eliminate them. The upcoming release of Moldex-3D R15 will provide a completely developed management system with an effective and intuitive integrated data base system.

simpatec.com



Company | Contact	Ad on page	Company profile at etmm-online.com	DESIGN SOFTWARE: CAD Software	CAE Software	Digitizing (Reverse Engineering)	
CGTech Ltd., Hove, UK | www.cgtech.co.uk	3					
CNC Software Inc., Tolland,CT, USA | www.mastercam.com	7		●	●	●	
Schott Systeme GmbH, München, DE | www.schott-systeme.de	12, 13		●			
SolidCAM Ltd., Or Yehuda, IL | www.solidcam.com	11		●		●	
Autodesk Ltd., Farnborough, Hants, UK | www.autodesk.com			●	●		
Camtek GmbH, Weinstadt, DE | www.camtek.de						
Cimatron GmbH, Ettlingen, DE | www.cimatron.de			●			
CIMsystem S.r.l., Cinisello Balsamo (MI), IT | www.cimsystem.com			●	●	●	
Dassault Systemes Deutschland GmbH, Munich, DE | www.solidworks.de			●			
Dassault Systemes SolidWorks Corporation, Munich, DE | www.solidworks.de			●			
Delcam International PLC, Birmingham, UK | www.delcam.com			●		●	
DP Technology Corp., Camarillo, CA, USA | www.dptechnology.com			●			
Esprit CAM Software, Montpellier, FR | www.dptechnology.fr						
Fanuc UK Limited, Quinn Close, Coventry, UK | www.fanuc.eu/uk						
Fastems Oy Ab, Tampere, FI | www.fastems.com						
Geometric Technologies Inc., Scottsdale, USA | www.camworks.com			●	●		
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MachineWorks Ltd., Sheffield, UK | www.machineworks.com						
Missler Software (Topsolid), Evry , FR | www.topsolid.com			●			
Moldex3D, Chupei, TW | www.moldex3d.com			●	●	●	
OneCNC UK Ltd. The Innovation Centre, Kingswinford, W Midlands, UK | www.onecnc.co.uk			●			
Open Mind Technologies AG, Weßling, DE | www.openmind-tech.com			●			
Parametric Technology (UK) Ltd., Cambridge, UK | www.ptc.com			●			
Planit Holdings, Ashford, UK | www.planit.com			●			
Robotmaster-Intercam S.A., Morges 2, CH | www.intercamsa.com			●			
Siemens AG, Erlangen, DE | www.siemens.com						
SmartCAMcnc, Springfield, OR, USA | www.smartcamcnc.com						
Surfcam, Inc. Corporate Headquarters, Thousand Oaks, USA | www.surfcam.com			●			
Tebis Technische Informationssysteme AG Pressestelle, Planegg, DE | www.tebis.de			●		●	
Vero Software Limited, Cheltenham, Glos, UK | www.verosoftware.com			●	●	●	

	MANUFACTURING SOFTWARE						OTHER SOFTWARE			
	Simulation Software	Solids Modeling Software (3D)	Surface Modeling Software	CAM Software	CIM Systems	CNC Control Software	NC/CNC Verification Software	Analysis Software, FEA	Mould Cooling Analysis Software	Mould Filling Analysis Software	Mould Maintenance Software
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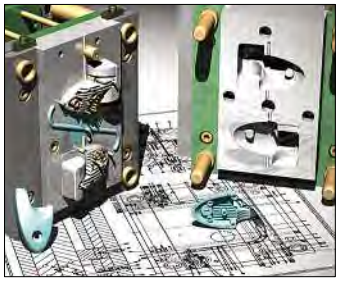
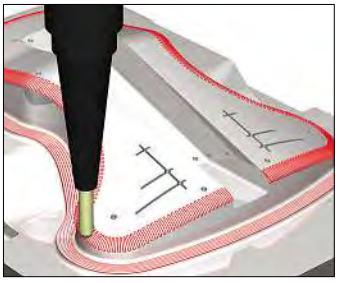
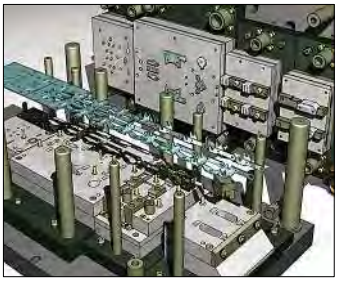
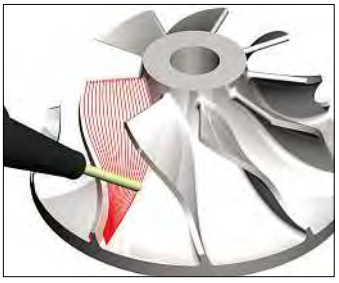
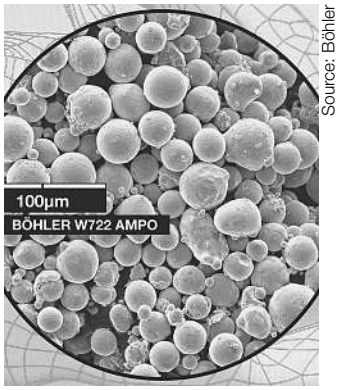





Portfolio now with additive manufacturing powder



Source: Böhler

The newly launched Böhler W722 Ampo powder. Böhler offers customisation of alloys.

Metallurgy Powders – Böhler Edelstahl is expanding its portfolio to include powder for additive manufacturing, running under the brand name of Böhler Ampo. Three lines will be launched: Böhler Ampo W722, N700 and L718, with the flexibility to further expand in future. With its leverage on metallurgical know-how and manufacturing options as a special steel producer for this new technology, Böhler offers customisation of alloys with small-scale production plants and metallurgical expertise.

According to Böhler, the powder is produced by atomisation techniques and tested in-house. Vacuum induction melting and atomisation under inert gas ensure its high quality. As per steel grade and customer requirements, raw-materials molten under vacuum or re-molten can be used to ensure high-quality standards and also to minimise undesired impurities. Based on the requirements of the AM process used, particle fraction ranging from 15-150µm is available. Properties such as flow ability, particle size distribution and bulk density are offered on request.

bohler-edelstahl.at

Commercial 3D printing system offers low cost per part

3D Printing – HP's production-ready commercial 3D printing system, HP Jet Fusion 3D 4200 printer, is designed for prototyping and short-run manufacturing needs, with high productivity to meet same-day demands at really low cost per part, the company explains.

According to HP, this 3D printing solution which has been recently introduced to the European market revolutionises design, prototyping and manufacturing, and delivers high quality physical parts up to 10 times faster and at half the cost of current 3D print systems.

By printing functional parts for the first time at the individual voxel level (a voxel is the 3D equivalent of a 2D pixel in traditional printing), the company says it provides customers the ability to transform part properties and deliver mass customisation as well. Designed for model shops and 3D print service bureaus, the Jet Fusion 3D printing solution offerings include simplified workflow and reduced cost for radical prototyping. According to HP, it can deliver final-parts manufacturing with breakthrough economics.

hp.com

Source: HP

The 3D 4200 is claimed to deliver quality parts up to 10 times faster than current 3D systems.

Source: GKN Sinter Metals

Simon Hoeges, GKN AM director, in front of the Metal-FAB1, an industrial-grade additive manufacturing machine.

Series production of AM metal parts

Additive Manufacturing – GKN Sinter Metals has announced it has begun series production of additively manufactured precision automotive parts at its plant in Radevormwald, Germany. The company is using its Metal-FAB1 system from Netherland-based Additive Industries to produce complex engine and transmission components for the original equipment and replacement parts markets.

GKN Sinter Metals is the world's largest producer of precision powder metal products, offering extensive technical expertise in design, testing and various process technologies. GKN Sinter Metals offers a full range of complex shapes and high-strength products for automotive, industrial and consumer markets worldwide. With the Metal-FAB1 system, GKN Sinter Metals stated that it is in a position to offer its customers around the world a range of complex and creative product solutions in next to no time.

The Metal-FAB1 can simultaneously print hundreds of parts on a single build plate. "Depending on how many data sets we feed into the Metal-FAB1, these can be 300 identical or 300 different parts. This gives us unprecedented production capacity and flexibility," says Dr Simon Hoeges, GKN AM director.

The industrial-grade additive manufacturing machine and integrated Additive World software platform will deliver up to a tenfold reproducibility, productivity and flexibility, Additive Industries says. The improved performance is said to be achieved by robust and thermally optimised equipment design, smart feedback control and calibration strategies.

In addition to the AM build process, the Metal-FAB1 also incorporates stress relief heat treatment and automated handling. The system uses powder bed fusion with multiple lasers. The modular design of the Metal-FAB1 system allows for customer- and application-specific process configuration, the company explains. It adds that multiple build chambers with individual integrated powder handling make this industrial 3D printer the first to combine up to four materials simultaneously in one single machine.

The system can be equipped with a maximum of four full field lasers, thereby eliminating the need for stitching when printing large objects, Additive Industries says. In a joint development program the technology is further optimised for the needs of the automotive industry, Additive Industries explains.

additive industries.com

Modular machine architecture

Source: Concept Laser

The individual modules are moved via a tunnel system.

3D Printing – The commercial product launch of a machine architecture from Concept Laser, the M Line Factory, took place during the course of Formnext powered by TCT 2016. Part production as well as set-up and dismantling processes take place in two independent machine units so that they can be operated physically separate from one another. According to Concept Laser, this enables production processes to run in parallel rather than sequentially so that downtimes are considerably reduced and the availability and output quantity of the process chain is thus increased.

The M Line Factory PRD, as the production unit, has a max. build envelope of 400 x 400 × 425 mm³ (x,y,z) and is optionally equipped with one to four laser sources, each delivering 400 W or 1,000 W of laser power, the company says. The core of the unit is three independent modules, the dose module, the build module and the overflow module, which can be individually activated. According to Concept Laser, the individual modules are moved via a tunnel system inside the machine.

concept-laser.de

Easy to integrate

Additive Manufacturing – On its stand at Formnext 2016, Renishaw presented its latest metal additive manufacturing system, the Ren-AM 500M. The system is specifically aimed at series production in industrial use. According to Renishaw, this AM system boasts an open architecture that ensures flexibility and compatibility with a range of systems and applications. This makes it easy to integrate with other software and hardware systems.

"With more than 40 years of experience supporting manufacturers around the globe, Renishaw understands how the manufacturing process chain is changing to include new technologies," explained Clive Martell, head of global additive manufacturing at Renishaw.

Source: Renishaw

Aimed at industrialised series production: RenAM 500M.

"Additive manufacturing is still a relatively specialised technology with a limited cohort of expertise, which is a barrier to adoption that many businesses find difficult to overcome. Renishaw is breaking down all these barriers with developments in advanced additive manufacturing systems, its network of Solutions Centres and industry collaborations."

renishaw.com

Quick Sourcing Grid: Additive Manufacturing

Source: BKL-Lasertechnik

Company | Contact	Ad on page	Prototyping Services	
Renishaw plc, Wotton-under-Edge, Glos, UK | www.renishaw.com	53	●	
3D Systems Corporation, Burlington, MA, USA | www.3dsystems.com		●	
Alphaform AG, Feldkirchen , Kr München, DE | www.alphaform.de			
Alzmetall Werkzeugmaschinenfabrik und Gießerei Friedrich GmbH & Co. KG, Altenmarkt a.d.Alz, DE | www.alzmetall.de			
Arcam AB, Mölndal, SE | www.arcam.com			
Arrk Europe Ltd. - Gloucester Technical Centre, Gloucester, UK | www.arrkeurope.com		●	
Concept Laser GmbH, Lichtenfels, DE | www.concept-laser.de			
DMG Mori Deutschland GmbH, Wernau (Neckar), DE | www.dmgmori.co.jp/en			
EOS GmbH Electro Optical Systems, Krailling, DE | www.eos.info			
ExOne GmbH, Gersthofen, DE | www.exone.com			
Fives Landis Ltd., Keighley, West Yorkshire, UK | www.fivesgroup.com			
German RepRap GmbH, Feldkirchen, DE | www.grrf.de			
GF Machining Solutions Management SA, Nidau, CH | www.gfms.com			
GOM Ges. für optische Meßtechnik mbH, Braunschweig, DE | www.gom.com			
Hybrid Manufacturing Technologies, Ltd, Moia, Leicestershire, UK | www.hybridmanutech.com			
Ibarmia Innovatek, Azcoitia, ES | www.ibarmia.com			
Imes-icore GmbH, Eiterfeld, DE | www.imes-icore.de			
Keyence Deutschland GmbH, Neu-Isenburg, DE | www.keyence.de			
MachineWorks Ltd., Sheffield, UK | www.machineworks.com			
Maschinenfabrik Berthold Hermle AG, Gosheim, DE | www.hermle.de			
Materialise N.V., Leuven, BE | www.materialise.com		●	
Matsuura Europe GmbH, Wiesbaden-Delkenheim, DE | www.matsuura.de			
Mazak Machine Tools, Worcester, UK | www.mazak.com			
Midas Pattern Co. Ltd., Bedford, UK | www.midas-pattern.co.uk		●	
Prodways Group , Paris, FR | www.prodways.com			
Proto Labs Ltd, Telford, UK | www.protomold.co.uk			
ReaLizer GmbH, Brochen, DE | www.realizer.com			
SLM Solutions GmbH, Lübeck, DE | www.slm-solutions.com			
Solidscape Inc., Merrimack, NH, USA | www.solid-scape.com			
Stratasys GmbH, Rheinmünster, DE | www.stratasys.com		●	
Trumpf Laser- und Systemtechnik GmbH, Ditzingen, DE | www.trumpf-laser.com			
Voxeljet AG, Friedberg, DE | www.voxeljet.com			
WFL Millturn Technologies GmbH & Co. KG, Linz, AT | www.wfl.at			

	Hybrid Machines	Rapid Tooling Systems	Reverse Engineering Services	AM Machines, Metal (SLM, DMLS, EBM)	AM Machines, Fused Deposition Modeling (FDM)	AM Machines, Polyjet matrix technology	AM Machines, Selective Laser Sintering (SLM)	AM Machines, Stereolithography (SLA)	Materials, Metallic, Nonmetallic/ Plastic	Software	Scanning Equipment
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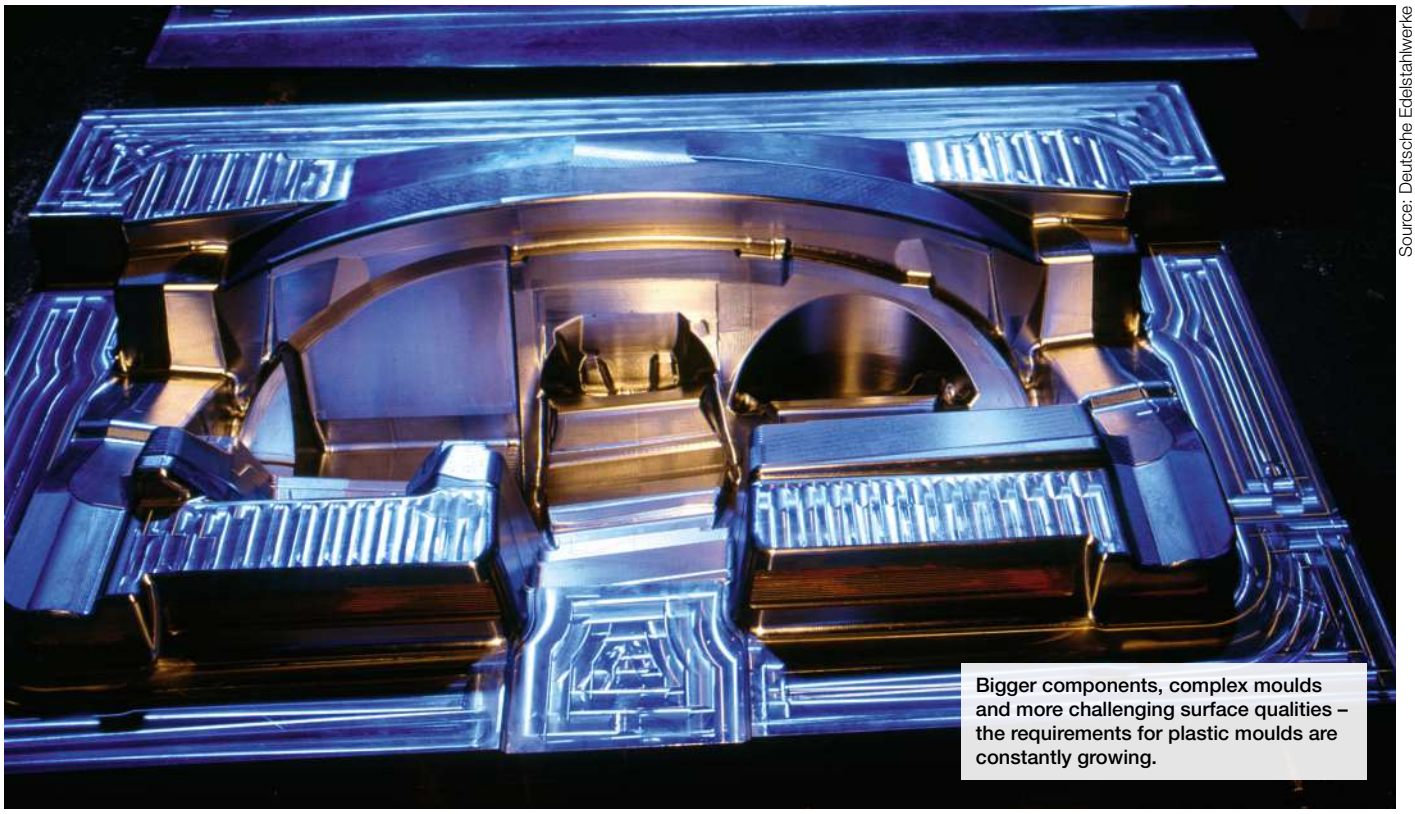


Source: Deutsche Edelstahlwerke

Bigger components, complex moulds and more challenging surface qualities – the requirements for plastic moulds are constantly growing.

Pre-hardened plastic mould steel for optimum product quality

Daniel Frie, Technical Customer Service at Deutsche Edelstahlwerke

The harder the mould steel, the better the surface finish quality on plastic products. This theorem explains plastic injection moulders' increasing need for special steels, which excel thanks to their homogeneous hardness. This is why Deutsche Edelstahlwerke developed Formadur 400.

ETMM

INFO

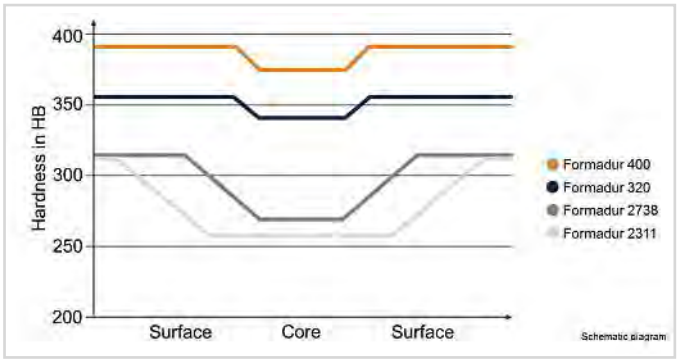
Deutsche Edelstahlwerke is one of the world's leading producers and processors of special steel products, with around 4,000 employees. With three materials groups engineering steel, tool steel and stainless, acid and heat-resistant steel, Deutsche Edelstahlwerke offers international customers a wide range of product dimensions.

Producing large moulds with deep engravings and complex geometries for plastic injection moulding is a supreme challenge. Surfaces need to be completely immaculate while complying with narrow tolerances regarding dimensional stability and accuracy of fit for plastic products. It is also important for the material to exhibit high wear resistance to ensure maximum productivity during production. Homogeneous hardness in mould steel is an essential prerequisite for meeting highest demands. This is a standard that far from every steel producer is able to fulfil, especially when it comes to providing high-grade steel blocks for large dimensioned plastic moulds.

Deutsche Edelstahlwerke, a company belonging to Schmolz + Bickenbach, is an expert in tool and mould steel and consistently uses state-of-the-art process technologies. This provides the company with the scope it needs to ensure further development of its steel products in line with market requirements. The global demand for pre-hardened plastic mould steels with high hardness has grown in recent years. Injection moulders require a maximum number of shots in combination with top quality, whether they are producing white goods, electronic devices or vehicle interiors and exteriors. Performance is decisive in the face of competition. Deutsche Edelstahlwerke regarded this trend as an opportunity to further develop its established plastic mould steel Formadur 320 to meet market requirements, especially with regard to hardness.

To meet market needs to an optimum effect, the company worked together with selected clients to develop the new steel Formadur 400 and bring it to the production stage. Thanks to extensive machining and deep drilling tests as well as simulations regarding through-hardenability, the steel manufacturer's newly developed product demonstrated the required material properties for the machining and use of special steel. Positive feedback from clients attests Deutsche Edelstahlwerke's success, the company says.

Source: Deutsche Edelstahlwerke



Comparisons of Formadur 320 and Formadur 400 with the standard P20 grades exhibit a significant increase in hardness distribution and through-hardenability.

With a hardness range of 365 to 410 HB through to its core, Formadur 400 is one of the most consolidated pre-hardened mould steels on the market. The material can be brought precisely into shape thanks to its homogeneous hardness. Polishing allows moulders to achieve an extremely high-end surface finish on moulds. This is effective in preventing any uneven surfaces on the plastic product. Formadur 400 also exhibits heightened wear resistance, which, in turn, increases productivity for plastic injection moulding. The material's mechanical-technological properties are optimised to such an extent that a whole variety of machining operations is possible: milling, welding, texturing and polishing. For even higher standards for polishing, Deutsche Edelstahlwerke offers Formadur 400 in its Superclean version, produced through remelting in an electro-slag remelting process (ESR).

Steel production based on secret formula

The material's optimal chemical composition is essential for the required hardness increase and homogeneity. Deutsche Edelstahlwerke smelts single-type steel scrap and selected alloy components in a 130-ton electric arc furnace at its steelworks in Witten in Germany's Ruhr region. During the secondary metallurgy process, disruptive gas and oxygen content is removed from the steel and the final chemical analysis is adjusted by microalloying. Even the tiniest impurities in the steel can have an effect on the plastic mould and, consequently, on the component's surface quality.

The steel producer uses an ESR process to improve the purity of the steel to meet stringent requirements for highest polishing results. This is the most important step in further treatment of Formadur 400 to produce its Superclean version. The difference in the achievable surface quality can be verified as clients who manufacture complicated high-end products require such superior quality. Forged or rolled steel products undergo heat treatment at the Hattingen, Krefeld or Witten works in Germany. The plant technology at Deutsche Edelstahlwerke is able to heat-treat steel products weighing up to 50 tons in all. This is a true competitive advantage and a prerequisite for achieving optimum homogeneous hardness.

dew-stahl.com

Flame retardant compounds

Materials – Thermoplastic elastomers specialist Kraiburg presented its new and expanded products, together with new applications in the automotive, industry, consumer and medical sectors at K 2016.

A highlight was the company's introduction of flame retardant compounds of the FR/AD1 series. The thermoplastic elastomers of its Thermoplast-K portfolio were developed especially for applications in the construction industry, where they are used to ensure flexible cable installation in flush-mounting boxes. The material is flame retardant in accordance with UL94 and has the flammability class V0. It also has good adhesion with ABS and PC in 2-component injection moulding. The flame retardant compounds are highly elastic and are free of latex, PVC and halogen.

Other exhibits included materials for drinking water applications that comply with important European certifications to ensure high safety and hygiene standards, and materials for under-the-hood automotive applications.

kraiburg.tpe-com

Source: Kraiburg

The flame retardant TPE compound has been devloped for the construction industry.

Wide assortment for every requirement

Source: qilaxia

Ugitech will present its product range at Schweissen & Schneiden 2017, the international trade fair for joining, cutting and surfacing.

Welding – Ugitech develops stainless and nickel-based wire for the entire range of welding applications. The company with headquarters in Ugine, France sells its products worldwide.

One of Ugitech's latest developments is the company's Exhaust brand temperature-resistant welding wire, engineered specifically for welding of exhaust systems. According to the company, Ugitech is constantly investing in the further development and optimisation of their offerings with the goal to offer customers the best possible material solution at all times. The company has two production plants totaling 22,500 m² for welding wire in France and Italy. More than 160 experts work at these sites on the development and manufacture of filler metals. 65 percent of the wire produced in both plants is used for welding work on exhaust systems.

Ugitech's products will be on show at this year's Schweissen & Schneiden in Düsseldorf, Germany, from 25 to 29 September 2017.

ugitech.com

Steeltec publishes material selection guide

Materials – Greater efficiency, improved dynamic strength and longer service life – the components used in today's high-tech applications have to meet increasingly sophisticated demands. Cost-effective production processes are essential to maintaining long-term market viability.

Steeltec has identified five steps that manufacturers of advanced steel components can take to identify the right high-performance steel for their purposes and to optimise the costs of their manufacturing processes, the company says. Using Steeltec's Material Selection Guide ('High-performance steel solutions for demanding engineering applications'), companies that process steel or that fabricate steel components now have the means to find the right technically advanced and persuasively priced premium-grade steel for their applications, Steeltex says. The Guide is said to explain the benefits of getting the material selection process right and the problems that can arise when the wrong choice is made, and recommends ways to optimise material processing and machining stages. Additionally, the Guide provides checklists that enable users to translate their individual processing and product requirements into material properties and it illustrates how preventive quality assurance measures can lead to enhanced market competitiveness. A case study of the electric power tools manufacturer Metabo is included to illustrate how a partnership with Steeltec can generate cost-efficient solutions for manufacturers.

steeltec-group.com

Source: Steeltec

'High-performance steel solutions for demanding engineering applications'.

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Quick Sourcing Grid: Tool & Modul Materials


Source: BKL Lasertechnik

Company | Contact	Ad on page	Company profile at etmm-online.com	Aluminum Alloys	Aluminum Plate/ Sets	Brass	
Eberhard Werkzeugtechnologie, Nordheim, DE | www.eberhard.de	84					
Meusburger Georg GmbH & Co. KG, Wolfurt, AT | www.meusburger.com	1, 65, 66, 67		●	●		
Millutensil s.r.l., Milano, IT | www.millutensil.com	33, 36, 37					
Poco Graphite Sarl, Limonest, FR | www.poco.com	19					
Präzi-Flachstahl AG, Everswinkel, DE | www.praezi.de	23					
Tosçelik Special Steel, Niksic, MNE | www.toscelikspecialsteel.com	21					
3D Systems GmbH, Darmstadt, DE | www.3dsystems.com						
Alcoa Europe, Birmingham, UK | www.alcoa.com			●	●		
Alimex Metallhandels. mbH, Willich, DE | www.alimex.de			●	●		
Allega GmbH, Niederglatt, CH | www.allega.ch			●			
Ampco Métal SA, Marly, CH | www.ampcometal.com					●	
Aubert & Duval, Gennevilliers Cedex, FR | www.aubertduval.com						
AW Precision Ltd., Rugby, UK | www.awprecision.co.uk				●		
Boehlerit GmbH & Co. KG, Kapfenberg, AT | www.boehlerit.com						
Böhler Schmiedetechnik GmbH & Co. KG, Kapfenberg, AT | www.bohler-forging.com						
CMT Materials Inc., Attleboro, USA | www.cmtmaterials.com						
Deutsche Edelstahlwerke GmbH, Witten, DE | www.dew-stahl.com						
Deville Rectification-Buderus, Pont-Salomon, FR | www.deville-recti.com						
DME Europe, Mechelen, BE | www.dmeeu.com				●		
DME UK, Oxon, UK | www.dmeeu.com				●		
Dytron Corp., Fraser,MI, USA | www.dytroncorp.com			●			
E.N.S. International S.r.l., Villanuova sul Clisi (BS), IT | www.ensint.com					●	
EDM-Tec OHG, Kaisersesch, DE | www.edm-tec.de						
EOS GmbH Electro Optical Systems, Krailling, DE | www.eos.info						
European Metal Supplies, Merchtem, BE | www.emsmetals.be			●	●	●	
FCPK Bytow Sp. z.o.o., Bytow, PL | www.fcpk.pl			●	●		
Fibro GmbH, Haßmersheim, DE | www.fibro.de				●		
Fine Cut Graphic Imaging Ltd., Lancing, W Sussex, UK | www.fcadvancedengineering.co.uk			●		●	
Hales Tool & Die Ltd. Unit 14, Maldon, Essex, UK | www.halesmastip.co.uk						
Hasco Hasenclever GmbH + Co KG, Lüdenscheid, DE | www.hasco.com						
Hitachi Metals Europe GmbH, Düsseldorf, DE | www.hitachi-metals.co.jp/e						
HSB Normalien GmbH, Schwaigern, DE | www.hsb-normalien.de			●	●		
Huntsman Advanced Materials (Switzerland) GmbH, Basel, CH | www.huntsman.com/advanced_materials						
Industeel Creusot, Le Creusot Cedex, FR | www.industeel.info						
Injecdesign Moldes para Plastico Lda., Oliveira de Azeméis, PT | www.injecdesign.com				●		
Lucchini RS S.p.A., Lovere (BG), IT | www.lucchinirs.it						
Lugand Aciers, Oyonnax Cedex, FR | www.cfam.fr			●	●	●	
Mersen France Gennevilliers S.A.S., Gennevilliers, FR | www.mersen.com						
Nonnenmann GmbH Präzisionsteile, Winterbach, DE | www.nonnenmann-gmbh.de						
Pedrotti S.p.A., Gavardo (BS), IT | www.pedrotti.it			●	●	●	
Poco Graphite, Inc. an Entegris Company, Decatur, TX, USA | www.poco.com						
Saglam Metal A.S., Istanbul, TR | www.saglammetal.com			●	●	●	
SPI Lasers, Southampton, UK | www.spilasers.com				●	●	
Synthesia, Pont-Sainte-Maxence, FR | www.synthesia.com						
Tau Metalli S.p.A., Travagliato (BS), IT | www.taumetalli.it			●	●		
Tokai Carbon Europe Ltd., Oldbury, W Midlands, UK | www.tokaicarboneurope.com						
Uddeholms AB, Hagfors, SE | www.uddeholm.com				●		

Copper Alloys	Foams	Graphite	Mould Coatings	Nickel-Base Alloys	Resins/Polymers/ Silicones	Steel, Hardened	Steel, Mild	Steel, Porous	Steel, Stainless	Steel Plates	Superalloys	Tungsten Carbide
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Insert grades for the WSX series for rough machining and finishing

The positive geometry of the Double Z inserts for the WSX series takes face milling to a new level of usability with eight cutting edges. The geometry also produces low cutting resistance, making it ideal for all types of machines, from low power through to heavy-duty types.

According to Mitsubishi, this level of cutting resistance is usually only associated with conventional single-sided positive inserts and allows end users to increase machine utilisation.

Three new insert grades have now been added to the range: MP7140, MP9130 and MX3020/3030. According to Mitsubishi Carbide, they are specially designed for stainless steels, HRSA and wiper finishing respectively and allow the WSX cutter to cover an extended application range. Although double-sided, when set in the cutter body a 26º positive axial rake angle is produced. This provides a strong but sharp cutting edge whilst allowing the inserts to be double sided. Furthermore, a large 5mm max depth of cut is possible.

Different insert grades for different applications

The three insert grades are designed to be efficient in various circumstances:

- Insert grade No. 1: MP7140 for rough machining of stainless steel.
- Insert grade No. 2: MP9130 for rough machining of HRSA.
- Insert grade No.3: MX3030/3020 Wiper for finishing applications.

A predictable and safe performance is demanded by today's customers and the WSX series meets these criteria with strong insert clamping and an Anti-Fly mechanism. Through-coolant holes are also standard in cutters under Ø160, providing efficient chip removal and cooling to further enhance process reliability.

Tough-Sigma technology is used in the new MP range of insert coatings to provide enhanced heat and wear resistance and provide a low coefficient of friction, lending further help towards the ultimate aim of complete process reliability across a wide application range, the company says.

The inserts are equipped with a series of chip breakers specifically designed to cover a varied range of applications. L breaker has a positive land for lighter cutting and the lowest cutting resistance, M breaker is for general cutting and the R breaker has enhanced edge strength for rough cutting.

The cutter bodies are available in diameters from Ø40 to Ø200 in regular and fine and ultra-fine pitch types. New standard pitch left-handed cutters are now also availab from Ø80 to Ø160.

To make it easier to find the right product with the required properties, Mitsubishi offers an online web catalogue. It containes regularly updated CAD data and information on over 50,000 items. The products can be filtered by description, cutting type, workpiece material and cutting condition. The search results offer a product photo, a tooling sheet and the features of that specific tool. The search is also aided by graphics for an easy selection process.

mitsubishicarbide.com

The insert grades are designed for machining HRSA, stainless steel, or for finishing touches.

Source: Mitsubishi Materials

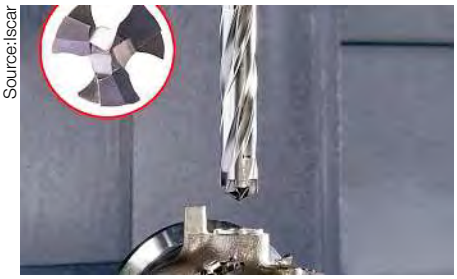
Reduced cycle times by 50%

Three-flute drills – Iscar has further extended its comprehensive product portfolio with the launch of its next-generation, advanced indexable drill, Sumo-3-Cham – a three-flute indexable drill that Iscar says reduces machining cycle times by 50%. The design of the Sumo-3-Cham is said to raise manufacturing productivity to new levels by reducing machining cycle times by up to 50% when compared to the conventional two-flute drills.

The product's pocket configuration is constructed on a "close structure" design with three contact areas based on a dovetail joint. This rigid clamping configuration divides the forces applied to the tools' pocket into three segments. Iscar notes that this arrangement reduces harmful influences on the pocket's life and also prolongs tool life. In a similar way, the cutting forces are equally divided across the three cutting edges of the drilling head.

iscar.co.il

Source: Iscar



Sumo-3-Cham's geometry shapes the produced chips optimally.

One tool for various drilling applications

Cutting Tools – Industrial Tooling Corporation (ITC)'s Top Cut 4 drilling line from Widia is a single tool designed for versatility and machines a broad assortment of materials. ITC says that this one tool can be used on a variety of drilling applications and workpiece materials. Offered with three Victory grades and two different geometries for drilling steel, stainless steel and cast iron, it is available in diameters of 12 to 68 mm.

For jobs with workloads that change, and when stable or unstable conditions are the norm, Top Cut 4 ensures cost efficiency and quality as inventory is reduced to only one tool being applied to multiple operations. It has high tool life and consistent performance when cutting at accelerated speeds, ITC notes. The tool can be used through and cross-holes too, inclined entry and exit, 45º corner, half-cylindrical, concave and chain drilling.

itc-ltd.co.uk

Source: ITC

Two different geometries are offered for drilling steel, stainless steel and cast iron.

High-performance milling grades expanded

Milling Inserts – Sumitomo Electric Hardmetal has five new different grades of RDMT button-style indexable milling inserts for carbon, alloy, stainless steels and cast iron, which offer high wear resistance and high resistance to insert fracturing.

Available in sizes of 8, 10, 12 and 16 mm inscribed circle, the five grades are physical vapour deposition-coated (PVD) for the ACP100, 200 and 300 inserts, and chemical vapour deposition-coated (CVD) for the ACK200 and 300 inserts.

The ACP100 grades for cutting steel and ACK200 grades for cast iron has Sumitomo's Super FF ultra-hard coating that employs a tough carbide substrate with an ultra-fine TiCN crystal structure. It has an ultra-smooth alumina on the surface and faces of the insert. The ACP200 and 300 grades for milling steel and ACK300 for cast iron employs Sumitomo's Super ZX multi-layer nano technology coating.

sumitomotool.com

Source: Sumitomo

The new RDMT button-style milling inserts for carbon, alloy, stainless steels and cast iron.

Multifunctional end mill Fightmax packs a punch

Source: Inovatools

Fightmax can be operated at high feed rates while maintaining process reliability.

Cutting – Fightmax HP is Inovatools' new roughing/finishing end mill, which the company says allows for helix angles of up to 45°. This four-edged end mill for steel materials has no significant chromium content and can rough and finish all in one process, depending on the cutting challenge. Thanks to its design, Fightmax provides high feed rates and high material removal in both wet and dry conditions, the company notes.

Inovatools adds that tough and extremely fine-grain carbide mixed in a balanced ratio forms the basis of the tool design to compensate for the high and varying loads to which the tool is exposed to when in use. The design of the tool, with its unevenly split geometry and unequal spiral pitch (35°/38°), offers quiet, vibration-free operation and a high cutting volume. The design, combined with the large groove cross-sections with a smooth finish for high chip evacuation, enable high feed rate parameters even at considerable working depths.

In the production of grooves, Fightmax can be operated at high feed rates while maintaining process reliability. The H5-quality shank design with concentricity of 0.005 mm and the unequal spiral pitch prevent disruptive vibrations even in the high-speed range. Due to the plunging angle of up to 45°, large quantities of material can be removed during pocket milling. The Varocon Plus coating is said to aid in the quick removal of chips and make the tool resistant to temperature and wear. The tool is available with diameters from 6 - 20 mm.

inovatools.eu

Quick-change tools eliminate clocking to raise productivity

Tools – Horn Cutting Tools new, modular system, DR Small, is designed for changing small, indexable-insert reamers in a machine spindle quickly with a high degree of repeatability.

The tools raise productivity and cut costs by eliminating clocking in the interchangeable head each time it is exchanged. Another advantage is that a manufacturer does not have to buy extra reamers to maintain production while worn tools are sent away to be reground. The patented system is the only quick-change method of attaching a small reamer head to a shank without the need for locking screws, Horn says. The high-precision interface is said to feature keys and slots for rapid, secure attachment with position repeatability within 5 µm. Steel and carbide shanks are available in different versions for machining through holes or blind holes – with the main difference for those used in internal coolant supply. These inserts are held in place with a central clamping screw at the head end.

phorn.co.uk

Source: Horn Cutting Tools

DR Small tools raise productivity and cut costs by eliminating clocking in the interchangeable head.

Optimised geometry in milling cutter extends tool life

Source: Jongen

The solid carbide cutter VHM 474W Ti10. with optimised geometry for high performance.

Milling – Jongen has introduced a high-performance shank type milling cutter VHM 474W Ti10 with optimised macro geometry that is said to provide a high-cutting volume and reduced power consumption with lower cutting forces. In addition, enlarged chip spaces enable good chip flow. The optimised micro geometry allows for long tool life and high feed rates, and the 45° edge chamfer ensures high edge stability.

Unequal spiral angle and uneven cutting pitch prevent vibrations and ensure smooth running as well as high process stability, and high surface finish can be achieved.

The special front geometry allows steep ramping angles and helix spirals. The tools are able to enter fully up to the final working depth rapidly and from that point, they can machine the material with high ap-values.

A defined cutting edge preparation results in a better layer adhesion, prevents high frequency vibrations and, thus, the improved surface quality of the cutting edge ensures low wear.

The quality Ti10 consists of the finest grain carbide, corresponding to the latest development in the ISO-Field K10-K20, which offers high tenacity with low wear. It is combined with a TiAlN monolayer-coating, which has a smooth coating surface for low friction and high thermal resistance. This optimally coordinated combination is suitable for wet milling, dry processing and milling with minimum lubricant grease. The tools are available in diameters from 4 to 25 mm.

jongen.de

Source: Anca

Anca's Laser Plus provides a robust measurement solution with quick measurement times which will not significantly add to the grinding cycle time.

Take control of the cutting tool measurement process

Grinding – When manufacturing cutting tools, it is important to produce a tool within a tolerance that is right first time. In today's marketplace it is essential to reduce waste to maintain a profitable production facility. Customers need to be confident their grinding machine can produce accurate tools.

In response to these problems, Anca has released the Laser Plus system – a product introduced to provide repeatable measurement and compensation of cutting tools. Laser Plus is the solution to reducing scrap and ensuring tools remain within specification. It is also extremely beneficial for maintaining tight tolerances and providing stability to the grinding process.

Laser Plus is an enhancement (not a replacement) for the touch probe on the MX and TX tool grinder ranges. The Laser Plus uses a non-contact laser beam to accurately measure and compensate features on a cutting tool. Because the laser is non-contact, the cutting edge cannot be damaged. In addition, the laser can measure features on micro tools that a touch probe cannot measure because the probe tip is too large.

The laser is permanently mounted inside the machine and will not interfere with the typical grinding processes. Using the laser, the operator is able to perform accurate in-process measuring without removing tools from the machine. In many cases Laser Plus will also reduce the need for using off-line external measurement equipment, which will save customers money.

The laser measurement process is fully automated and requires no operator intervention. If a customer has a machine fitted with a Laser Plus, they can confidently leave the machine to run unmanned for long periods using the laser to measure and compensate for grinding inaccuracies. The Laser Plus system can measure and maintain an accuracy of ± 0.002 mm (or less) over a large batch of tools. One of the reasons the Laser Plus system can achieve these levels of accuracy is because the laser measures the top and bottom of the tool. The maximum diameter the Laser Plus can accept for top and bottom measurement is 2.0 mm.

One of the most of important features that needs to be measured and controlled on a cutting tool is the outside diameter (OD). To manage this critical operation, Anca has interfaced the laser measurement with Statistical Process Control (SPC) software to monitor and control the OD.

anca.com

System for multiple milling operations with only one insert

Milling – Squarworx is Pokolm's new, multifunctional milling system for precise machining for both 90° and 45° approach angles with only one insert. It can perform square shoulder, slotting, face and chamfering milling operations and was presented at MEX, the company says.

Each insert has four useable cutting edges with a corner radius of 0.8 mm and can cut materials in five different grades covering the machining of all standard materials, ranging from roughing to finishing.

As Pokolm explains, all available shell-type, threaded shank and end mills possess the maximum possible number of teeth. Additionally, the mandatory internal coolant supply allows for high feed rates. The square shoulder and slotting cutters are available from stock in diameters from 25 - 66 mm.

Source: Pokolm

Squareworx is said to be able to cut materials in five different grades.

The chamfering milling cutters come in diameters from 16 - 63 mm and are for both forward and reverse chamfering operations, thanks to their special geometry. According to Pokolm, cutting ease is guaranteed, even with machines that feature less sophisticated geometry.

pokolm.de

For shoulder and face milling of cast iron and hard steel

Bild: Mapal

Mapal's HX high-performance milling cutters that can be used for the company's HX indexable inserts.

Cutting tools – Mapal has expanded its HX Milling line with a milling cutter for the face and shoulder milling of cast iron and hardened steel. It can be used with Mapal's HX indexable inserts with six cutting edges for face milling or with W-shaped three-edge inserts for shoulder and face milling. The tool body is manufactured from a robust nickel-plated steel, making it well-suited to the demands of hard machining.

According to Mapal, the use of this adjustment and clamping system offers backlash-free mounting of the indexable inserts whilst the axial run-out can be set with micron precision. The inserts are designed as full-face variants.

mapal.com

Quick Sourcing Grid: Cutting Tools

Source: Kennametal

Company | Contact	Ad on page	Company profile at etmm-online.com	Boring Bars	Boring Tools	Deburring Tools
InovaTools Eckerle & Ertel GmbH, Kinding, DE | www.inovatools.eu	25			●	●
Meusburger Georg GmbH & Co. KG, Wolfurt, AT | www.meusburger.com	1, 65, 66, 67			●	
Allied Maxcut Engineering Co. Ltd., Kingswinford, UK | www.alliedmaxcut.com					
Boehlerit GmbH & Co. KG, Kapfenberg, AT | www.boehlerit.com				●	
Ceratizit Austria GmbH, Reutte, AT | www.ceratizit.com				●	
Cole Carbide Industries Inc., Orion Twp., MI, USA | www.colecarbide.com			●		
Dormer Pramet, Chesterfield, UK | www.dormerpramet.com			●	●	●
Emco Maier Ges.m.b.H., Hallein, AT | www.emco.at					
Greenleaf Corp., Saegertown, PA, USA | www.greenleafcorporation.com				●	
Gühring KG, Albstadt, DE | www.guehring.de				●	●
Ingersoll Werkzeuge GmbH, Haiger, DE | www.ingersoll-imc.de				●	●
Iscar Ltd, Tefen, IL | www.iscar.com			●	●	●
ITC Industrial Tooling Corp.Ltd., Tamworth, Staffs, UK | www.itc-ltd.co.uk					●
Jongen Werkzeugtechnik GmbH, Willich, DE | www.jongen.de				●	●
Kennametal Inc., Latrobe, PA, USA | www.kennametal.com			●	●	●
Korloy Europe GmbH, Oberursel, DE | www.korloyeurope.com			●	●	●
Kyocera Unimerco Tooling GmbH, Neuss, DE | www.kyocera-unimerco.de					
LMT Fette Werkzeugtechnik GmbH & Co. KG, DE | www.lmt-fette.com			●	●	●
Mapal Präzisionswerkzeuge Dr. Kress KG, Aalen, DE | www.mapal.de					
Mitsubishi Materials, Meerbusch, DE | www.mitsubishicarbide.com			●	●	●
MMC Hitachi Tool Engineering Europe GmbH, Hilden, DE | mmc-hitachitool-eu.com					
Otto Suhner AG, Lupfig, CH | www.suhner.com					
Paul Horn GmbH Hartmetall-Werkzeugfabrik, Tübingen, DE | www.phorn.de			●	●	●
Rainford Precision Machines Ltd., Rainford, St Helens, UK | www.rainfordprecision.com					
RobbJack Corporation, Lincoln CA, USA | www.robbjack.com					
Sandvik Coromant, Zaventem, BE | www.sandvik.coromant.com			●	●	
Seco Tools AB, Fagersta, SE | www.secotools.com			●	●	●
TaeguTec Ltd., Daegu, KR | www.taegutec.com			●	●	
Tool-Flo Mfg. Inc., Houston, TX, USA | www.toolflo.com				●	
Tribo Hartstoff GmbH, Barchfeld-Immelborn, DE | www.tribo.de					
Tungaloy Germany GmbH, Monheim am Rhein, DE | www.tungaloy.de			●	●	
Union Tool Europe SA, Marin-Epagnier, CH | www.uniontool.com					
Walter AG, Tübingen, DE | www.walter-ag.com			●	●	
WNT Deutschland GmbH, Kempten (Allgäu), DE | www.wnt.de				●	●
Zecha Hartmetall- Werkzeugfabrikation GmbH, Königsbach-Stein, DE | www.zecha.de					

Drills (indexable)	Drills (Solid-Carbide)	End Mills	Inserts (Drilling)	Inserts (Milling)	Inserts (Parting & Grooving)	Inserts (Threading)	Inserts (Turning)	Milling Tools (indexable)	Multifunctional Tools	Parting & Grooving Tools	Reamers	Solid Countersinks	Threading & Tapping Tools	Turning Tools
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Taking multitasking machining to the next level

Barbara Schulz

Turning, multitasking or 5-axis machining are terms Okuma has long been known for in the manufacturing world. Now, the Japan-based machine tool maker introduces a machine that "can do it all in one": milling, turning, grinding, laser-hardening and 3D metal printing.

ETMM

INFO

The new Okuma multitasking machines MU-6300V Laser EX and MULTUS U3000 Laser EX will be available in Europe in mid-2017.

At the 28th Japan International Machine Tool Fair in November of last year, Okuma presented a new line of machine tools designed to meet the industry's demands in regard to just-in-time production, smart factory and varying order sizes, including high-mix, low-volume production as found in the tool and mould-making industry. The manufacturer's trade innovations included state-of-the-art 5-axis vertical machining centres and a new type of intelligent multitasking machine. Among the highlights was the introduction of the world's first multitasking machines capable of milling, turning, and grinding as well as laser-hardening and 3D metal printing. The new models will be available in Europe in mid-2017.

Designed to be the world's first "done-on-one" machines, the Okuma MU-6300 V Laser EX and the Multus U 3000 Laser EX are capable of milling, turning, grinding, 3D metal printing and heat treatment for a wide range of workpiece sizes and shapes. According to Okuma, on-machine hardening provides the solution to a major bottleneck in production: Compared to hardening by conventional heat treatment, the process is quick and causes less distortion, resulting in dramatically increased throughput, Okuma claims. The machine tools are said to fully support agile manufacturing and process-intensive applications.

Enabling stable laser processing over long runs

With a high-quality Trumpf laser beam source at its core, Okuma's Laser EX series enables stable laser processing over long runs. The machines allow for laser metal deposition – LMD – for both large-capacity and high-definition additive manufacturing. Moreover, 0.4 to 8.5 mm laser spot diameters enable unparalleled throughput regardless of the application. 3D moulding, coating and sectional repair of heat-resistant alloys and highly rigid materials are available on the machine as well, Okuma adds.

Meanwhile, Okuma's OSP control monitors and controls the entire process, ensuring reliable and stable additive manufacturing for products on par with forged components. The machine tools therefore meet the quality requirements of even the most demanding applications and industries such as aerospace machining.

Additional Okuma models with laser applications will be available shortly.

To facilitate process-intensive production in a smart factory, Okuma has added the Multus U5000 to its line-up of multitasking machines. Designed for machining medium and large-sized components for the aerospace, energy and infrastructure industries, the Multus U5000 handles even difficult-to-cut materials, such as titanium and Inconel, the company says. With the claimed strongest turning spindle of its class, the machine is said to achieve unrivalled machining efficiency.

In an effort to allow operators to perform gear machining in-house, Okuma has made

The Okuma MU-6300V Laser EX allows for laser metal deposition – LMD – for both large-capacity and high-definition additive manufacturing.

Source: Okuma

skiving and hobbing operations available on their multitasking machines with the accompanying software package enabling faster and easier programming, the machine tool expert says.

With Industry 4.0 no longer a thing of the future, the Multus U5000 comes equipped with the latest generation of CNC control – OSP suite – as well as Okuma's Intelligent Technology. According to the manufacturer, these applications offer supreme connectivity and allow for a seamless integration of the machine tool into an "Internet of Things"-based production environment.

Smart machining centre for 5-axis vertical machining

Designed to stand at the heart of a smart factory, Okuma's latest 5-axis vertical machining centre MU-S600V is able to instantly respond to changed lead-times and accommodates production formats ranging from high-mix, low-volume to mass production.

The compact MU-S600V has a very small footprint with a machine width of 1,400 mm and is able to cut workpieces of up to 600 mm in diameter. According to Okuma, the machine's compact dimensions and structural design allow for outstanding ease-of-use and easier crane jobs. Its robotic table enables completely unmanned, automated operations, eliminating manual handling of parts between set-ups in different machines. Production line layouts are said to be easily adjusted in accordance with changes in production volume.

okuma.eu

Source: Okuma

Okuma's 5-axis vertical machining centre MU-S600V is able to instantly respond to changed lead-times and is said to accommodate production formats ranging from high-mix, low volume to mass production.

Machining centres with design, manufacturing innovations

Source: Hardinge

Innovative travelling beam designs represent the first of a new 5-axis machine generation.

Machine Tools – Bridgeport XT from Hardinge is the company's first milling product realised through global engineering. It fully complies with the latest ISO Standard 16090-Pt.1 with Functional Safety and the design adopts a travelling beam structure resulting in exceptional geometric accuracy, the company says. This design incorporates the 3-linear axes with the cutting tool combined with the rotary and tilt axis table supporting the workpiece.

The innovative travelling beam design represents the first of a new generation of 5-axis machining centres from Hardinge. It is equipped with a large capacity of a 630 mm-diameter trunnion table and a capacity of 350 kg, coupled with a 900 mm-swing diameter – all extend the range of Bridgeport 5-axis solutions. The design and use of twin drive tilt axis is said to maximise the drive stiffness and result in high precision.

Thermal distortion effects are minimised by chilled spindles, cooling of ball nuts and end bearings in all linear axis optimising machining accuracy, the company explains.

hardinge.com

User-friendly vertical beam injection moulding machine

Injection Moulding – The fully-hydraulic Maplan MTF 1500/250 from its new MTF-range is a vertical beam injection moulding machine that is user-friendly and ergonomic. The company says it has an operating height of 935 mm, making it more accessible and this "one-piece design" enables the machine to be transported without the need to have the hydraulics or the injection unit removed. Only the switch cabinet should be removed, making relocating the machine within the production site easy. The machine's clamping unit has been optimised with FEM analyses to ensure more rigidity with minimal plate bending and high plate parallelism. Enlarged, double-acting fast stroke cylinders can now move even massive tools better and quieter. The 680 mm-space between the tie-bars provide more scope for automation solutions. Its switch cabinet has an integrated cooling device to allow for reliable control components with a long service life. The 250 machine supplements the 3,200kN version thanks to its injection volume of 1,500 to 2,500 cm^3.

maplan.at

Source: Maplan

The MTF 1500/250 with a new clamping unit concept, ergonomic operating height.

Expansion of product portfolio to include tool presetting machines

Machines – Haimer designs and produces innovative, high-precision products for metal-cutting and other branches including automotive, aerospace, energy, rail and general machining. Apart from its extensive tool-holder offerings, including shrinking and balancing machines, 3D-Sensors and solid carbide cutting tools, its portfolio now also includes tool presetting machines.

This is with the acquisition of the company Microset, making the Haimer Group a complete system provider for tool management around the machine tool. According to Haimer, the Microset tool presetting devices meet Haimer's high quality standards and now covers the needs of almost all machine operators.

One highlight at the Moulding Expo 2017 was that the Germany-based company from Bielefeld showcased its Vio linear series. Haimer says this is the only machine series on the market with a linear drive for efficient and precise presetting of drilling, milling and turning tools. The direct drive within the x and z axis offers the user dynamic positioning precision and reliability for even the largest tooling and a repeatability of +/- 2 µm, the company says.

According to Haimer, the increased speed of linear drive can guarantee a productivity increase of up to 25% during the machining process – and at a good price-performance ratio.

All machines of the company's Microset Vio series have a modular design to cover a wide spectrum of needs. Tools that weigh up to 160kg with a diameter and a measuring length of up to 1,000mm can be measured, Haimer noted. Subject to customer requirements, the devices can be upgraded to fully automated CNC measuring machines with the company's integrated shrinking technology. The unique design ensures ergonomic functionality for ease of use for the operator. This applies both to the spindle access as well as the central control panel, Haimer said.

The machine's one-hand operation makes it possible to manually or automatically measure the axes. and guarantees µm-precise fine positioning, the company claims.

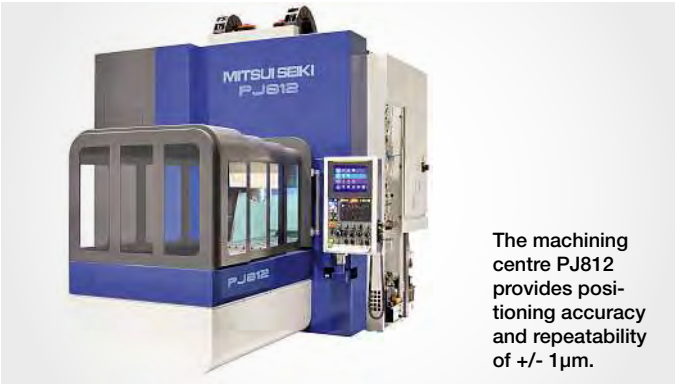
Furthermore, high quality during the manufacturing process can be achieved through fast and exact measuring with the image-editing software, Microvision Vio, the company adds. Furthermore, tool measurement is said to be easier with the help of the large high-resolution flat screen monitor.

Haimer.de

Source: Haimer

From manual to semi-automatic and fully automated measuring: Microset Uno premium, Uno autofocus und Vio linear.

Source: Mitsui Seiki



The machining centre PJ812 provides positioning accuracy and repeatability of +/- 1µm.

Three-axis CNC centre for high-precision machining

Machining – The new Mitsui Seiki PJ812 precision profile centre is a three-axis CNC vertical jig mill engineered to perform high-precision contour machining and ultra-precise boring of components with critical tolerances. The machining centre is ideal for processing parts for the mould and die, optical, aerospace and medical industries.

According to the company, the PJ812 can provide positioning accuracy and a repeatability of +/- 1µm. A thermal compensation system employs sensors on the machine faceplate and inside the spindle to minimise the effects of temperature changes on part accuracy and cut temperature-generated displacement by 60%. This system also reduces Z-axis thermal growth and deflection by 30%. Furthermore, cooling systems for slide way lubrication and ball screw cores stabilise axis feed precision.

The machining centre's mechanical design features maximise machine rigidity and accuracy include hardened and ground tool steel box slide ways. The PJ812 possesses an energy saving circuit that reduces electric power consumption by up to 90% and compressed air consumption by up to 40%.

mitsuiseiki.com

Affordable, high-quality 5-axis machining centre

5-axis Machining – Hermle's new affordable 5-axis machining centre C 250 took centre stage at the company's booth at AMB 2016. The economically priced machine is the latest model to be added to Hermle's high-end machining centre program. The machine, together with the C 400, is arranged below the double-digit series with its C 12, C 22, C 32, C 42, C 52 and C 62 models. There is no compromise on quality of build or functionality, however, the company said. The only proviso is that the machine is available with a limited range of options.

Thanks to the large swivelling range of the workpieces in the work area, the C 250 offers a very large working area relative to its footprint, Herlme says. The C 250, just like the C 400, comes with Hermle's tried-and-tested modified gantry design and a mineral casting machine bed. With the 3-axis version, the integrated rigid clamping table is suitable for workpieces weighing up to 1,100 kg. High-precision machining of workpieces weighing up to 300 kg is possible on the NC swivelling rotary table of the 5-axis version. The C 250 is equipped with a Heidenhain TNC 640 controller featuring a range of extra features.

hermle.de

C 250 with an NC swivelling rotary table and the TNC 640.

Source: Hermle

Efficient, stable machining on a small footprint

Machining – Occupying less than five square metres, DMG's new CLX350 CNC lathe can turn components from bar up to 51 mm in diameter (65 mm optional) and has a maximum turning diameter of 320 mm, and the machine can also be augmented with modular additions. Its Z-axis travel is 530 mm. Spindle speeds of up to 5,000 rpm can be programmed and the cartridge design allows for simple and rapid exchange, the company says.

Additionally, the well-priced machine has a VDI 30 turret with 12 tool positions, all of which can be driven on request. The lathe's rigid construction and the use of IT1-class ball screws enable components to be machined with accuracy, repeatability and surface finish with good chip flow. An optional chip conveyor provides higher-volume production.

The Siemens-based Slimline 19-inch touch-screen control with bespoke software offers fast and simple operation and advanced simulation possibilities. Technology cycles including Easy Tool Monitoring make working with the CLX 350 easy.

dmgmori.com

Source: DMG Mori

The CLX 350 CNC turning centre occupies less than five square metres and can be augmented.

Hybrid machine combines AM with multi-tasking

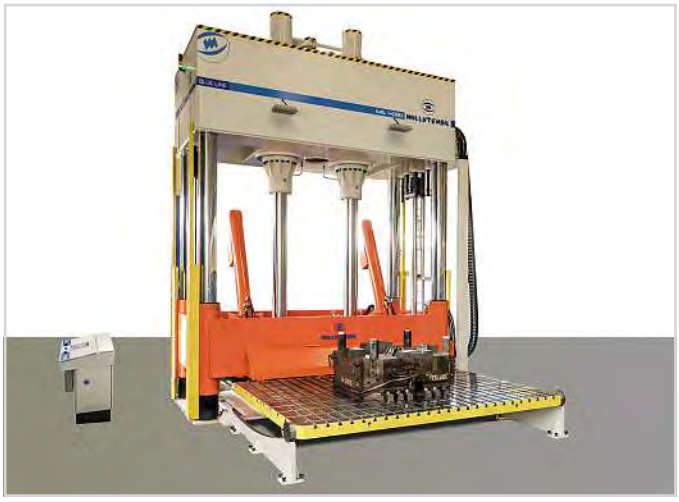
Machine Tools – Yamazaki Mazak's new Integrex i-400 AM is a revolutionary hybrid machine that combines additive manufacturing with multi-tasking capability. It integrates direct energy deposition AM technology into a 5-axis multi-tasking machine to offer machine users hybrid technology and subtractive manufacturing in one platform, the company says.

According to Mazak, Integrex i-400 AM uses a built-in 1kW fiber laser to melt metallic powder, which is then applied layer-by-layer via interchangeable cladding heads. The heads are stored in the machine's standard 36-tool magazine and enable the automatic change from additive to subtractive tooling, optimising process cycle time. Its technology can be used to clad a range of material types, including stainless steel, nickel alloys and copper, making it ideal for a range of applications, from repairing existing worn or damaged components or the complete generation of new parts. The machine is equipped with Smooth-X control, Mazak's 5-axis version new Smooth Technology.

mazakeu.co.uk

Source: Mazak

I-400 AM integrates direct energy deposition AM technology into a 5-axis multi-tasking machine.



Source: Millutensil

Millutensil has recently manufactured a die and mould spotting press featuring 4.000 mm x 3.000 mm plates, and a clamping force of 500 t.

Spotting presses are ideal for adjusting die casting moulds

Spotting Presses – Millutensil has recently manufactured a die and mould spotting press featuring 4.000 mm x 3.000 mm plates, and a clamping force of 500 t. This machine was made for Skoda Auto in the Czech Republic and is an example of the increasing importance of spotting and adjusting dies and moulds before they go into full production in the automotive industry, Millutensil says.

The Italy-based company offers two series of die and mould spotting presses: the MIL/Classic series and the MIL/Compact series. The latter is different from the former for the extensible plate extension on the side, having a greater distance between columns.

According to the company, this solution is particularly interesting in the sector of die casting moulds, which – although they have a smaller centre body - are often equipped with internal slides that are driven by very large auxiliary cylinders that considerably increase the overall dimensions. The MIL/Compact series, therefore, guarantees – for the same plate size - a bigger distance between columns, thus avoiding the need for the operator to disassemble the auxiliary cylinders. The result is shorter adjusting times, because it is not necessary to disassemble the cylinders, and in particular the possibility to choose a smaller and therefore less expensive press (thanks to the bigger distance between columns with the same plate size), Millutensil explains.

In the MIL /Compact series presses, an actuation system with two cylinders is used, which is said to distribute pressing forces more evenly and on a bigger area.

Thanks to a control panel equipped with Siemens TP1200 Touchpanel and Siemens S7-300 electronic PLC, which manages all the press functions, the machine use is simple, easy and comfortable, the company claims.

Furthermore, a hydro-mechanical device works without interruption all along the press stroke, preventing the accidental fall of the upper plate. Additionally, it is possible to adjust, set and store the press speeds by means of an exclusive mould level self-learning system, which is defined in levels (L1, L2, L3).

The setting of levels (L1, L2, L3) considerably facilitates adjusting operations, guaranteeing the maximum repeatability and safety of movements with a significant reduction of the risk of accidental impacts.

The electronic control of the upper plate's parallelism provides the required accuracy.

millutensil.com

Flexibility for mould makers

Source: Krauss Maffei

The CX series has a clamping force range from 350 to 6,500 kN.

Machines – Krauss Maffei's CXZ 80-380/180 is a hydraulic injection moulding machine that the company says has the advantages of a plastics-specific component design using a two-component application. Another company highlight is its new all-electric PX series injection moulding machine for universal moulds.

The CX series is a compact, efficient and flexible two-panel machine with a clamping force range from 350 to 6,500 kN. At the joint VDWF (German Tool and Mould Making Association) booth at MEX, a CXZ machine with a clamping force of 800 kN demonstrated the advantages and disadvantages of plastics-specific or non-plastics-specific component design using a two-component application separated by colour.

The plastics construction area was marked in the blue zone, the non-plastics area in the red zone. The design of the machine also enables fast and convenient setting-up of moulds, the company says. This is supported by the good accessibility of the ejector area with the option of easily fastening additional ejectors or unscrewing units. The wide doors can be opened all the way to permit easy access.

krausmaffei.com

More international involvement

Die casting – Turkey-based mould base manufacturer Tekis says its manufacturing capacity has now reached the 30-tonne mark and that the company now has the scope to produce larger castings in sizes up to 2200 mm x 3200 mm.

The family-owned business that was established in 1972 makes mould bases, die sets, custom machines and equipment for in-house use and for its customers.

Tekis has achieved its target of improvement in both efficiency and capacity thanks to the latest investment in a new machine in November of last year. As a result of this, the company now has the ability to manufacture bigger mould die castings not only for local but also international customers, the company explained.

Source: Tekis

CEO Filiz Ozogul Sahinoglu said: "It is now time to exhibit at MEX."

That was the reason why Tekis CEO, Filiz Ozogul Sahinoglu, mentioned that the company was ready to exhibit at the recently held Moulding Expo in Stuttgart, Germany. This she noted was also to attract more international customers and to give Tekis further exposure to expand its involvement in the EU, US and UK markets. The company already exports to more than 20 countries worldwide.

tekiskalip.com.tr

Quick Sourcing Grid: Machining Equipment

Source: Hermle

Company | Contact	Ad on page	Boring Machines	
Exeron GmbH, Oberndorf am Neckar, DE | www.exeron.de	31, 35		
Sarix SA, S. Antonino, CH | www.sarix.com	45		
Anca Europe GmbH, Weinheim, DE | www.anca.com			
Breton, SpA, Castello di Godego, IT | www.breton.it			
Colchester Lathe Co., Heckmondwike, W Yorks, UK | www.colchester.co.uk			
DMG Mori AG, Winterthur; CH | www.dmgmori.com			
Emco Maier Ges.m.b.H., Hallein, AT | www.emco.at			
Ewag AG, Etziken, CH | www.ewag.com			
F. Zimmermann GmbH, Neuhausen auf den Fildern, DE | f-zimmermann.com			
Fehlmann Maschinenfabrik AG, Seon, CH | www.fehlmann.com			
Fidia, SpA, San Mauro Torinese (TO), IT | www.fidia.it			
Fritz Studer AG, Steffisburg, CH | www.studerag.ch			
GF Machining Solutions Management S, Meyrin 1, Winterthur, CH | www.gfac.com			
Gruppo Parpas | www.gruppoparpas.com		●	
Haas Automation Europe, Zaventem, BE | www.haascnc.com			
Hardinge GmbH, Krefeld, DE | www.hardinge.com			
Heller Machine Tools Ltd., Redditch, Worcs, UK | www.heller.co.uk			
Heto Corporation, SA Z.I. Santiago de Riba Ul, Oliveira de Azeméis, PT | www.iheto.com			
Hurco Europe Ltd., High Wycombe, Bucks, UK | www.hurco.co.uk			
imes-icore GmbH, Eiterfeld, DE | www.imes-icore.de			
Jobs, SpA, Piacenza, IT | www.jobs.it			
Kitamura Machinery GmbH, Düsseldorf, DE | www.kitamura-machinery.de			
Körber Schleifring GmbH, Hamburg, DE | www.schleifring.koerber.de			
Mac Tec e.K., Emmelshausen, DE | www.mac-tec.de			
MAG Systems S.r.l., Abbiategrasso (MI), IT | www.magsystems.it		●	
Makino Europe, Kirchheim unter Teck, DE | www.makino.eu			
Maschinenfabrik Berthold Hermle AG, Gosheim, DE | www.hermle.de			
Matsuura Europe GmbH, Wiesbaden, DE | www.matsuura.de			
Mersen France Gennevilliers SAS S.A.S., Gennevilliers, FR | www.mersen.com			
OPS - Ingersoll Funkenerosion GmbH, Burbach, DE | www.ops-ingersoll.de			
Rainford Precision Machines Ltd., Rainford, St Helens, UK | www.rainfordprecision.com			
SHW Werkzeugmaschinen GmbH, Aalen Wasseralfingen; DE | shw-werkzeugmaschinen.de			
Suhner France S.A., Alfortville, FR | www.suhner.com			
Toyoda Mitsui Europe GmbH, Krefeld, DE | www.toyoda-mitsui.com			
Unisig GmbH, Bad Urach, DE | www.unisig.de		●	
Yamazaki Machinery UK LTD, Worcester, UK | www.mazak.com			
YMT Technologies Ltd., Yeovil, UK | www.ymtltd.co.uk			

	Drilling Machines	Machining Centres, Graphite-Electrode	Grinding Machines	Gun Drilling Systems	Machining Centres, High-Speed	Machining Centres, Horizontal	Lathes	Machining Centres, 5-Axis	Milling/ Turning Machines	Turning Machines	Machining Centres, Vertical
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Schunk has presented an advanced line of system components for automated loading of machining centres at AMB 2016.

Source: Schunk

Schunk and the benefits of Industry 4.0: flexibility, availability and speed

At trade fairs, manufacturers present their latest developments in automation and smart production. At AMB 2016, Schunk had a system on show for the automated loading of machining centres, which enables a stable production process during the exchange of the workpiece.

Automated machine loading and the trend toward Industry 4.0 have been the central topics of AMB 2016, according to Dr. Markus Klaiber, the CTO of clamping and gripping specialists Schunk. "Modern machining center concepts must take three factors into account: the shortest possible cycle times, maximum system availability and the ability to respond very flexibly to product modifications and changes in demand," emphasizes the production expert, who sees a need for action primarily in SMEs.

Manufacturers who use machining technology face the challenge of having to produce the largest possible parts spectrum with the smallest possible number of operations and minimal set-up times. At the AMB exhibition, Schunk invited visitors to discuss its product lines and expertise in this field. At the trade fair, Schunk has presented an advanced line of system components for automated loading of machining centers. This comprises numerous low-maintenance clamping devices and gripping systems that ensure a stable production process when the workpiece is changed. The range of application extends from the production of large series to efficient loading in batch size one production. Highlights of Schunks's product range include the Tandem-plus, the Rota THW-plus and Rota NCX power chucks, the compact pallet-loading and clamping tower solutions of the Vero-S series, the multi-functional Kontec KSC centric clamping device, the Pronto quick-change jaw system and the PGN-plus and PGN-plus Electric grippers, the world's first grippers with permanent lubrication in the multi-tooth guidance, the company says.

To increase process reliability and efficiency in the machining process, Schunk also expanded the high-performance, vibration-damping hydraulic expansion holders of the Tendo E compact and Tendo Aviation series. According to Schunk, these holders guarantee enormous clamping forces and feature mechanical pull-out protection, which is required for example in the aviation and aeronautics sectors.

Process reliability – the most urgent challenge in machine construction

Schunk sees Industry 4.0 less as a short-term trend than as a logical consequence of a development that has been going on for decades. "Production systems of tomorrow will feature excellent networking capabilities. With the help of clamping devices and gripping systems, these systems will be able to constantly monitor their own status and that of their environment," explains Klaiber, with a view toward the future and describing the biggest challenge of machine construction. "Industry 4.0 will put us a big step ahead, as soon as automated, autonomous systems can remedy their own faults."

Schunk hopes that its components will play an important part in this connection: "Intelligent grippers will give us the opportunity to detect errors on the workpiece and therefore optimise the production process in coordination with the higher level control technology and clamping devices in real time." This should enable highly efficient automated production even of very small batch sizes in the future.

schunk.com

Programmable, electro-mechanical wedge clamps

Source: Hilma-Roemheld

Hydraulic-free, electro-mechanical wedge clamp from Roemheld that provides oil-free clamping.

Accessories – Clamping systems without hydraulic support are necessary when operations on sliding tables, injection moulding machines as well as bed and ram of forming presses require oil-free clamping of dies. For this, Roemheld says it has developed new electro-mechanical wedge clamps with high flexibility and clamping force, and programmable drives.

They are suitable for applications when hydraulic oil is not desired, for example, in purely electrical machines, the food industry and in cleanrooms. The clamps have a guide housing and a clamping bolt. As all functions are electrically monitored, they can also be integrated into automated systems. The 24-V, 3.8-A variant has a retention force of up to 240 kN, making them suitable for systems where dies and moulds have to be secured in tight spaces with high clamping forces.

The wedge clamps feature programmable standard drives and provide a clamping and releasing position of the bolt of up to 25 mm. Installation is said to be simple with its plug-in connection.

roemheld-gruppe.de

Milacron's Cimcool Fluids introduces metalworking fluid

Source:Milacron

Cimperial 35-880 fluid is made for manufacturing aluminium, titanium, steels, stainless steels, nickel-based alloys, and cobalt-based alloys.

Fluids – Milacron, an industrial technology company serving the plastics processing and industrial fluid industries, announced that its Cimcool brand has released a boron and formaldehyde releasing agent-free product for extra heavy-duty applications in the aerospace industry.

According to the company, Cimperial 35-880 is a high-performance emulsion suitable for a number of heavy-duty machining and grinding operations.

The metalworking fluid is equipped with Cimcool's CimShield technology, which ensures product stability and the pH buffering of the mix, and provides corrosion protection, Milacron says.

milacron.com

Source: Haas

The Haas TR200Y, a dual-axis trunnion rotary table, puts 5-axis capabilities well within reach of the average job shop.

Dual-axis trunnion rotary table mounts on mid-size VMCs

Machining Accessories, Machines – At AMB 2016, US-based CNC machine tool manufacturer, Haas Automation, presented among its exhibits two new CNC rotary tables, a prototype of a newly developed compact mill for micro-machining as well as an 'advance sight' of a new Y-axis CNC turning centre.

The new rotary table on display was the Haas TR200Y, a dual-axis trunnion rotary table that puts 5-axis capabilities well within the reach of the average job shop. The TR200Y is designed to mount in the Y direction (front to back on the table) of a mid-size VMC. At less than 686 mm wide and only 508 mm deep, the TR200Y easily fits on one end of the machine's table, leaving the remaining space free for additional fixtures or vices. The TR200Y has a 200 mm T-slot platter, and will swing parts up to 206 mm diameter, Haas explained.

There were two TR200Y units on display, one as a separate unit and another fitted to a Haas VM-2 vertical, mould-making machine. This was among a cross-section of CNC machines from the existing Haas portfolio, including a UMC-750SS Super Speed 5-axis universal machining centre, a VF-3YT/50 VMC with 50-taper spindle and a VM-2 vertical mould making machine.

Haas showcased its new ST-15Y big bore, small footprint CNC turning centre in Stuttgart, Germany too. The ST-15Y provides 102 mm of Y-axis travel (±51 mm from the centerline) for off-centre milling, drilling and tapping, and comes as standard with 6000 rpm high-torque live tooling and a full C-axis for versatile four-axis capability. The machine, which has become available in Europe since the fourth quarter of last year, offers 63.5 mm bar capacity and a maximum cutting capacity of 356 × 406mm, with a swing of 406 mm over the cross slide.

With the industry witnessing a marked trend for micro-machining applications, the company also focused on a prototype of its new CM-1 compact mill, which has been designed as a high-accuracy solution for high-volume production and prototyping of small, high-precision 2D and 3D parts such as those found in the communications, medical and dental industries. Small enough to fit into most freight elevators, the CM-1 features 300 × 254 × 300 mm travels, a 508 × 254mm T-slot table, a 30,000 rpm ISO20 taper spindle and a 20-pocket automatic tool changer. Maximum cutting feeds are 12.7 m/min, with rapids to 19.2 m/min for reduced cycle times.

haascnc.com

Quick Sourcing Grid: Machining Accessories


Source: Tillacron

Company | Contact	Chucks	Chucks, Magnetic Holding	Clamping Tools	Cutting Fluids	
Alphatech, Montluel, FR | www.alphatech.fr					
Angelo Ghezzi & C S.p.A., Paderno Dugnano (MI), IT | www.angeloghezzi.it					
AR Motif Makina Dis Ticaret Ltd. Sti. Topcular, Kisla Caddesi, Istanbul, TR | www.armotif.com	●	●	●	●	
ASM Automation Sensorik Messtechnik GmbH, Moosinning, DE | www.asm-sensor.de					
ATI Stellram Ltd., Melksham, Wilts, UK | www.stellram.com					
Big Kaiser Präzisionswerkzeuge AG, Rümlang, CH | www.kaisertooling.com					
CeramTec UK Ltd., Towcester, Northants, UK | www.ceramtec.de					
EDM-Tec OHG, Kaisersesch, DE | www.edm-tec.de	●	●	●		
Emco Mecof, Belforte Monferrato (AL), IT | www.mecof.it					
Erowa AG, Büron, CH | www.erowa.com	●	●	●		
Ewag AG, Etziken, CH | www.ewag.com					
Fenn Tool Ltd., Braintree, Essex, UK | www.fenntool.com					
Fidia, SpA, San Mauro Torinese (TO), IT | www.fidia.it					
Fischer AG, Herzogenbuchsee, CH | www.fischerag.com					
Fluid Conditioning Systems Ltd. Innovation Centre, Warwick, UK | www.fluidcs.com				●	
Fraisa S.A., Bellach, CH | www.fraisa.com					
Gewefa UK Ltd., Corsham, Wilts, UK | www.gewefa.co.uk	●				
Gressel AG Spanntechnik, Aadorf, CH | www.gressel.ch	●		●		
Gurkan Makina Ltd. Ikitelli Org. San. Bol., Istanbul, TR | www.gurkan.com	●				
Haas Automation Inc., Oxnard, CA, USA | www.haascnc.com					
Haimer GmbH, Hollenbach, DE | www.haimer.de	●	●	●		
Hainbuch GmbH Spannende Technik, Marbach am Neckar, DE | www.hainbuch.de			●		
Hardinge Inc., Workholding Division, Elmira, NY, USA | www.shophardinge.com	●				
Hirschmann GmbH, Fluorn-Winzeln, DE | www.hirschmanngmbh.com	●	●	●		
Horst Witte Gerätebau Barskamp KG, Bleckede, DE | www.horst-witte.de	●		●		
Houghton plc, Manchester, UK | www.houghton.co.uk				●	
imes-icore GmbH, Eiterfeld, DE | www.imes-icore.de					
ITC Industrial Tooling Corp. Ltd., Tamworth, Staffs, UK | www.itc-ltd.co.uk				●	
Kitagawa Europe Ltd., Salisbury, Wilts, UK | www.kitagawaeurope.com	●				
Leader Chuck Systems Ltd., Tamworth, UK | www.leaderchuck.co.uk	●	●	●		
Mac Tec e.K., Emmelshausen, DE | www.mac-tec.de	●	●	●	●	
MAG Systems S.r.l., Abbiategrasso (MI), IT | www.magsystems.it		●			
Mitee-Bite Products Inc., Center Ossipee, USA | www.miteebite.com			●		
NCMT Ltd., Thames Ditton, Surrey, UK | www.ncmt.co.uk					
Okamoto Machine Tool Europe GmbH, Langen (Hessen), DE | www.okamoto-europe.de					
Otto Suhner AG, Brugg, CH | www.suhner.com	●		●		
Parpas Spa, Cadoneghe, IT | www.gruppoparpas.com					
Rego-Fix AG Präzisionswerkzeugfabrik, Tenniken, CH | www.rego-fix.ch	●		●		
Röhm GmbH, Sontheim, DE | www.roehm.biz	●	●	●		
Rollomatic SA, Le Landeron, CH | www.rollomatic.ch					
Sarix SA, S. Antonino, CH | www.sarix.com					
Schaublin S.A. Fabrique d'outillages, Delemont, CH | www.schaublin.ch			●		
Schunk GmbH & Co. KG Spann- und Greiftechnik, Lauffen am Neckar, DE | www.schunk.de	●	●	●		
Steelfluid S.r.l., Genoa, IT | www.steelfluid.it				●	
Streuli technologies AG, Birmensdorf, CH | www.streuli-techno.ch	●	●	●		
Suhner France S.A., Alfortville, FR | www.suhner.com					
System 3R (UK) Ltd., Princes Risborough, Bucks, UK | www.system3r.com		●	●		
Tecnomagnete, SpA, Lainate (MI), IT | www.tecnomagnete.com		●			
Tecnomagnete GmbH Magnetspanntechnik, Langen (Hessen), DE | www.tecnomagnete.de	●	●			
Tribo Hartstoff GmbH, Barchfeld-Immelborn, DE | www.tribo.de					
Tungaloy Germany GmbH, Monheim am Rhein, DE | www.tungaloy.de			●		

	Cutting-Tool Coatings	Filters	Fixturing, Quick-Change	Fixturing Components	Grinding Wheels	Lathe Tooling and Accessories	Lifting Equipment	Rotary Tables	Spindles	Toolholders	Tool Management Systems	Vises
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Makino announces merger with Global EDM Supplies

Rosemarie Stahl

Makino announced its merger with North American EDM consumables supplier Global EDM Supplies. The merger is expected to expand the company's SST Consumables business. The integration should be completed in 2017.

Makino hopes that this merger will provide customers with broader geographic reach, greater product diversity and increased accessibility to experienced technical services and support. "We are very pleased to continue our growth in the consumables business through the merger of Global EDM Supplies," said Don Lane, CEO of Makino "We look forward to better serving our customers through the addition of Global's skilled and experienced personnel, geographic presence and product portfolio."

According to the company, Makino, a leader in advanced CNC machining centres, is committed to providing high-performance, leading-edge machining technologies and innovatively engineered process solutions that enable manufacturers to focus on making what matters. Makino offers a wide range of high-precision metal cutting and EDM machinery, including horizontal machining centres, vertical machining centres, 5-axis machining centres, graphite machining centres, and wire and Ram EDMs.

Makino's automation solutions provide reduced labour costs and increased throughput in a variety of production volumes and designs, the company says. Their engineering services offer expertise for challenging applications across all industries.

Headquartered in Mason, Ohio/USA, Global EDM is the exclusive North American importer of the Excetek line of EDM Wire and Sinker Machines as well as exclusive US distributor of Ocean EDM Drills. In addition, Global EDM offers an expanded range of Beaumont's Fast Hole EDM Drill machines and P-ECM Electro Chemical Machines, providing a complete portfolio of EDM/ECM machines.

Global EDM Supplies' EDM consumables catalogue includes more than 3,000 different EDM parts and supplies, including wire, filters, wear parts, resin, fluid and lubricants, and electrodes. Since its founding in 1995, Global EDM Supplies has built a reputation for its technical support and customer service across the United States, with eight locations across the country.

At Global EDM, everyone seems to be very pleased with the future integration: "We are excited to continue providing our customers with machines that use technology to make them affordable and easier to operate," said Ramesh Malhotra, CEO of Global EDM. Barry Ramsay, Vice President of Global EDM, added: "Our team of engineers is committed to providing Global's family of customers with uninterrupted, timely service and support across all service, warranty, maintenance and repair programmes."

"We are excited about the prospects for expanding Global's reach afforded by our merger with Makino," said Tom Kucharski, President of Global EDM. "Our unmatched technical and personal service will be further enhanced by the resources of Makino and SST".

The integration of Global EDM Supplies into SST, is expected to be completed within the first quarter of 2017. With its robust network of engineers, Global and SST are committed to offering fast local support with complete machine repair and maintenance programmes. SST and Global support and services are to continue to operate uninterrupted across all regions and locations.

makino.com

Source: Makino

Makino offers a wide range of high-precision metal cutting and EDM machinery, including horizontal machining centers, vertical machining centers, and wire and Ram EDMs.

With the help of r-Connect, the Cut P can communicate with the manufacturer at any time.

Source: GF Machining Solutions

Simplify demanding applications

Today, EDM machines need to have many different talents. For example, they have to offer a broad application area and be time and cost-efficient. GF Machining Solutions wants to offer exactly such an all-rounder.

The fourth industrial revolution—also known as Industry 4.0—represents an era of innovation shaping the way manufacturers work. The Agie-Charmilles Cut P wire EDM series by GF Machining Solutions delivers intelligence to advance their speed, flexibility and quality whilst helping them get to the heart of even the most critical applications, the company says. According to GF Machining Solutions, the Cut P wire EDM series provides access to twice the number of dedicated solutions afforded by a standard EDM machine. Cut P users can realise a range of possibilities across various quality-centric industries, including electronic components, automotive and medtech.

From producing a surgical tool weighing only a few grams to machining a six-ton die-casting mould for automotive, the Cut P series is designed to help manufacturers. The solution's Intelligent Speed Generator (IPG) enables precision parts as well as mould and die manufacturers to increase their cutting performance by 20 percent, GF Machining Solutions says. This includes obtaining the thermostabilisation and machining repeatability to achieve accuracy down to 2 µm and finer surface finishes down to Ra 0.08 µm. According to GF Machining Solutions, advanced taper accuracy below 10 seconds with straightness, sharp contours and no lines becomes easily achievable with the Cut P series' Expert systems. Furthermore, the solution's collision protection system prevents costly machine maintenance and ensures long-term accuracy and reliability. The Cut P series is also equipped for smart manufacturing and connected solutions.

gfms.com

ETMM

INFO

Swiss-based GF Machining Solutions' products range from electric discharge machines and high-speed and high-performance milling machines to 3D Laser surface texturing machines, services, spare and expendable parts, consumables and automation solutions.

Micro EDM milling machine is precise, user-friendly

Source: Schulz

Sarix Sales & Marketing Manager Franck Leleu with with the SX 100 micro EDM machine.

EDM Machining – Micro EDM machining specialist Sarix has showcased its SX100 micro EDM milling, drilling machine at AMB in Stuttgart. The machine comes in a new design based on users' requirements and is said to offer many advantages: high user-friendliness, compactness, full operative access, touchscreen display, joystick-handbox and much more. This is said to becombined with the high performance and high quality machining offered by Sarix. The SX100 comes with a small footprint with all required accessories: a compact SX-CNC and separate pneumatic/hydraulic unit and a dielectric unit with three separate pumping circuits within an high pressure line up to 100 bars. According to Sarix, the design is fully compliant with the new stringent machine safety standards without drawbacks for the accessibility of the work space. Moreover, the latest Sarix precision electrode collet, SP12, is said to assure a slack-free and repeatable holding of the electrode. In production the achievable runout of the electrode is less than 1 micron and remains constant even when the collet is changed, Sarix says.

sarix.com

OPS Ingersoll presents next generation of High Speed Eagle

Source: OPS Ingersoll

The High Speed Eagle V5 has been on show at the booth of OPS Ingersoll at Moulding Expo 2017.

Machining – Following the High Speed Eagle V9, OPS Ingersoll presented the second machine of the V-Line with Heidenhain-control at the Moulding Expo 2017: the High Speed Eagle V5. With axis travel of (X/Y/Z) 550 × 400 × 400 mm, the High Speed Eagle V5 guarantees maximum performance, OPS Ingersoll says. The Gantry concept with the optimal integration of the 4th/5th axis is said to offer 5-axis travel with compact external dimensions of 2.800 × 2.020 mm, and a height of 2.450 mm.

According to the company, the automated loading into the machine with workpieces from either side gives the operator full accessibility to the working area to control the machining even when integrated in automated systems. The machine is equipped with a HSK E40 spindle (1 - 42.000 rpm, 15 kw), OPS Ingersoll says.

ops-ingersoll.de

Spanish supplier introduces premium wire EDM machines

Wire EDM – Now available from the exclusive UK and Eire agent, Warwick Machine Tools, the new range of ONA AV wire EDM machines is part of the Spanish company's strategic plan to improve current product competitiveness with the introduction of high performance 'Premium' machines that was initially established with the recent launch of the highly capable QX die sink CNC EDM range.

A comprehensive range of ONA AV models are available. The compact ONA AV25 model with axis travels of 400 x 300 × 250 mm in X, Y and Z respectively, and the larger ONA AV35 model with travels of 600 mm in X, and 400 mm in Y and Z. Both models feature U-V travels of 120 by 120 mm. Designed to be extraordinarily compact the new machine layout reduced installed floorspace by around 20% compared to existing models of similar dimensions, the company says. Using a modular design concept, the large-scale AV machines are designed for wire cutting bulky components.

Source: ONA

In single pass precision cutting the enhancements in performance of AV machines compared to previous ONA wire EDM machines sees an increase of cutting speed up to 40%, ONA says.

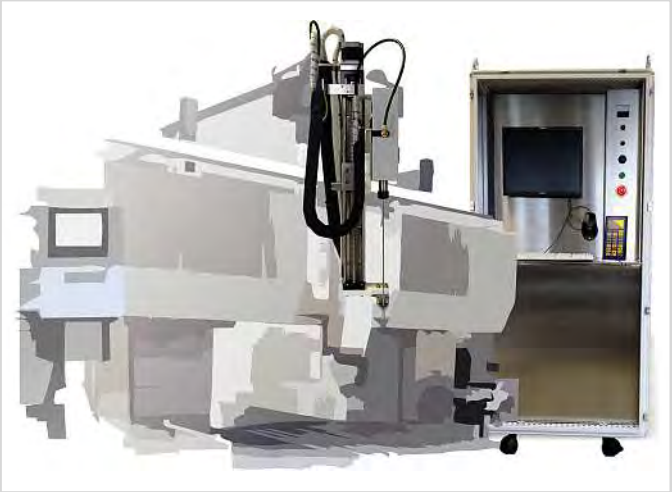
The range starts with the impressively quick ONA AV60, with cutting speeds up to 450 mm²/min. It has axis travels of 800 mm in X and 600 mm in Y, while the Z-axis can be specified as 500, 600, 700 or 800 mm to accommodate the workpiece that can weigh up to an impressive 5 t, ONA says. Next up is the AV80, able to take the same weight on the worktable it extends the axes to 1,000 mm in X, 600, 800 or 1,000 mm in Y with the same Z-axis range options as the AV60.

Both the AV100 and AV130 can accept loads up to 10,000 kg on the worktable. The AV100 has travels of 1,500 mm in X, 1,000 or 1,300 mm in Y and 600, 700 or 800 mm in Z. Extending the X-axis to 2,000 mm the other two axes of the AV130 are available with the same optional travels as the AV100.

For ease of operation ONA has developed a new CNC with CAD/CAM for the AV range that exceeds the demands of most programmer, ONA says, and at the same time offers a simple, user-friendly interface. The CNC makes it possible to control up to eight axes simultaneously, has CAD/CAM incorporated and boasts a 23'' touchscreen monitor. A 3D viewer displays the workpiece, the cutting position and wire path, while 3D set up with optional touch probing is also supported.

warwickmachinetools.co.uk, onaedm.com

Source: Heun



The eroding unit by Heun can be applied in many different fields of EDM drilling.

Improving existing technology for today's requirements

EDM Drilling – The first EDM drilling units of Heun to be placed on the market were modules that consisted of an all-purpose, adaptable eroding head with servo-unit and a mobile generator with high-pressure pump. These modules are still available now, although with an improved design. They are still used to carry out special tasks, for example, the removal of rivets from the outer plating of airplanes during maintenance, relief drillings, bleeder holes as well as cooling holes into metallic moulds, drill holes into injection nozzles and EDM drilling with extremely pointed angles.

According to Heun, the eroding unit can be applied in many different fields of EDM drilling. Every kind of conductive material can be machined, independent of softness or hardness, the company says. The fast EDM drilling speed is the main feature of this machine.

The unit is of compact design and appropriate for machining especially big work pieces. The generator and the monitor are located within the sold, mobile control cabinet. The water-cooled generator is extendable up to 80 ampere. The operating interface, which is – as Heun says it - self-explanatory, is controlled by touch-screen terminal. The eroding head can be attached to existing machining centres or to robot tooling.

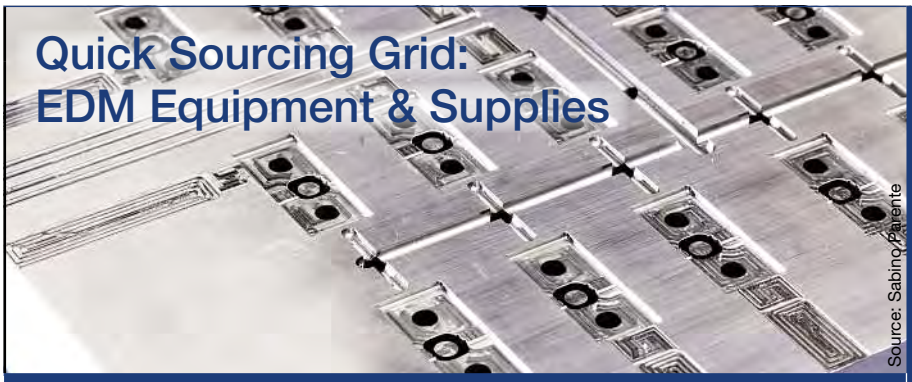
Independent use by mounting on a stand or drill rig is also possible. Copper or graphite can be used as electrode material brass. Different ceramic guides can be installed. Therefore, the electrode diameter range can be modified from Ø 0.3 – 3.0 mm. Electrodes of Ø 0.1 – 6 mm can be clamped with special collet chucks.

Optionally, machining with electrodes of up to 50 mm as well as with form electrodes is possible, the company says. Every electro-conductive component can be machined. Until now, eroding heads of different length have been constructed. At present, 3,000 mm is the vastest travel distance that has been reached. The head-generator unit has an analysis tool to control the drilling process. It is also possible to connect the unit to the particular machine and to pass signals to this respective machine.

The functions are the same as on standard EDM drilling machines. A special feature is that the spindle can also be locked in place in order to be able to carry out die-sinking or cut off parts as, for example, threaded bolts or sheet-metal parts.

heun-gmbh.de

Quick Sourcing Grid: EDM Equipment & Supplies



Source: Sabino Parente

Company | Contact	Ad on page	EQUIPMENT/ACCESSORIES					
		Additives/Rust Inhibitors	CAD/CAM Software	Die-Sinking Machines, CNC	EDM Polishing Supplies	Electrode Holders	
Exeron GmbH, Oberndorf am Neckar, DE | www.exeron.de	31, 35		●	●		●	
HIG Handel mit Industriegütern Ges.m.b.H., Wien, AT | www.hig.at	43	●					
Poco Graphite SARL, Limonest, FR | www.poco.com	19						
Sarix SA, S. Antonino, CH | www.sarix.com	45						
Berkenhoff GmbH, Herborn, DE | www.bedra.com							
Buchem Chemie + Technik GmbH & Co. KG, Köln, DE | www.buchem.de		●					
Cimtrode, The Electrode Company GmbH, Mattighofen, AT | www.cimtrode.com							
Easymetal GmbH, Wolkersdorf, AT | www.easymetal.com							
EDM- Deutschland Zeller & Hofmann GbR, Kahl a. Main, DE | www.edm-deutschland.de		●				●	
EDM Service, Jouy-le-Mouier, FR | www.edmservice.com		●				●	
EDM-Tec OHG, Kaisersesch, DE | www.edm-tec.de		●		●	●	●	
Erodex (U.K.) Ltd., Halesowen, W Midlands, UK | www.erodex.com		●				●	
Erowa AG, Büron, CH | www.erowa.com						●	
GF Machining Solutions Management S, Meyrin 1, Geneva, CH | www.gfac.com				●			
H.G. Hassfurther GmbH & Co. KG, Lüdenscheid, DE | www.hgh-luedenscheid.de				●		●	
Herding GmbH Filtertechnik, Amberg, DE | www.herding.com							
Hermann Schmidt Co., South Windsor, USA | www.hschmidt.com							
Hirschmann GmbH, Fluorn-Winzeln, DE | www.hirschmanngmbh.com						●	
ITW Rocol North America, Glenview, USA | www.rocolnorthamerica.com							
J. G. Dahmen GmbH & Co.KG, Iserlohn, DE | www.dahmen-draht.de							
Josef Waller Zwei Rad Shop, BÜRON, CH | www.erowa.com						●	
Leader Chuck Systems Ltd., Tamworth, UK | www.leaderchuck.co.uk							
Mac Tec e.K., Emmelshausen, DE | www.mac-tec.de		●		●		●	
Makino Europe, Kirchheim unter Teck, DE | www.makino.eu				●			
Mann + Hummel GmbH GB Industriefilter, Speyer, DE | www.mann-hummel.com							
Mersen France Gennevilliers SAS, Gennevilliers, FR | www.mersen.com						●	
Mitsubishi Electric Europe B.V. Mechatronics, Ratingen, DE | www.mitsubishi-mmd.de		●		●		●	
Ningbo Powerway Materialise Co. Ltd., Ningbo, CN | www.pwmaterial.com							
NCMT Ltd., Thames Ditton, Surrey, UK | www.ncmt.co.uk				●			
Ona Electro-Erosion S.A., Durango, ES | www.onaedm.com		●		●		●	
OPS - Ingersoll Funkenerosion GmbH, Burbach, DE | www.ops-ingersoll.de				●			
Poco Graphite, Inc. an Entegris Company, Decatur, TX, USA | www.poco.com							
Sodick Europe Ltd., Coventry, UK | www.sodick.org		●	●	●		●	
Stäubli Faverges SCA, Faverges, FR | www.staubli.com							
System 3R (UK) Ltd., Princes Risborough, Bucks, UK | www.system3r.com						●	
Tokai Carbon Europe Ltd., Oldbury, W Midlands, UK | www.tokaicarboneurope.com							
Tribo Hartstoff GmbH, Barchfeld-Immelborn, DE | www.tribo.de							
Zimmer & Kreim GmbH & Co KG, Brensbach, DE | www.zk-systems.com			●	●		●	

									SUPPLIES/CONSUMABLES								
	End Mills/Ball Nose Cutters for Graphite	Filtration/Dust/Fume Extraction Equipment	EDM Fixtures	Robot Loading/ Automated Handling Systems	Small-Hole Drilling Machines, CNC	Wear Parts	Wire-Cut Machines	Work Holders	Copper/Copper Tungsten	EDM Dielectrics for Sinkers	EDM Dielectrics for Small-Hole EDM Drills	Electrodes	EDM Fluids	Graphite for Electrodes	Pipe Electrodes	Resin/Filters	Wires
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Source:J&S West

One of West Pharmaceutical's two Jones & Shipman 524 surface grinders.

The J&S touchscreen control with Easy software.

Source:J&S West

Grinding update for precision and quality

Cornwall-based pharmaceutical company West Pharmaceutical Services develops pharmaceutical packaging components. For their moulds, they recently acquired grinders by Jones & Shipman for the surface treatment of their high-grade stainless steel moulds.

ETMM

INFO

Machine tool manufacturer Jones & Shipman, founded in Leicester, England, in 1899, produces a wide range of grinding machines like precision cylindrical grinding machines and serves precision industries such as automotive and mould making.

The specialised grinding section within the Bodmin, Cornwall, moulds and tooling manufacturing operations of West Pharmaceutical Services Cornwall Limited has maintained its loyalty to Jones & Shipman grinding machines following an investment and upgrade programme. Recently installed have been a Jones & Shipman Ultramat 650 Easy cylindrical grinder, two J&S 524 Easy surface grinders, and a Hauser H35 jig grinder – also supplied through Jones & Shipman.

West is a leader in the development of pharmaceutical packaging components and delivery systems for injectable drugs. It prides itself in being at the forefront of pharmaceutical and biotech innovation, developing new therapies that will become tomorrow's healthcare solutions. In Bodmin, the extensive toolroom operation reflects the standards of the pharmaceutical industry – the machine tools and environment are spotless – and as John Chaffe, Manufacturing Manager at the plant, explains, there is a culture of not just cleanliness but absolute precision.

"Consistency, accuracy and surface finish are the mantras across everything we manufacture," says Chaffe. "Mostly, we work in stainless steel with rubber mould manufacture predominating and these are bespoke to the many moulding machines in operation in West's worldwide operations.

Primarily, the mould consists of two matching plates containing inserts that create the seals or stopper vials. Plates can accommodate anything from a few hundred inserts to the very largest we manufacture that contains 11,000," the manufacturing manager explains. "There is no compromise

on precision or quality and component repeatability is a major factor that frequently necessitates complex ground surfaces to low micron finishes. We always flood the component and work table in coolant," he adds, "a time proven way of negating thermal expansion."

As well as rubber moulds in many formats, the Bodmin operation also manufactures plastic moulds for products such as tamper-proof tips; very fine- ground cones for producing needle shields and trim dies used for precision- cutting the finished seals after moulding. High-grade stainless steel is the first- choice workpiece material for both the surface finishes achievable, and also because of the arduous sterilising regime that involves submersing the moulds in 400°C saline solution.

Grinding high-grade stainless steel

And, as John Chaffe explains, Jones & Shipman has long been the preferred grinding machine supplier to West in Bodmin. "We have operated two older 1300's for some years, but when it came time to upgrade, we were impressed with the Easy software J&S has developed for programming and operating its latest-generation machines. We first invested in a 524 surface grinder with the touchscreen and Easy software, and when we added another 524 along with an Ultramat Easy 650 cylindrical machine, they readily integrated with our manufacturing processes."

Operator acceptance of the Easy software has been excellent, and while the many different programmes are accessed from a network, skilled and semi-skilled operators alike find the software used at the machine "easy" as its name suggests. The latest-generation Ultramat 650 specified by West features the optional B axis with its wheelhead swivel for grinding negative tapers. The B axis provides the ability to not only grind multiple diameters but to angle features on components in one process and to automatically externally and internally grind in one set-up. This not only improves the cycle time but also the important repeatability and concentricity of parts as the component does not have to be remounted when undertaking batch work.

Running micron accuracies

Another specified option is an ACL (acoustic listening device), which allows for very precise pick-up by the operator when the wheel touches on the part. It is very accurate and allows the operator to run the machines to micron accuracies. There is also a special adaptor to accommodate occasional polar grinding.

The Ultramat 650 design features a one piece "Tee Bed" design with a fully supported table combined with technical innovation and the ability to offer high geometric accuracy.

The control panels have membrane-type touch keys and electronic handwheels, while the machine also has automatic dressing and grinding cycles, which means it can be quickly set, then left unmanned. As standard, it is equipped with Heidenhain "Absolute" Nano linear scales and Fanuc Digital AC servo-motors and control.

jonesshipman.com

Company | Contact	Ad on page	Company profile at etmm-online.com	CLEANING		
			Cleaners, Nonultrasonic	Cleaners, Ultrasonic	
Boride Engineered Abrasives, Traverse City, MI, USA | www.borideabrasives.com	49				
Diprofil Diamantprodukter AB, Spånga, SE | diprofil.com	63				
Meusburger Georg GmbH & Co. KG, Wolfurt, AT | www.meusburger.com	1, 65, 66, 67				
Millutensil s.r.l., Milano, IT | www.millutensil.com	33, 36, 37				
Acrolab Ltd., Windsor, CA | www.acrolab.com					
Alpha Mold Tech Limited, Shenzhen, UK | www.alpha-mold.com				●	
Asco Carbon Dioxide Ltd., Romanshorn, CH | www.ascojet.com					
Buchem Chemie + Technik GmbH & Co. KG, Köln, DE | www.buchem.de			●	●	
DME Co., Madison Heights, MI, USA | www.dme.net			●		
Dong Guan T-Tech Tooling & Plastic Ltd., Dong Guan City, CN | www.tsunngai.com					
Dytron Corp., Fraser,MI, USA | www.dytroncorp.com					
EDM-Tec OHG, Kaisersesch, DE | www.edm-tec.de					
Eko Plastic Improvements, Jordan Valley, IL | www.eko-plastic.com					
Engis (UK) Ltd., Henley-on-Thames, UK | www.engis.com				●	
Engis Corp., Wheeling, USA | www.engis.com				●	
Finnsonic Oy, Lahti, FI | www.finnsonic.com			●	●	
Fodesco OY, Lehmo, FI | www.fodesco.fi					
Gesswein & Co. Inc., Bridgeport, USA | www.gesswein.com				●	
H.G. Hassfurther GmbH & Co. KG, Lüdenscheid, DE | www.hgh-luedenscheid.de				●	
Irmamolde Lda., Maceira-Ira, PT | www.irmamolde.pt					
Joke Technology GmbH, Bergisch Gladbach, DE | Joke Technology GmbH, Bergisch Gladbach, Germany			●	●	
Kemet International Ltd., Maidstone, Kent, UK | www.kemet.co.uk				●	
Master Abrasives Ltd., Daventry, Long March Industrial Estate, UK | www.master-abrasives.co.uk					
Matissart Nord, Labourse, FR | www.matissart.com					
Micro Fusion Technology Inc., Hemingway, USA | www.micro-fusion.com			●	●	
Nakanishi Inc., Kanuma-shi, Tochigi-ken, JP | www.nsk-nakanishi.co.jp					
O.C.S. srl, Adrara S. Martino, IT | www.ocs-stamp.it					
O.R. Lasertechnologie, Dieburg, DE | www.or-laser.de					
Oelheld GmbH, Stuttgart, DE | www.oelheld.de					
Otto Suhner AG, Brugg, CH | www.suhner.com			●		
Petform Ltd t/a Anker Moulding Systems, Accrington, Lancs, UK | www.ankerhouse.com					
Rofin-Sinar Laser GmbH, Hamburg, DE | www.rofin.com					
Saint-Gobain Ceramic Materials, Worcester, USA | www.amplexproducts.com			●	●	
Saint-Gobain Grains & Powders, Avignon, FR | www.saint-gobain.com					
Sobef-Sierom, Saint-Priest, FR | www.sobef-sierom.fr					
SST Microwelding, Bordeaux, FR | www.sstmicrowelding.com					
Starrett Precision Optical Ltd., Skipton, UK | www.guyson.co.uk			●	●	
Suhner France S.A., Alfortville, FR | www.suhner.com					
Suhner Su-Matic Handelsges. mbH, Wien, AT | www.suhner.at					
Trumpf Werkzeugmaschinen Deutschland Vertrieb + Service GmbH, Ditzingen, DE | www.de.trumpf.com					

			EQUIPMENT				SUPPLIES						
	Mould Cleaning Agents	Mould Cleaning Systems	Laser Welding Equipment	Mould Polishing Equipment	Mould Repair Equipment	Welding Machines	Abrasives	Diamond Compounds	Lubricants	Mould Releases	Polishing Abrasives	Polishing Supplies	Replacement Parts
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Product portfolio for high-resolution and on-site measurements

At Control 2017, GOM presented its complete Atos Scan Box series, including Atos Capsule, an optical measuring machine for quality assurance with high image resolution, and a mobile and flexible measuring system that can be used directly on-site of the measuring object.

GOM, based in Brunswick, Germany, is expanding its Atos series with a new sensor for full-field digitising and inspection of contoured part geometries. The fringe projection system is designed for production quality assurance of small to medium-sized parts and excels by its high precision for fine details. In addition to surface deviations from CAD, GD&T data and detailed information is derived automatically.

According to the company, Atos Capsule combines GOM technologies, such as Blue Light Technology and the triple-scan principle, with a housing design for industrial use that provides protection against dust and splashing water. Thanks to the maximum stiffness of the unibody housing, the sensor achieves the required process stability for automated applications and precise measuring results, GOM says.

With the standardised measuring machine Atos Scan Box, the Atos Capsule system is used for automated measurements and inspection. It is a complete optical 3D measuring machine that was developed for efficient quality control in production and manufacturing processes. Flexible and partly mobile solutions are available for different part sizes and applications. Using the photogrammetric add-on sensor Atos Plus, bigger components or several parts can be measured simultaneously with an Atos Scan Box, while at the same time increasing the overall accuracy.

Two versions of the Atos Capsule are available with different levels of detail. The system captures 8 or 12 million points per scan with changeable measuring areas. The dimensions of the sensor, its low weight and the short working distance simplify its application in practice.

Atos Capsule combines GOM technologies, such as Blue Light Technology and the triple-scan principle, with a housing design that provides protection against dust and splashing water.

Source: GOM

Implementing measurements directly into the process

Today, due to increasingly shorter production and development times, the inspection of tools, systems and components takes place directly during the ongoing production. GOM responds to this challenge of industry with mobile and flexible measuring systems that can be used directly on-site of the measuring object.

Pontos Live, GOM's mobile optical 3D measuring system, is primarily used for online measurement and part positioning. It enables an assembly analysis that is based on augmented reality. Using dynamic referencing, the part as well as the sensor can be moved freely – regardless of the interferences of a production environment.

Atos Compact Scan, the compact class of the Atos series, excels by its flexibility: System, stand and laptop fit into one suitcase and can be transported easily. Thanks to the changeable measuring areas, the robust and precise sensor enables digitising and inspection of small parts up to large tools. Depending on the requirements, the sensor's accuracy and resolution can be adapted flexibly.

Tritop, the handheld photogrammetry system, enables fast and precise measurement of individual 3D coordinates of large-volume objects, such as wind power plants, aircraft or ships. The system is used handheld and wireless. The measurement can be evaluated immediately on the laptop.

gom.com

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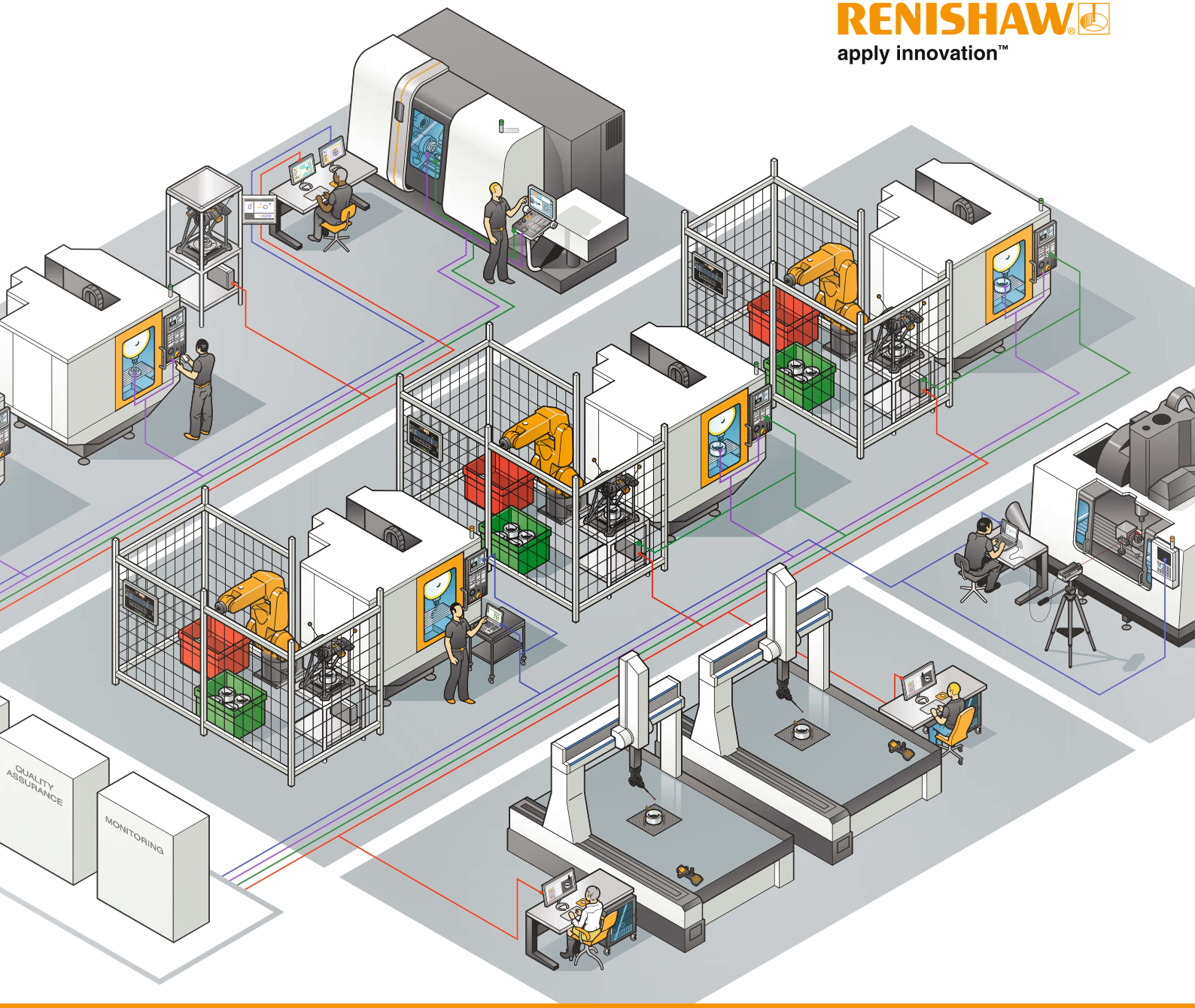
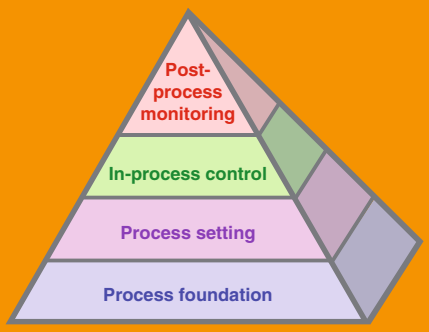


Transform your manufacturing

Intelligent machining processes are a critical element in advanced manufacturing technology. Widely publicised trends such as Industry 4.0, the Industrial Internet of Things, cloud computing and data mobility provide manufacturers with an unparalleled opportunity to develop processes which deliver improved productivity and process capability.

Automation, measurement and feedback can deliver process control throughout the stages of manufacturing. Optimised processes monitor not only the condition of parts, but also the performance of machines, process trends, interventions and environmental effects.

Renishaw provides the technologies required to measure and control many of the key process variables in CNC machining and other forms of manufacturing. Talk to us about how we can help transform your manufacturing.



For more information visit www.renishaw.com/processcontrol

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www.renishaw.com

Coolant and oil no hindrance for accurate measurement

Source: Blum

Pulling measurements of grooves and bars can be carried out with the TC61 touch probe system as well.

Measuring – The challenges of on-machine measurement technology is very different to those encountered when measuring outside the machine. Coolant and oil are frequently a source of incorrect measurements when using standard touch probes. Blum Novotest's bi-directional TC61 touch probe system, based on the company's Pre-deflection technology, can conduct measurements reliably and consistently on a machine despite the presence of coolants and oils, Blum said and added that even pulling measurements of grooves and bars can be carried out with the TC61. The coolant has no impact on the actual measurement, even at a measuring speed of 5 m/min.
blum-novotest.com

Extending the affordability of 3D-scanning technology

Metrology – Werth says that its ultra-compact Scope-Check S Probe coordinate measuring machine has advanced scanning capability, giving it a good price-to-performance ratio. With a measurement range of 400, 200 and 200 mm in the X, Y and Z axes respectively, it has a granite base and does not require compressed air supply. Precision mechanical guides and a temperature compensation system guarantee reliable measurement results, even under difficult environmental conditions, the company says.

It adds that gauging benches, hard gauges and conventional measurement systems can be supplemented or replaced by this machine and that its high-precision 3D scanning probe system and rapid CNC-path controls can handle many areas of application. It has the new Win-Werth 8.40 3D measurement software that provides user-friendly functions for semi and automatic generation of scanning paths and for modifying programs. The interactive graphic user interface enables dimensions to be captured by clicking on the graphic.
werth.de

Source: Werth Messtechnik

Scope-Check S Probe has a high-precision 3D-scanning system and CNC-path controls.

Premiere for measuring and presetting devices

Source: Zoller

The Smile tool presetting and measuring machine with one-hand hold control.

Metrology – Zoller introduced its new generation of presetting and measuring devices at AMB 2016 in Stuttgart, Germany. The devices offer a new design and quality, the company says. The combination of optimised ergonomics, comprehensive hardware and software functionality provide precise measuring results for every tool. Its device series offers an extensive range of setting and measuring solutions for drilling, milling, and turning tools.

The "smile" series is said to be user-friendly with its progressive one-hand control handle, spindle handling and modern electronics. The company's smile-compact mini entry model is designed for small operations or as a second device for simple tool presetting. Among Zoller's exhibits were its classic "eQ" one-hand control handle; the "cockpit" control unit for operating comfort; the "ace" high-precision spindle, a high-end camera for the smallest tool geometries and options such as RFID technology for reliable process data transmission and "venturion" providing flexibility and precision.
zoller-d.com

Smart moulds optimise overall cell performance

Mould Making – Milacron presented its products and services on two booths at K 2016, where the company featured its multiple product brand technologies. The company's diverse portfolio covers the manufacture, distribution and service of highly engineered and customised systems, delivery of equipment and service to customers throughout the entire lifecycle of their systems and an extensive plastics portfolio covering runners, injection moulding, extrusion and blow moulding, equipment, controllers, mould bases and premium fluids.

Source: Milacron

Smart-Mold sends and receives information from other equipment to optimise the cell performance.

Among the many exhibits, Mold-Masters, part of the Milacron Group, demonstrated a system that allows injection moulds to be made "aware". The so-called Smart-Mold features sensors, strategically mounted in the hot runner, generating telemetry for use to track OEE, maintenance and potential issues via the cloud or LAN, Mold-Masters said. Smart-Mold then sends and receives information from other equipment in the work cell to optimise overall cell performance. Drawings and set-up guides are then available.
milacron.com

Software for component testing

Testing – DHS Dietermann & Heuser Solution presented several new products at Control 2017. Among them is Version 16 of the image database, Cleanalyzer Professional, a new software module including hardware, specifically for testing welded joints during production. Cleanalyzer allows for quicker and more precise scanning of filters, faster data transmission and improved image quality thanks to its light-sensitive, low-noise camera sensor, DHS says.

Another product shown was Easy-Controller, a compact, optical inverse system for rapid checking of samples during production. It has an integrated digital camera and LED ring light in a stainless-steel housing and comes in four versions with fixed focal lengths. Components are placed directly on the glass pane for inspection or measurement or inspection without the need for them to be focused.

dhssolution.com

Source: DHS

The Cleanalyzer Professional with a new ergonomic design and new hardware.

Measuring in line with Industry 4.0

Multi-measuring – Recent developments by Taylor Hobson (part of Ametek) include the Talyrond HS that delivers multi-part measurement without data loss; the i-Series Multi Axis system for automated measurement of large components; and the Form Talysurf PGI CNC for highly automated, high-accuracy measurement of small components.

According to the company, all products deliver an in-depth understanding of characteristics such as surface finish, contour, form, radius, roundness and harmonic analysis and can provide vital feedback for improvements in design and production. The new Talyrond 500 HS with its carousel system is a high-precision, multi-part roundness measuring system, making it a multi-part measurement system. The unique counterbalanced design of the carousel system ensures measurement to the instruments' specification. This portable device sits on the spindle table via three-point location and plugs into a concealed socket. Control is provided via the company's Ultra software to enable fully automated measurement of multiple parts. Talyrond 500 HS is ideal for high-volume throughput, with no-operator attendance and reduced set-up time, the company says.

The company has joined the Industry 4.0 revolution: Automation must be flexible enough to deal with rapidly changing product components, it says. Its new Form Talysurf i-Series Multi-Axis systems deliver automated surface finish, form and contour measurement at the touch of a button.

taylor-hobson.com

Clamping system works within seconds

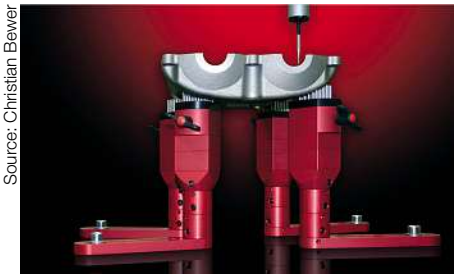
Fixing – Pintec, the modular clamping system from Germany-based Christian Bewer, is said to fix difficult-shaped workpieces in the metrology room quickly and easily. According to the company, this clamping system is best for jobs with a small number of pieces, prototypes or small series.

It is very often not profitable to build a special fixture for a small series. However, the workpiece must still be fixed for co-ordinate or optical metrology and must therefore be put in the required and secure position. Pintec can as such, provide a practical and flexible solution for such applications for the user in the metrology room by allowing for the quick measurement of the difficult-formed workpiece.

Construction and handling of Pintec, according to the company, is easy, even for difficult and complex-formed workpieces.

pintec.de

Source: Christian Bewer



Pintec is best for jobs with a small number of pieces, or prototypes, Bewer says.

Quick Sourcing Grid: Quality Control

Source: P.E. Schall

Company | Contact	Ad on page	CMM	Inspection Machines	Inspection Probes	
Millutensil s.r.l., Milano, IT | www.millutensil.com	33, 36, 37				
Renishaw plc, Wotton-under-Edge, Glos, UK | www.renishaw.com	53	●	●	●	
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ACI (UK) Ltd, Newport Pagnell MK16 9PS, UK | www.acieurope.co.uk					
AR Motif Makina Dis Ticaret Ltd. Sti. Topcular, Kisla Caddesi, Istanbul, TR | www.armotif.com			●	●	
Blum-Novotest GmbH, Grünkraut, DE | www.blum-novotest.com			●	●	
Carl Zeiss Industrielle Messtechnik GmbH, Oberkochen, DE | www.zeiss.de/imt		●			
Coord3 Industries S.r.l., Bruzolo (TO), IT | www.coord3.it		●	●		
Creaform Deutschland GmbH, Leinfelden-Echterdingen, DE | www.creaform3d.com		●	●		
Creaform France, Fontaine, FR | www.creaform3d.com		●			
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Delcam International PLC, Birmingham, UK | www.delcam.com					
Dimension, Eden Prairie, MN, USA | www.dimensionprinting.com					
Euracon, Rotterdam, NL | www.euracon.net					
Faro Europe GmbH + Co KG, Korntal-Münchingen, DE | www.faro.com		●	●		
GOM Ges. für optische Meßtechnik mbH, Braunschweig, DE | www.gom.com		●			
Hexagon Metrology Precision Center Aarau-West, Unterentfelden, CH | www.hexagonmetrology.com		●			
Hexagon Metrology Romer Division, Montoire Sur Le Loire, FR | www.romer.fr		●	●	●	
Hexagon Metrology S.p.A., Grugliasco (TO), IT | www.dea.it		●			
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Joke Technology GmbH, Bergisch Gladbach, DE | www.joke-technology.de					
Kistler Instrumente AG, Winterthur, CH | www.kistler.ch					
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L. S. Starrett Co. LTD, Jedburgh, UK | www.starrett.co.uk					
Leica Geosystems AG, Unterentfelden, CH | www.leica-geosystems.com/metrology		●	●	●	
M&H Italia S.r.l., Tagliolo M to AL, IT | www.mh-inprocess.com		●		●	
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Metris Germany GmbH, Alzenau, DE | www.metris.de		●	●	●	
Metris UK Ltd., Derby, UK | www.metris.com		●		●	
Metrol Co. Ltd., Tokyo, JP | www.toolsensor.com				●	
Mitutoyo (UK) Ltd., Andover, Hants, UK | www.mitutoyo.co.uk		●	●	●	
Moldex3D, Chupei, TW | www.moldex3d.com				●	
MTS Sensor Technologie GmbH & Co. KG, Lüdenscheid, DE | www.mtssensors.com					
Newall Measurement Systems Ltd., Leicester, UK | www.newall.co.uk					
Nikon Metrology NV, Leuven, BE | www.nikonmetrology.com		●		●	
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Raytek GmbH, Berlin, DE | www.raytek.com					
Renishaw GmbH, Pliezhausen, DE | www.renishaw.de		●	●	●	
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Solartron Metrology, Bognor Regis, UK | www.solartronmetrology.com			●	●	
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	Laser Measuring Systems	Measuring Devices	Measuring Software	Microscopes	Mould Test Machines	Optical Test Systems	Probe Software	Scanning Systems	Spotting Presses	Stress Analysis Equipment	Tool Breakage Detection	Tool-Setters
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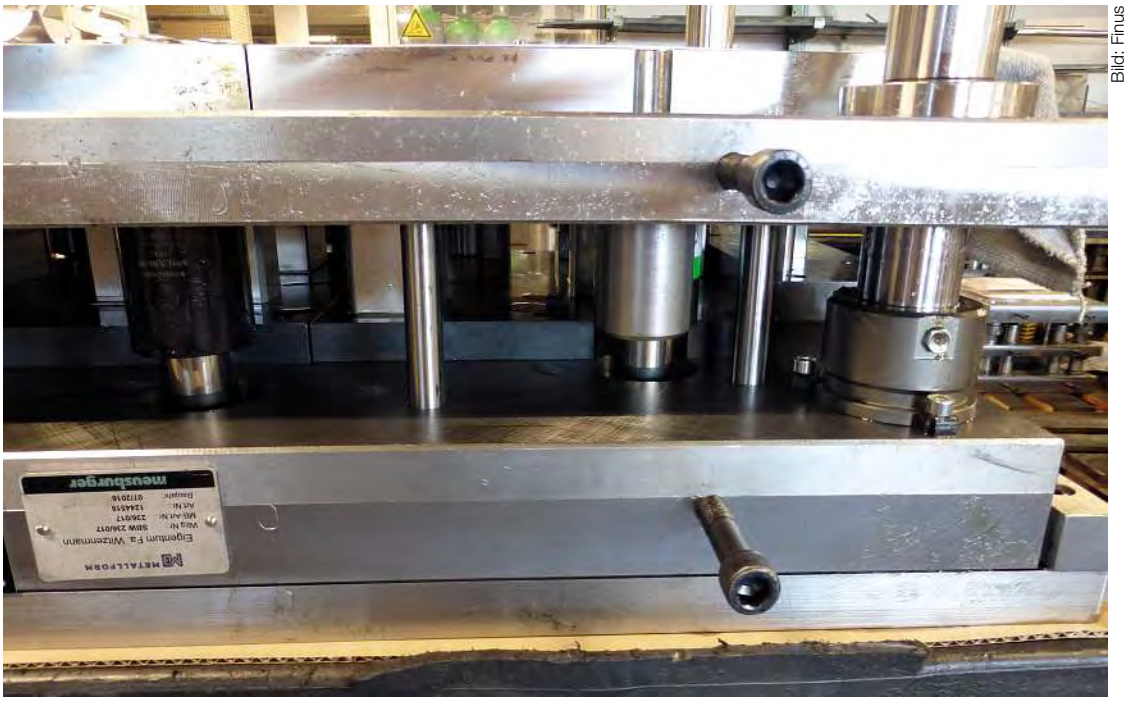

Bild: Finus

Here, the plates with the typical Meusburger alignment can be seen. With this, toolmakers do not need to serach for a zero point every time when they start milling.

Good die-making makes the difference – standard parts help in doing so

Frauke Finus

A contract manufacturer from Franconia produces parts on his stamping line that many others can only produce with a costly fine cutting method. The great know-how in both in-house die-making and in-house tool-making makes this possible. The medium-sized company uses standard parts from Meusburger for its dies.

When you hear Bamberg you think of a cathedral, beer, basketball and the Brose and Bosch companies. However, not only "the large ones" but also numerous small and medium sized companies with in-house know-how are located in Bamberg. One of these is Metallform Bamberg GmbH, which has specialised in the production of stamping and bending parts from the coil, dies as well as welded and mounted assemblies for over 30 years. Since 2014, the company with around 50 employees has been owned and managed by Jens Kache. The contract manufacturer, which supplies to the automotive, med-tech and telecomunication industries, among others, uses mainly progressive dies on its three stamping lines.

"We are able to produce certain stamped parts with the same quality as many others manage to obtain only with fine cutting technologies," explains Ludwig Müller, Technical Manager at Metallform. Designer Alexander Degle says: "Therefore, our customers save money. In fine cut, these parts would be substantially more expensive." The know-how that makes this possible lies in the in-house die-making, which staff at Metallform are particularly proud of, as becomes clear during a conversation with ETMM's partner magazine blechnet. As an example the Metallform company stamped a flange for a medium conducting cable in an engine compartment – a part that was predestined for the fine cut.

Heat-treated for stress relief for low-deformation processing

The Bambergians have a number of milling centres for die-making and have been using the standard parts from Meusburger for some time. "Every now and then we mill some die plates for a company from the surrounding area with which we maintain friendly relationships. This was our first contact point with Meusburger, whom we previously only knew from injection moulding. After several trade fair contacts and conversations, we decided to try some of the standard parts from Meusburger," explains Müller. Degle adds: "The catalogue in the modular system convinced me. I can order

everything from one source, the quality and price are right and I save time through the intelligently designed standard parts from Meusburger. The SV-Standard die set, for example, is already provided with drill holes." In Bamberg, the standard alignment edge on the plates and the integrated anti-rotation blocking are also highly appreciated. "Thanks to the alignment edge, the milling cutter does not have to search a zero point every time and the anti-rotation blocking protects us from possible costly damage because the stamping die halves can no longer be accidentally twisted by 180°," explains Müller, emphasising the advantages. "Furthermore, our standard parts are heat-treated for stress relief by default, which results in low warping and good subsequent machining properties," adds Sebastian König, Area Sales Manager for the Central Germany sales region at Meusburger.

The standard parts are easily compiled in the online catalogue with just a few clicks and displayed there as both a parts list and as a finished component. "The online wizard reduces the risk of incorrect orders. For example, I can already order the first parts before the design of the die set has been completed without losing trank of things. But the best thing is the easy and orderly transfer to our CAD programme, VISI by Medacat, so there;s nothing lost somewhere in CAD," concludes Alexander Degle.

Source: Meusburger Georg GmbH & Co KG

Metallform uses standard parts from Meusburger in its die-making, inluding guiding elements.

In 2016, Metallform built around 50 new stamping dies, which will be launched in series next year. This is also the reason for the planned purchase of a fourth stamping line. "We are very happy with our decision to use standard parts from Meusburger," summarises Müller.

metallform-bamberg.de
meusburger.com

Corporate Profile

ADVERTISEMENT

Quality, performance, service – that´s KNARR

KNARR – the Powerful partner for tool and mould making, located in the north of Bavaria (Germany), inspires ist customers with high stock availability, flexible manufacturing systems as well as its stable conditions at a reliable high quality. "Quality, Performance and Service" are not without a reason the company's virtues. For more than 20 years, KNARR is best known not only for its large range of standard parts, but also for its customized manufacturing service of special parts. "Our customers benefit especially from an uncomplicated communication as production and distribution are under the same roof" explains Thomas Wunsiedler, responsible of marketing at KNARR.

The motto "Proven quality – now directly from the manufacturer" stands for product families such as limit switches, short stroke cylinders, slide elements, fine centering units or collapsible cores. Despite the products are quite new in KNARR's product portfolio, the company can look back on many years of production experience as a manufacturer of such quality products and can is now able to support its customers even better. In dialogue with the customers, also traditional KNARR topics like ejection technology, centering and guiding elements, injection or cooling are constantly developed further. New items and dimensions recently were published in KNARR's standard parts catalogue 2016.

The same applies to mould bases: they are available as standard types or p-plates, but next to that, also completely machined, according to customer specification. Moreover, KNARR offers its bored plates in two different pillaring systems K and F – both available from stock. These developments reflect the company's promise to be the powerful full-range supplier for tool and mould making.

"We want to face the demanding challenges of mould making together with our customers, by serving more than just standard solutions" Rainer Knarr, owner and managing director, points out. The collapsible cores, which are manufactured by the company itself, the DLC coated high precision flat ejectors with corner radii and the XXL stepless ejector sleeves are such innovative solutions without a doubt. In addition to the ongoing product range expansion, KNARR offers also a user friendly online configurator to its customers, which allows an individual and simple compilation of mould bases within just a few clicks. The desktop edition of this shop, which also includes CAD data, is now available too.

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Our local partner UK/Ireland
Gunther UK Ltd.
Phone: 01474879774, www.gunther.co.uk

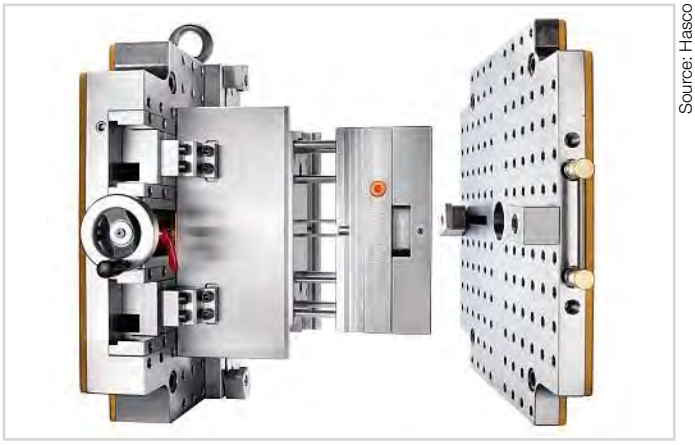
Unbeatable duo for practical small series

Injection moulding – With the Duo Clever Mold System (CMS) A8500/... and the small-series mould K 3600/..., Hasco enables its customers to save time and money in the production of small series.

The Hasco Clever Mold System A8500/... is an efficient and variable mould system for injection moulding machines. It encompasses all the components of a classic mould unit, so that the customer need only focus on the cavity and ejector plate systems.

The A8500/... mould system is fastened to the machine with just four screws on each side, ensuring that it can be rapidly switched between machines. Infinitely variable clamping bars ensure that moulds of different sizes can be readily exchanged.

The small series mould K3600/... incorporates all the elements of relevance on the cavity. The standard component package encompasses the cavity plates, ejector package and corresponding accessory components. It is available in four different mould sizes in the materials 1.2767 and Toolox 33; other sizes and materials can be supplied on request.



Source: Hasco

The A8500 + K3600 have been designed for frequent and rapid mould changes in small series production.

Since the small-series mould does not require centring on the machine, several cavities, each with their own gating position, can be placed in a mould. For articles with an identical mass and colour, set-up times of less than five minutes can be achieved.

For the small-series mould that goes with the Clever Mold System, the plate dimensions and thicknesses, the system diameter, the hole spacing and the bore packages have been adopted from the classic Hasco K-range. This allows each Hasco K3600/... to be made into a "normal" injection mould tool should production demand exceed expectations, freeing up the A8500 for future product development.

Using the Clever Mold System in combination with the small-series mould opens up innovative solutions to low-cost small production runs through rapid mould changes on all standard injection moulding machines. Undercuts, core pullers, slides and hot runners can be directly integrated in the CMS and are available as an adaptor solution for all K3600/... small-series moulds. By employing this duo, customers are able to consistently make small-series moulds in a simplified and reduced form, thus saving time and money, the company says.

hasco.com

Faster cushioning process and gentle application

Source: AHP Merkle

ZHZ 160 are manufactured to DIN/ISO 6020/2 requirements.

Cylinders – AHP Merkle has presented its latest advancements from the last two years at Moulding Expo 2017, which include linear cushioning, the ZHZ 160 rod cylinder and AHP's new block cylinder.

One highlight was the newly developed, linear cushioning. This cushioning, as AHP explains, is not only linear but also evaluable for the designer, and therefore easy to lay. The cushioning process itself is said to be faster and at the same time more gentle in the application. At the fair, this development has been featured with animations and actual measurements. According to AHP Merkle, the linear cushioning is available in the new rod cylinder series, ZHZ 160. It is equipped with hardened and hard-chromed piston rods as standard and its dimensions are manufactured to DIN/ISO 6020/2 requirements, AHP notes.

A new switching solution with inductive sensors, the block cylinder BZP 501 has also been on show at the trade fair. The switching system is also available for high temperature options of up to 140°C, AHP says.

ahp.de

Small heater cartridges added to programme

Source: Türk+Hillinger

Germany-based company, Türk+Hillinger, will be presenting its wide range of products, including its newly introduced small heater cartridges at its booth at the trade fair.

Cartridges – Türk+Hillinger, leading industrial supplier of electrical heating elements, has recently added small heater cartridges with the diameters of 3.1, 4 and 5 mm to its inventory. The company says they are all outfitted with swagged-in and internally connected flexible teflon-insulated leads with a connection length of 1000 mm.

The popular high-performance cartridge heaters HLP have a high surface load, which due to their special design are capable of accommodating more power in a very small space, the company says. The available lengths and diameters also enable more usage in a wide variety of applications.

tuerk-hillinger.de,

UNDERCUTS

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... WITH THE ADJUSTABLE FITTING!

The Double Rack family continues growing, in this occasion we introduce a part that allows the adjustment of the DR/KR rod up to ±2mm. before its fixing. Easier installation and fine tunning of the molding insert at the same time!

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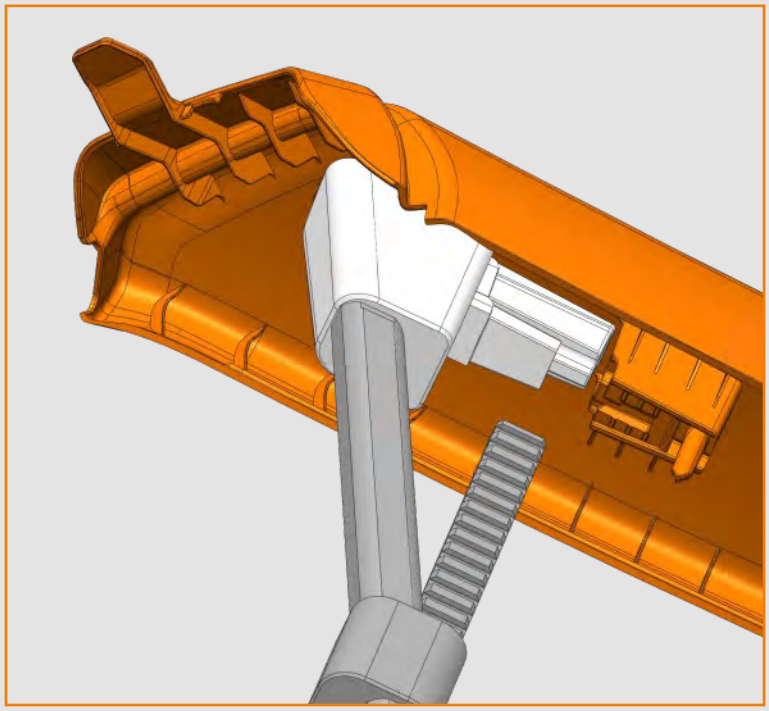

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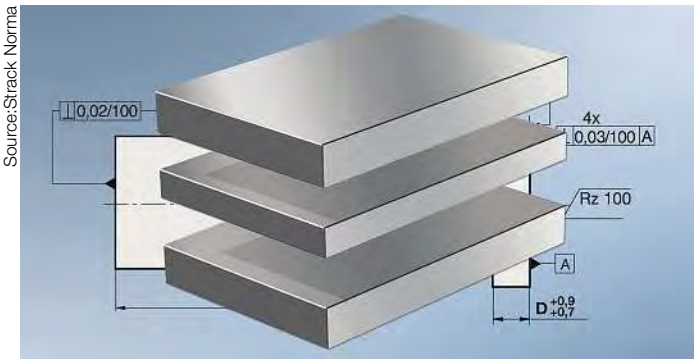
INNOVATIVE SOLUTIONS FOR YOUR MOLDS

Simple plates as a low-cost alternative

Source:Strack Norma



Strack Norma offers two new plates as a cost-effective alternative to their previous plates, the E and P plates.

Plates – Strack Norma has supplemented its product range of plates with the new SE and SE-2 plates. According to the company, the simplified mould plates are a low-cost alternative to the previous E and P-plates.

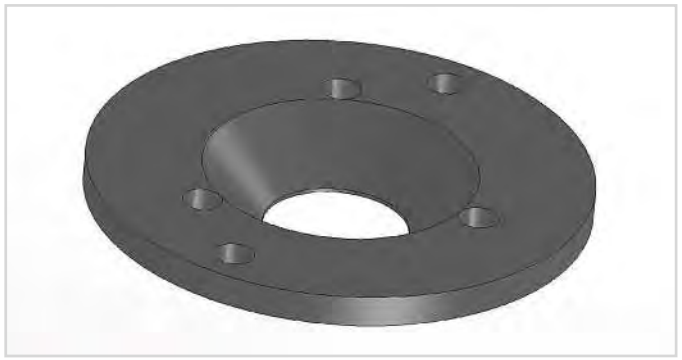
Both the SE and SE-2-plates are milled finely on all sides. SE plates are suited ideally for the production of mould plates with comprehensive machining and are also suitable for inserts, slides, cutting and toolmaking elements, the company notes.

The new plates are part of Strack's Flexiline plate line. The plates are freely selectable in size and plate thickness depending on the external dimensions.

strack.de

Locating rings for quick and easy centring of moulds

Source: HSB Normalien



The locating ring with neck and screw holes speeds up the centring of the mould on the clamping plates of injection-moulding machines.

Locating Rings – HSB Normalien showcased at MEX, among its multiple displays, locating rings with neck and screw holes, its HSB 100 M and HSB 500 M series. The centring of the mould on the clamping plates of the injection-moulding machine is easier and faster with these drilled centring rings as there is no longer the need for the use of screw heads, which is a time-consuming step, HSB says. Both locating rings come with predrilled two and three-hole formats, and optionally with 120° or 180°. The company stocks sizes of 100-160 mm for the 500 M with heights of 17-21 mm, and for the 100 M series, sizes 100-175 mm with heights of 12-17 mm.

hsb-normalien.de

Source: Agathon

Round centring systems for backlash-free guiding offer an alternative to cubic-flat systems.

Guiding, centering systems for high-performance tools

Centering Systems – Agathon has presented its round centring systems for backlash-free guiding and the centring of two plates/mould halves in tool construction (patent pending) at the Moulding Expo 2017. The systems offer an alternative to cubic flat centring systems to allow for lower overall costs, space-saving assembly, little to no maintenance, use in cleanroom environments, high initial load capacity and long tool life, Agathon says.

Standard series 7995 with an integrated cage stop for guiding short ejection strokes have also been presented. Their compact design makes them apt for short-stroke applications. The fine centring system remains in the preloaded position over the whole stroke and the pillar does not leave the bush, Agathon noted. With new design elements, a fine centring system with high process stability even for this type of application has been developed. Backlash-free roller guides for high-performance injection moulds and hybrid and punching tools will be on show as well.

Besides the catalogue programme, special parts can also be manufactured according to customer drawings, the company explains.

agathon.ch

Offline ordering

Standard parts – Germany-based Knarr Werkzeugfertigung, manufacturer and full-range supplier in the field of standard and special parts for mould making, now offers its online ordering and configuration system in a desktop version, so there is no need to be connected to the internet, the company explains.

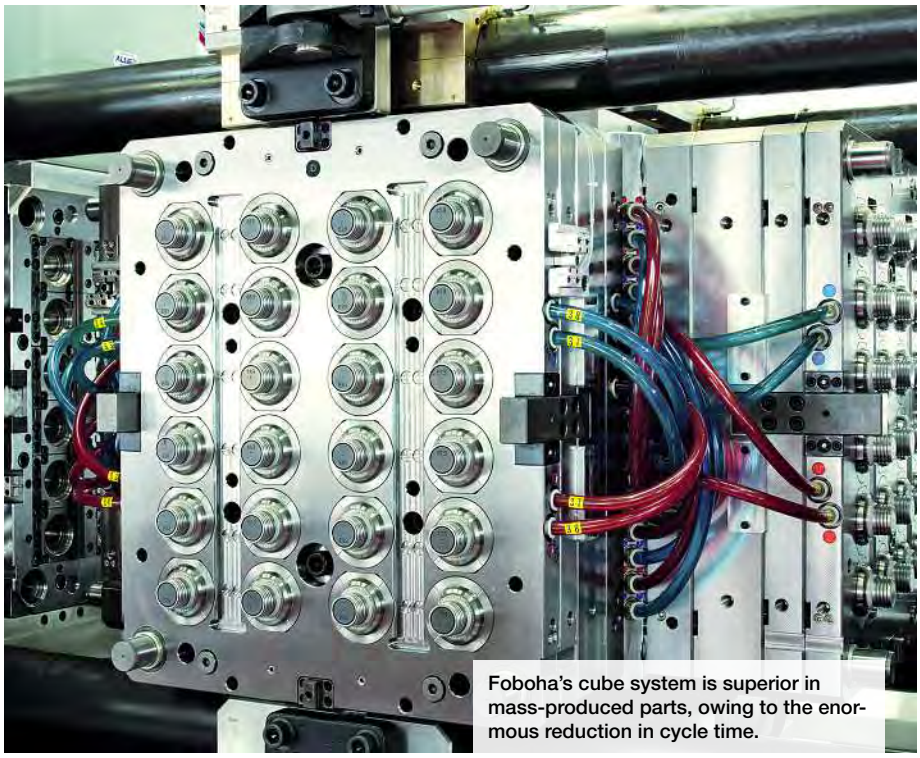
Similar to the online version, users can chose between the standard parts, single plates or the configuration tool for complete mould bases; be it for ejection and demoulding, centering and guiding elements, injection/lettering/marking, cooling/tempering, slide elements, general parts and accessories, Knarr says. Distribution is operated under the division, Knarr Vertriebs.

knarr.com

Source: Knarr

Knarr's online shop is now available as a desktop version.

Source: Foboha



Foboha's cube system is superior in mass-produced parts, owing to the enormous reduction in cycle time.

Three cube applications

Cube Technology – Foboha showcased an integrated injection blow moulding concept with its patented cube technology, as well as the production of two-component preforms on a cube mould at K 2016 in Düsseldorf.

The company explained that the production of preforms with Mu Cell technology on a 2 × 4-fold cube mould was presented.

The two-component preform consists in its core component of a foam that is injected via a Mu Cell facility. After the blow-moulding process, the special foam creates a metallic effect without actually adding metallic pigments. This means, for example, that silver coloured bottles can be recycled normally because the material is nothing but PET.

"The cycle time necessary for a two- or one-component product can be reduced by up to 30%."

Foboha Germany GmbH

On the opposite side, the foam core is sheathed with compact PET, generating the outer shape and the thread of the preform. It noted that the shot weight for four preforms is 124 grammes.

Furthermore, during a pilot project, blow-moulded one-component small containers of polypropylene were produced for the first time using a cube mould, Foboha noted. In an 8-cavity cube mould, which can be upscaled many times over for high output production, the previously produced preforms were blown up in the opposite mould position parallel to injection moulding. In the fourth station, a six-axis robot removed the finished containers. The shot weight was 8 grammes per container. The narrowest tolerances were achieved both in the thread area and container body. By substituting the material that until now was made of glass components with parts made of polypropylene, both production costs and packaging weight was reduced considerably, the company explained. This significantly reduces unit costs.

The company has been manufacturing injection blow moulds for decades. Now, this technology is being implemented as cube moulds for high output figures for the first time.

The advantages of cube technology become especially apparent with the production of mass products such as with seals for food and non-food sectors. The mould shown in the image above demonstrates a specially implemented solution of the film hinge..

Foboha (Adval Tech Molds Business) operates as a business within the Molding Solutions strategic business unit of Barnes Group's Industrial Segment.

advaltech.com

Source: Cumsa

From the DR range of the company's rack family.

Cumsa added developments to its product family

Components – Cumsa has released a number of developments to its rack family. It said that based on the company's continuous research and customer feedback, it also made several improvements to its rack system.

As such, its DR range is being expanded with the addition of a smaller 16 mm size. At the other end of the scale, two larger units, KR58 and KR76, are being added to the KR rang, specifically designed for large tools.

These changes include developments, namely, a new "fast fit" system that is designed to offer a quick and easy solution for fitting the insert to the shaft, and the unification of the 100 mm and 125 mm stroke racks' geometry. This would therefore mean that all of these parts will have the same installation process. The fixing key for the shaft in the ejector plates have been removed, which will provide more latitude to the customers to implement their own bespoke solution. The base units will now be given a black oxide treatment, while the material and hardness will remain the same. Furthermore, the KR22 will now include an O-ring on its shaft, similar to the KR28 & KR34.

Founded in 1979, today Cumsa is still a family company dedicated to the design, manufacturing and distribution of solutions for the mouldmaking and moulding industries. Apart from its direct branches in Portugal, Italy, China and United States, it also has a complete distribution network in over 40 countries. Moreover, the company has a strong focus on R&D.

cumsa.com

Remote monitoring of a mould's complete hisotry

Data is relayed to the cloud-based CVe Live website.

Source: Progressive Components

Monitoring System – Having access to a mould's complete history and data can be valuable to mould builders and processors alike. Now, the American components manufacturer Progressive Components says its CVe mould monitoring system has been installed on thousands of tools worldwide since its initial release in 2011. New features have been added, allowing unprecedented visibility of tooling and production. The monitor enables the user to supervise timely production around the world because the data is relayed to the cloud-based CVe Live website.

New features include text alerts to designated recipients when a tool isn't performing as expected., text alerts to designated recipients when a tool isn't performing as expected, Mold Downtime and Reject tracking give visibility to common issues and trends, and Work Order Tracking that was added to the existing Preventive Maintenance capability to enable users to track and identify recurring issues in order to prevent future unscheduled maintenance.

The Performance Tracking and History aggregates data by both the mould and the moulding machine allow users to schedule tools for presses they perform best in, thereby optimising production output, the company says.

"The CVe platform serves up information in an easy-to-understand format, enabling users to identify poorly performing moulds before they impact the supply chain," states Glenn Starkey, President of Progressive Components, and adds: "This new release further expands on an industry-exclusive capability that allows users to access information online via a secured website using a PC, smartphone or tablet."

procomps.com

Standard components for modular concepts

Standard Parts – Austria-based manufacturer of high-precision standard parts, Meusburger, offers convenient and cost-effective standard components that guarantee the easy installation of die modules, the company claims.

Key advantages when using these modules include quick tool changes and therefore reduced machine standstill time. The company which has over 50 years of experience in working with steel offers users the possibility to use these advantages with its extensive range of products for the modular concepts. Various elements are also available for guiding in the module. For example, the range contains different items for positioning and fixing, which are required for the precise assembly of modules with repeatable accuracy. These are suitable for a huge range of applications. The components can be ordered at Meusburger's online shop.

meusburger.com

Source: Meusburger

Standard components for the modular concept from Muesburger.

One step ahead of the competitors – with standardisation

meusburger®
SETTING STANDARDS

The Meusburger Group is the leading international manufacturer of high-quality standard parts, hot runner and control systems and selected workshop equipment. More than 17,500 customers all over the world make use of the numerous advantages of standardisation and benefit from the company's over 50 years of experience in working with steel. The permanent availability of products makes the Meusburger Group the reliable and global partner for die, mould, jigs and fixtures construction.

Meusburger sets standards

High-precision standard parts by Meusburger optimise the entire process chain. With the consistent use of high-quality standard parts, you can benefit from a large cost-saving potential in die, mould, and jigs and fixtures construction and the subsequent production of parts. All plates and bars by Meusburger are heat treated for stress relief and therefore provide a reliable basis for high-grade moulds, dies, and jigs and fixtures.

Short lead times

Via state-of-the-art production lines and well designed processes, the products arrive at the industry's largest standard parts warehouse for plates and accessories. The in-house quality assurance ensures consistently high quality of all products. The optimised logistics chain guarantees short lead times of 24 or 48 hours.

Reliable and global partner for making dies, moulds, jigs and fixtures

At Meusburger the range of products and services is continuously adapted to meet the customers' needs. Through easy ordering options, continuous availability of the products, short lead times and a reduced number of suppliers, the customer can save time and money. Clearly arranged and informative sales documents as well as top service provided by a competent team of in-house and field sales staff perfectly complete the service package

PSG hot runner and control systems give you reliability

PSG offers hot runner systems and control systems first-hand. The high-quality products are developed, produced and tested under practical conditions in the Mannheim and Seckach locations. So the highest quality is guaranteed – made in Germany. A wide range of industry knowledge and more than 50 years of experience in the plastic industry are available to customers. Whether in the automotive or medical industry or in the areas of consumption, transport packaging and caps and closures – wherever temperatures or pressure are regulated, PSG is there with their control systems and temperature regulation components.

Partnership-oriented, global, longstanding

Customers appreciate the cooperative partnership as well as the industry and cross-technology expertise at PSG. PSG stands side by side with its partners for the realisation of special solutions. In addition, PSG has a global network of more than 30 partners in Europe, Asia and America. Since both customers and employees remain loyal to PSG, you have a contact for years who simply knows what is important for you

Fact box

Turnover in 2016: 270 million EUR
Catalogue items: 85,000 – 99 % availability
Products: standard parts and workshop equipment for making dies, moulds, jigs and fixtures
Customers: more than 17,500 all over the world
Percentage exported: 93%
Sales branches in: India, China, Turkey, the U.S. and Mexico
Members of staff: 1400

Meusburger Georg GmbH & Co KG
Kesselstr. 42
6960 Wolfurt
Austria
Phone 00 43 (0) 55 74 / 67 06-0
Fax 00 43 (0) 55 74 / 67 06-11
sales@meusburger.com
www.meusburger.com

Quick Sourcing Grid: Tool Mould Components

Source: Agathon

Company | Contact	Ad on page	Company profile at etmm-online.com	Bases	Bushings	Cavities	Connectors/Couplings	Cooling Systems
Cumsa, Sant Just Desvern (Barcelona), ES | www.cumsa.com	61, 68, 69						●
Eberhard Werkzeugtechnologie, Nordheim, DE | www.eberhard.de	84			●			
Knarr Vertriebs GmbH, Helmbrechts, DE | www.knarr.com	59		●	●	●	●	●
Meusburger Georg GmbH & Co. KG, Wolfurt, AT | www.meusburger.com	1, 65, 66, 67		●	●		●	●
Agathon AG Normalien, Bellach, CH | www.agathon.ch				●			
AHP Merkle GmbH, Gottenheim, DE | www.ahp.de							
A-One Moulds, Pune, IN | www.indiamoulds.com					●		
Braunform GmbH Kunststoff- und Pharmatechnik, Bahlingen am Kaiserstuhl, DE | www.braunform.com			●		●		●
Carrs Toolsteel Technologies, Tipton, W Midlands, UK | www.carrs-tool.co.uk			●				
Deutsche Edelstahlwerke GmbH, Witten, DE | www.dew-stahl.com			●		●		●
DME Europe, Mechelen, BE | www.dmeeu.com			●	●		●	●
Dongsan Bearing Corporation, Namdong-gu, Incheon, KR | www.dongsanbearing.com				●			
EDM-Tec OHG, Kaisersesch, DE | www.edm-tec.de							
FCPK Bytow Sp. z.o.o., Bytow, PL | www.fcpk.pl			●	●	●	●	●
Fibro GmbH, Haßmersheim, DE | www.fibro.de				●		●	
Hasco Hasenclever GmbH + Co KG, Lüdenscheid, DE | www.hasco.com			●	●		●	●
Helix Tools/Arti Takim, Bursa, TR | www.artitakim.com						●	
Hitachi Metals Europe GmbH, Düsseldorf, DE | www.hitachi-metals.co.jp/e							
HSB Normalien GmbH, Schwaigern, DE | www.hsb-normalien.de				●	●	●	
i-mold GmbH & Co. KG, Michelstadt, DE | www.i-mold.com							

	Cores	Ejection Systems	Ejector Pins/Sleeves/Plates	Fasteners	Frame/Insert Systems	Guides	Heating Equipment	Hydraulic Cylinders	Interlocks	Latch Locks	Leader Pins	Mould Port Plugs/Seals	Quick Mould-Change Systems	Slides/Slide Locks	Sockets	Springs	Stop Pins/Sleeves	Support Pillars
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Quick Sourcing Grid: Tool Mould Components

Source: Agathon

Company | Contact	Ad on page	Company profile at etmm-online.com	Bases	Bushings	Cavities	Connectors/Couplings	Cooling Systems
Millutensil s.r.l., Milano, IT | www.millutensil.com	33, 36, 37			●			
Präzi-Flachstahl AG, Everswinkel, DE | www.praezi.de	23						
Progressive Components, Wauconda, USA | www.procomps.com	2			●		●	●
Türk+Hillinger GmbH, Tuttlingen, DE | www.tuerk-hillinger.de	5						
Keronite International Ltd., Haverhill, UK | www.keronite.com							
MHS - Mold Hotrunner Solutions Inc., Georgetown, CA | www.moldhotrunnersolutions.com				●			
Nonnenmann GmbH Präzisionsteile, Winterbach, DE | www.nonnenmann-gmbh.de				●		●	●
Opitz GmbH, Aschaffenburg, DE | www.opitz-gmbh.de							
Padm Tooling, Capelle aan den Ijssel, NL | www.padm-tooling.com			●	●	●	●	
Pedrotti S.p.A., Gavardo (BS), IT | www.pedrotti.it			●	●		●	●
Roehr Tool Corp., Hudson, USA | www.roehrtool.com							
Schöttli AG, Diessenhofen, CH | www.schoettli.com					●		
Stäubli Faverges SCA, Faverges, FR | www.staubli.com						●	●
Strack Norma GmbH & Co. KG, Lüdenscheid, DE | www.strack.de			●	●		●	●
Tecnomagnete, SpA, Lainate (MI), IT | www.tecnomagnete.com							
Tekis Teknik Erozyon Kalip Sanayi Ve Ticaret A.S., Kocaeli, TR | www.tekiskalip.com.tr			●	●	●		
Tirad s.r.o., Zeletava, CZ | www.tirad.cz			●				
Tribo Hartstoff GmbH, Barchfeld-Immelborn, DE | www.tribo.de							
Weber Manufacturing Technologies Inc., Midland, CA | www.webermfg.ca			●		●		
Wema GmbH, Lüdenscheid, DE | www.wema.de						●	●

Cores	Ejection Systems	Ejector Pins/Sleeves/Plates	Fasteners	Frame/Insert Systems	Guides	Heating Equipment	Hydraulic Cylinders	Interlocks	Latch Locks	Leader Pins	Mould Port Plugs/Seals	Quick Mould-Change Systems	Slides/Slide Locks	Sockets	Springs	Stop Pins/Sleeves	Support Pillars
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From easy adaptation to specific application

Hot runner solutions are essential for tool and mould making. The latest technology from this field has been shown at Moulding Expo 2017. Ewikon has presented the latest developments in multi-tip and valve gate technology with focus on multi-cavity applications.

ETMM

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Founded in 1979, Ewikon is a German provider of hot runner system solutions. Its headquarters in Frankenberg includes R&D, design, production and sales departments and employ more than 265 qualified staff.

The Ewikon micro-manifold technology is a solution for very compact moulds with an extremely high number of cavities. It enables the cost-effective large-scale production of parts with small shot weights, the company says. A system consists of fully balanced micro-manifolds with four screwed-in heat-conductive tip inserts, each of which are fed by a main manifold placed on a second level.

A manifold/four-tip cluster requires only one coil heater and one control zone. Thus, the expenditure for control technology is considerably reduced. Furthermore, the reduced space requirement for electric wiring allows for very compact moulds with maximum stability. A hot-half concept with standardised dimensions for moulds with up to 192 cavities is available.

Another featured product was the Ewikon HPS III-MH multi-tip nozzle concept, which, according to Ewikon, is one of the most advanced solutions for direct side gating available today. Standard materials as well as technical resins and filled materials can be processed easily. The patent-pending installation technology for the tip inserts facilitates installation and exchange from the parting line of the mould and requires only standard mould inserts.

The nozzles come in several sizes for shot weights of up to 40g per gate and are available for linear or radial arrangement of parts. The field of side gating applications is growing steadily and now includes much more than the typical target market (medical), which uses the HPS III-MH nozzle, e.g., for high-precision moulding of syringes or pipettes.

Moreover, side gating is proving to be a more cost-effective solution than conventional gating in other areas as well, including the electronics industry and when producing technical parts.

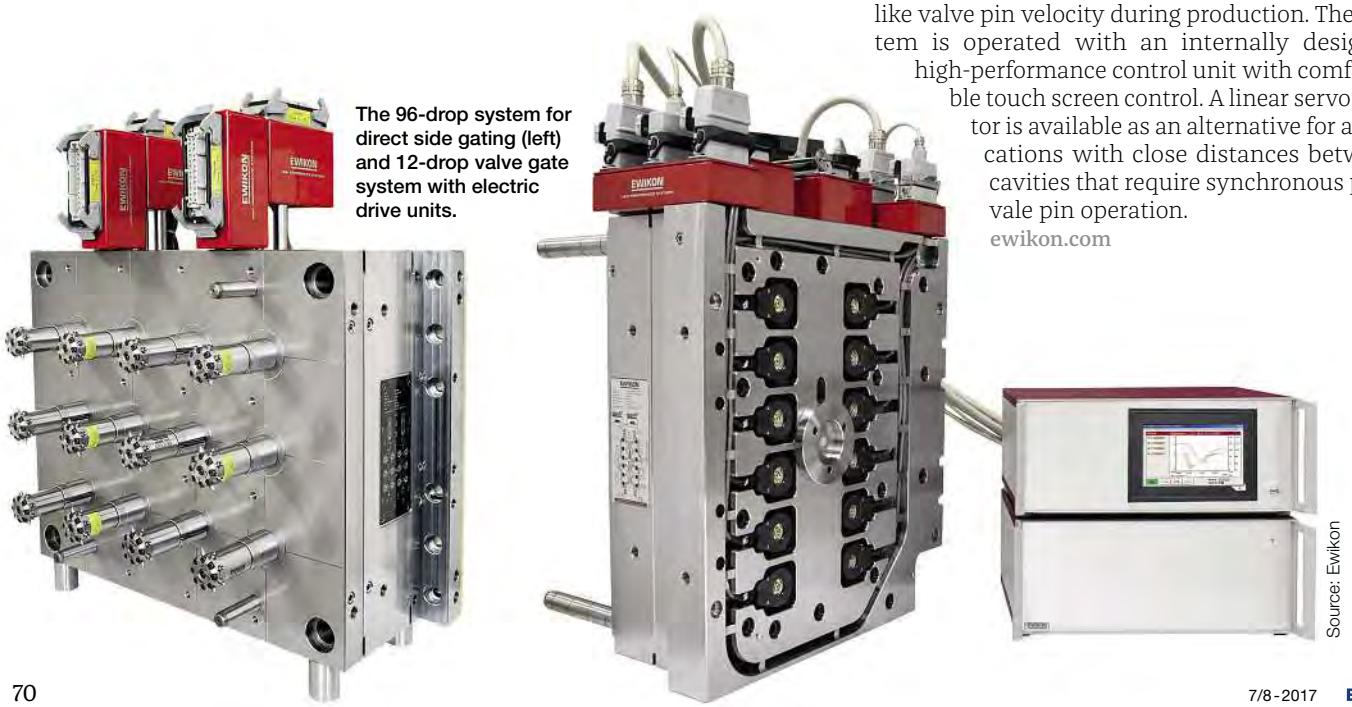
Side gating more cost-effective than conventional gating

The Ewikon range of valve gate solutions offers a variety of system designs and drive options for easy adaptation to specific application requirements. The second generation of electric drive units with step-motor technology is available for more demanding applications.

Better yet, there is zero emission of particles compared to pneumatic or hydraulic drive units. Thus, this technology is particularly suitable for cleanroom applications. Furthermore, the system enables the individual adaptation of operating parameters to the process requirements in several valve pin operating modes.

Examples are a function for complex movement profiles of the valvepins, which makes it possible to approach several positions with one injection cycle, and the fast fine-adjustment of parameters like valve pin velocity during production. The system is operated with an internally designed high-performance control unit with comfortable touch screen control. A linear servo-motor is available as an alternative for applications with close distances between cavities that require synchronous plate vale pin operation.

ewikon.com



The 96-drop system for direct side gating (left) and 12-drop valve gate system with electric drive units.

Source: Ewikon

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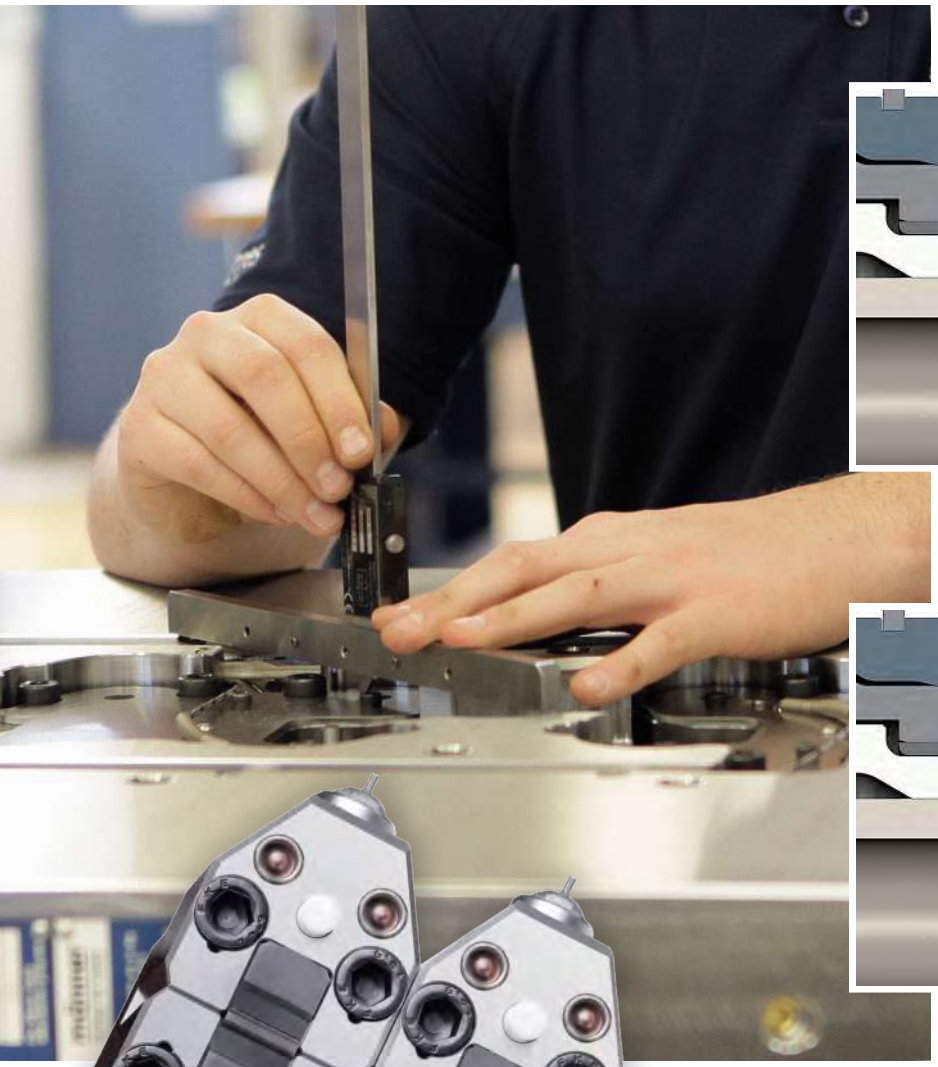
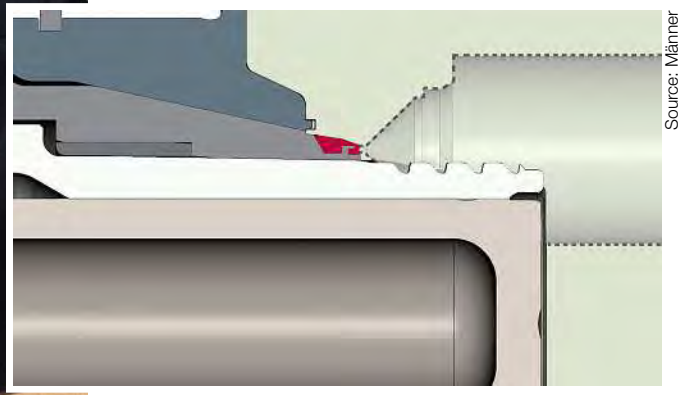
hot runner solutions

Multi-component production using side valve gate nozzle

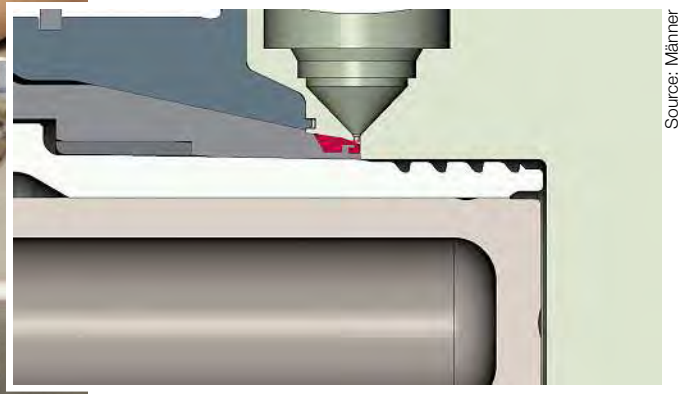
Initially developed for manufacturing injection bodies and tubular geometries, the side valve gate nozzle Männer Edgeline is now used in a variety of applications. Some production solutions can even be implemented using only lateral injection.





Source: Männer

The frontal injection position with a common hot runner system is not practicable due to the collision with the cube-sided mould core.



Source: Männer

Side injection via Männer Edgeline.

Source: Männer

The side valve gate nozzle from hot runner specialist Männer features valve pins that move at a right angle with respect to the opening and closing of the mould. With its advanced capabilities, Edgeline lets users enjoy the benefits of a hot runner system with the original cylindrical valve gate – featuring defined pin opening and closing, cosmetic gate quality, resin savings, and above all high process reliability, even in applications requiring side injection. The capability of the Edgeline valve gate system becomes evident in the production of two-component screw caps, Männer says.

The patented side valve gate system is used in a 24+24-cavity two-component cube mould. The screw cap is made of PP with an inner TPE seal. Cube technology permits the process steps for mould-filling component 1, cooling, mould-filling component 2, and demoulding to take place simultaneously, significantly reducing cycle time. Additional benefits of cube technology include a higher

ETMM

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Solutions for Plastics

Männer develops high-tech solutions for injection moulding applications. For the production of plastic parts capable of meeting the most demanding requirements for precision and surface quality, Männer delivers high-performance moulds, tailored hot runner technology, and innovative micropart manufacturing systems.

Founded in 1965, Männer is among the industry's leading suppliers, with more than 500 employees and production, sales, and service locations in Europe, the USA, and Asia. Männer has been a business of Barnes Group since 2013.

Founded in 1857, Barnes Group is an international industrial and aerospace manufacturer and service provider, serving a wide range of end markets and customers.

number of cavities within the same working surface and an improved energy footprint. The cube mould works with a Männer single-drop valve gate system and the Männer Edgeline side valve gate system.

While the lid is usually injection-moulded first and then the sealing ring, the use of the Edgeline system permits a different approach. In the first parting plane, the TPE seal is laterally injection-moulded by the Edgeline nozzle. On this nozzle, specially developed for side injection moulding, the nozzle body, complete with pneumatics, lies in the direction of the mould as usual.

However, the pins move at right angles to the opening and closing direction of the mould, rather than in the same direction. This enables the nozzle body to be positioned so that it does not collide with the cube-sided mould core. The actual lid injection is moulded over the seal in the second parting plane only. This innovative solution can be put into practice with lateral injection only.

Suitable for wide range of plastic resins

The Edgeline valve gate nozzle covers a wide range of plastic resins. The system is ideal for processing even glass substitutes such as COC or COP, which are, for example, used in the production of prefilled syringes. The nozzle design helps to maximise stress-free resin processing, making Edgeline suitable not only for commodity resins, but also for sensitive and demanding resins.

An extended pin opening stroke has made it possible to increase the open flow area, reducing the required pressure through the nozzle. The heater elements for the nozzle body, nozzle tip, and the nozzle base, along with special heat-conducting materials, are some of the key features for reaching an optimal temperature profile along the entire flow path.

The patented Männer Edgeline system enables the benefits of cylindrical valve gates to be used even with lateral injection. Benefits include defined opening and closing of the valve pins, superior gate quality, material savings, and above all, excellent process reliability. It also enables innovative solutions to be used, such as cube technology for two-component products.

maenner-group.com.

How to choose the correct hot runner supplier

When confronted with the increase in available hot runner systems on the market, making the correct choice for a hot runner supplier is critical. Three qualities are particularly important to consider in the decision-making process: analysis capabilities, design input and product range.

Source: ©pogonici - stock.adobe.com / Fotolia.com

When looking for a supplier, manufacturers often feel overwhelmed by the countless offers.

During the infant stages of a new mould build it is critical that a hot runner designer can provide input and feedback on the part design and layout of the mould. Analysis software programs can assist with the correct gate location and number of gates, warpage, shrinkage, pressure drop, weld lines, gas traps, shear stress, temperature rise and part fill time so that the performance of the hot runner and the mould are optimised.

Incorrect use of a hot runner can adversely affect the performance of a mould and the product it produces. An example of this is the degradation of material within a hot runner or mould cavity. Some factors affecting plastic material degradation are: Poor venting, increasing melt temperature or injection velocity, dead areas or shear points within the hot runner, and long residence times inside the hot runner.

Proper hot runner analysis and manufacture can assist with:

- Identifying likely areas for gas traps to determine vent placement
- Optimising melt channel diameters to keep shear stresses at ideal values
- Thermocouple placement for accurate and reliable heater control
- Advice on the best way to profile and polish melt channels
- Advice on the correct diameter reduction techniques
- Optimising melt channel lengths to each cavity, particularly in family moulds

Thermal finite element analysis (FEA) can assist with determining the optimum thermal profile of the hot runner system. Through the use of proper analysis tools and techniques, the hot runner supplier can predict issues at an early design stage and make recommendations to the mould-maker for an improved result.

During the design process, mould-makers should look for a partner that can supply hot runner drawings and models that are easily integrated into their mould designs. Hot runner 3-D models used for approval drawings ensure they are simple for the mould designer to check and can easily provide gate insert or plate drawings for manufacturing. The hot runner supplier's ability to be flexible with drawing file formats and CAD packages is key to a successful partnership.

Correct part design is crucial to a successful mould build and there are many areas where the hot runner supplier can offer advice based on experience in the injection moulding industry. Design features such as cooling circuits around the gate, dimples in the gate area and thin wall sections can be commented on and improvements made before

a commitment to a particular design. When hot runner suppliers are invited to be involved in projects at an early stage they are able to provide input into part design, cavity design and mould layout that can be crucial to a successful mould.

Competition, the rising costs of materials, time restraints and new technologies are pressures that are not new, but exponentially increasing. Efficient use of time, mould and plastic materials is critical to the success of every new tooling program. Ensuring optimisation at the earliest stage of design when the cost of change is lowest will save time and money throughout the build process. Commissioning, production efficiency, part quality, cycle time and material content is also influenced by time invested with your hot runner supplier during the early design stage.

The cost of making corrections or modifications to a hot runner after manufacturing is expensive and time-consuming. Quick yet accurate engineering is critical to keeping a new tool on time and within budget. The use of leading-edge technology and the knowledge base within the hot runner supplier's engineering group is crucial when building a high-performance and high-quality mould.

Product Range

Hot runner technology has advanced significantly in the last decade. A hot runner supplier should be able to assist you in all areas of gating styles, dimple design, cooling requirements, electrical optimisation and gating position for precise flow balancing. When faced with the difficult choice of selecting the correct hot runner for your mould, accurate professional advice and clear explanations of the complex technology are important to the build of a high-performance solution.

A broad product range that covers all applications and markets is critical. Using a single supplier for all applications removes compatibility and consistency issues that potentially can occur when working with a variety of suppliers. A strong working relationship with one supplier streamlines the whole process for a mould-maker, whether it is a simple hot sprue, complex multi-material, hot half or family mould. Working closely with a hot runner specialist enables mould-makers to deliver runnerless tooling that is right for the application and performs to the customer's exacting specifications. The mould-maker's choice in a hot runner supplier can dramatically influence the quality and performance of the mould and the moulded parts. The ideal hot runner supplier will assist with analysis during part design and mould design, provide compatible and accurate design information and utilise the latest technology to improve product performance. Overall customer satisfaction builds strong mould-maker and moulder relationships. In all cases – and the relationship with a hot runner supplier is no exception – this results in repeat business and sales growth.

Article provided by Mastip: mastip.com

Direct side gating in compact, multi-cavity moulds

Barbara Schulz

At last year's K-show in Düsseldorf, Günther Heisskanaltechnik has focused on its Okta Flow multi-tip nozzle for side gating. However, there are said to be a variety of unique selling points setting the company apart from the competition.

The Okta Flow type OMT multi-tip hot-runner nozzle is designed for direct side gating of products in compact, multi-cavity moulds.

Source: Günther

You sometimes have to dare thinking outside the box," Günther Managing Director Siegrid Sommer said in an interview with ETMM, referring to the company's innovative products and lean manufacturing setup. Günther manufactures all hot runners at its headquarters in Frankenberg and distinguishes itself with a very high degree of vertical integration. Around 220 staff including 19 apprentices are working as a team to make the company what it is today: a globally competitive manufacturer of complex hot runner systems.

Talking about Günther's range of hot runner systems and interesting history, Sommer emphasised that the company's success is not only based on the development of hot runner systems that serve the injection moulding industry through an optimum temperature distribution and control, but also by focussing on the tool and mould maker, who needs to ensure the optimum integration of the hot runner system into the mould. According to Sommer, the two-part shaft, which consists of a titanium alloy with low thermal conductivity in the front area and an integrated air gap, assures effective insulation and, accordingly, a low loss of heat from the hot runner nozzle to the mould. The temperature distribution throughout the nozzle is therefore very homogeneous.

Tool and mould makers benefits from modular two-part shaft system

Moreover, the tool and mould maker benefits from the modular two-part shaft system, Sommer explained. While the mould maker normally has to work with very tight tolerances when manufacturing the mould to fit the hot runner nozzles, the shaft around the nozzle in Günther's solution features a greater diameter and only needs the mould maker to cut a through-hole with a H7 tolerance. Furthermore, the modular system also allows for easy integration of the valve gate technology into the system.

According to Günther, the needle guidance inside the nozzle promises an economical and virtually wear-free operation. During the needle's closing movement, it is first centred by means of a conical guide until it is lowered completely and precisely into the cylindrical sealing. When necessary, the needle guidance can be replaced without much effort. The Günther sealing element in the manifold is said to assure optimum needle guidance and

Source: Günther

Günther's mini hot runner systems feature nozzles with individually controlled tips and are said to be ideal for the gating of small parts – with close cavity spacing.

Source: Günther

The two-part shaft in Günther hot runner nozzles offers optimum thermal separation from the mould. The shaft, which is made of two different materials, prevents uncontrolled thermal dissipation and allows for the best possible thermal separation between the mould and the nozzle.

reliability in the manufacturing process. The valve-gate needle in multi-point valve gating systems can be driven by means of single-needle valves, step motors, a lifting mechanism or a sliding-cam mechanism. These various types of drives enable Günther to offer a suitable solution for every customer requirement, Sommer emphasised.

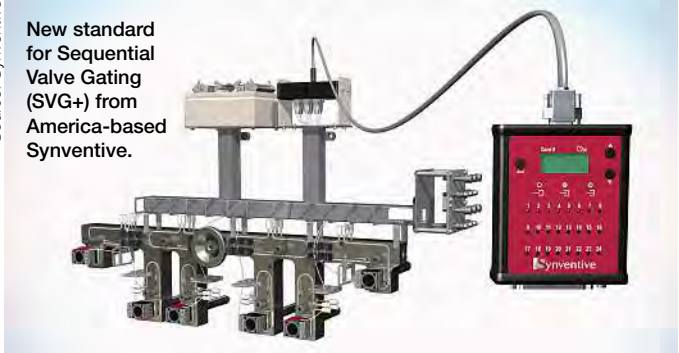
Of course, Günther has showcased its innovative Blue Flow technology with the slim, efficient thick-film heating for hot-runner nozzles at K 2016, but the focus has been on the company's Octa Flow multi-tip hot runner nozzle. The Okta Flow type OMT multi-tip hot-runner nozzle was designed for the direct side gating of products in compact, multi-cavity moulds. According to Günther, this nozzle type allows for a cost-effective mould design with undivided inserts. The company optionally offers nozzle tips with protection against wear while processing filled materials. The nozzle is available as either a radial or a linear version and can be used as a single nozzle if it has a heated adapter.

Günther Heisskanaltechnik lists the following product features:

- side gating without cold slug,
- pitch circle diameters: PC Ø 45mm, PC Ø 65 mm,
- tips individually replaceable on the machine,
- up to eight nozzle tips,
- optimum temperature management,
- heated tip area,
- floating bearings independent of heat expansion,
- undivided inserts

guenther-heisskanal.de

Source: Synventive



New standard for Sequential Valve Gating (SVG+) from America-based Synventive.

Hot runners with modular actuators, no cooling lines

Hot Runners – Synventive has launched its SVG+ hot runner systems. With several proprietorial and patented design features, they offer high performance, efficiency and reliability for sequential moulding of large parts.

The company says the system's simple design eliminates the need for cooling lines or plates. External monitoring and diagnostic tools by way of a Valve Monitoring Interface (VMI) for monitoring, diagnostics and troubleshooting are claimed to facilitate less downtime and less scrap. Also, this provides real time sequential valve gate status, the ease of set-up and confirms that the piston is traveling as intended. It is also designed for the straightforward upgrade to the company's "active Gate" technology. Moreover, high quality Class A part surface finishes can be achieved more quickly and that it can mould parts with complex geometries and high dimensional stability.

The SVG+ actuated systems are equipped with new modular actuators and patent-pending Syncool 3 technology, which provides indirect cooling of the actuators without the need for separate cooling lines. As such, it preheats without doing damage to actuator or seals, eliminates clogged or leaking cooling lines and prolongs actuator seal life. Additionally, manifold temperature uniformity is improved and removing the cooling plate facilitates quick-mould changes by eliminating the need to cool down the hot runner to prevent the degrading of the hydraulic fluid.

synventive.com

Source: Husky

The new series of nozzles is said to provid customers more options to produce better quality parts.

Expansion of award-winning valve-gate technology

Nozzles – Expanding the award-winning valve gate technology product line released in 2015, Husky has now presented its Ultra Helix 350 valve gate. This new series of nozzles provides more options for creating a wider range of applications and to produce better quality parts, the company says.

Husky conducted extensive research to understand the fundamentals of valve gate dynamics, materials, wear and gate quality while developing this nozzle. Coming as close as possible to zero-gate vestige performance, Ultra Helix improves part quality.

Additionally, Ultra Helix nozzles build on the company's track record of industry-leading thermal uniformity, which in turn virtually eliminates mechanical wear on the valve stems and cavity steel, Husky claims.

"Husky's Ultra Helix valve gates have increased our confidence in hot runner valve gate moulding," says Casey Miller, senior tooling engineer, C&J Industries, an FDA-registered Husky customer, focusing on the manufacture of medical devices. He adds, "Although other manufacturers have gates incorporated in the nozzle tips similar to the Ultra Helix, we have not seen one that has the valve stem with continuous guidance throughout the cycle."

In 2015, Husky won the Ringier Technology Innovation Award for the development of its Ultra Helix valve-gate technology and its contribution to production efficiency and cost effectiveness.

husky.ca

Interaction in injection moulding processes ensures safety

Temperature Control – PSG's goal is to increase safety in injection moulding processes. According to the company, its Profi-Temp+, is interacts with machines or production parts to "understand each other". Here, the standardisation of data interfaces is the key to link the temperature control system 4.0, PSG explains.

Profi-Temp+ has a a variety of data interfaces and protocol that allow for connectivity to machine controls, process control systems or process data collection systems to form the basis for the temperature control system 4.0. They access all processes and configuration parameters and make the process clear.

With its compact design, this system has a small footprint. The Smart Power Limitation (SPL) function prevents the heating power required by the heating outputs for the control from exceeding the available power. Profi-Temp+ measures the heating current that is required for the process to be carried out without interrupting the control and output of heating pulses.

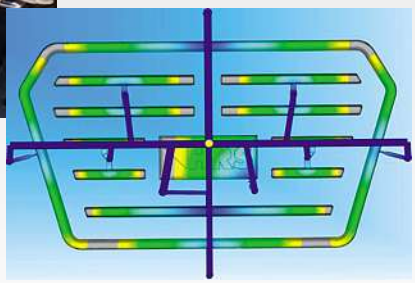
psg-online.de

Source: PSG

The profi-Temp+, designed for hot runner control 4.0 interacts with machines or production parts to "mutually understand each other".

Chrome components in a single shot

With its Flexflow technology, Italian hot-runner specialist HRS Flow has developed an innovative solution for the injection moulding of high-quality parts primarily for the automotive industry.



Comparison between real moulding and FLEXflow simulation. Flow balancing predictivity matches reality perfectly.

Source: HRS Flow

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INFO

With Flexflow, the individual valve pins of the currently up to 16 hot-runner nozzles can be precisely opened and closed sequentially, independently of one another. Depending on the opening or closing step, up to eight valve positions can be predefined with a motor accuracy of ± 10µm.

Flexflow is a servo-driven, finely regulated valve gate system for hot-runner systems. The precise control of the melt flow of each individual hot-runner nozzle permits a very balanced filling of all cavities and uniform pressure distribution during the packing stage, even with multiple gating and widely varying cavity volumes.

The radiator grille from the HRS Flow test mould, measuring 580 mm x 330 mm with a total parts weight of 297 g and different wall thickness from 2 mm to 3 mm on cavities, is subsequently chrome-plated and must therefore meet very high demands in terms of surface quality. According to HRS Flow, with the Flexflow valve gate system, even large-area parts can be moulded with high-grade surfaces.

With the customised opening of the valves, the dreaded pressure loss that occurs with conventional cascade injection moulding methods is avoided, and, with it, the accompanying marks on the moulded part. Moreover, controlled pin position during the packing stage make it possible to reach independent pressure control on each gate and thus desired shrinkage for each cavity, speeding-up the matching of tolerance requirement and avoiding expensive modification of tools. The injection-moulded radiator grille is produced in a single shot over ten gating points with nozzles from HRS Flow's MA series. In the past, to achieve the different shot weights and still meet the demands for chrome-plating and assembly tolerances, separate moulds would have been needed to produce this high-quality part, HRS Flow says.

hrsflow.com

Quick Sourcing Grid: Hot Runner Systems, Components & Supplies

Source: Günther

Company | Contact	Ad on page	Heating Elements	Hot Halves, Fully Wired	Hot Runner Components	Hot Runner Manifolds
Ewikon Heißkanalsysteme GmbH, Frankenberg (Eder), DE | www.ewikon.com	79		●	●	●
HRSflow, member of INglass, San Polo di Piave (TV), IT | www.hrsflow.com	73		●	●	●
Mastip Technology Ltd., Auckland, NZ | www.mastip.com	71		●	●	●
Mold Masters Europa GmbH, Baden-Baden, DE | www.moldmasters.com	75	●	●	●	●
Türk+Hillinger GmbH, Tuttlingen, DE | www.tuerk-hillinger.de	5	●			
Dalton Electric Heating Co. Inc., Ipswich, USA | www.daltonelectric.com		●			
DME Europe, Mechelen, BE | www.dmeeu.com		●	●	●	●
Dongsan Bearing Corporation, Namdong-gu, Incheon, KR | www.dongsanbearing.com					
Friedrich Freek GmbH, Menden (Sauerland), DE | www.freek.de		●			
Gammaflux Europe GmbH, Wiesbaden, DE | www.Gammaflux.de					
Günther Heißkanaltechnik GmbH, Frankenberg (Eder), DE | www.guenther-hotrunner.com		●	●	●	●
Guzzini Engineering, Recanati (MC), IT | www.guzziniengineering.com			●	●	●
Hales Tool & Die Ltd. Unit 14, Maldon, Essex, UK | www.halesmastip.co.uk		●	●	●	●
Hasco Hasenclever GmbH + Co KG, Lüdenscheid, DE | www.hasco.com		●	●	●	●
Heitec Heisskanaltechnik GmbH, Burgwald, DE | www.heitec.com			●	●	●
Hotset Heizpatronen- und Zubehör GmbH, Lüdenscheid, DE | www.hotset.de		●			
Hotsys Co. Ltd., Ansan, Gyeonggi-Do, KR | www.hotsys.co.kr		●	●	●	●
Husky Injection Molding Systems Ltd, Bolton, ON, CA | www.husky.ca		●	●	●	●
Husky Injection Molding Systems S.A., Dudelange, LU | www.husky.ca			●	●	●
i-mold GmbH & Co. KG, Michelstadt, DE | www.i-mold.com			●	●	●
Imtech Design Ltd., Chislehurst, Kent, UK | www.imtechdesign.com					●
Incoe International Europe, Rödermark, DE | www.incoe.de		●	●		●
Kunststofftechnik Glittenberg GmbH, Frankenberg, DE | www.glittenberg-gmbh.de			●	●	●
Männer Solutions for Plastics, Bahlingen am Kaiserstuhl, DE | www.maenner-group.com			●	●	●
MasterFlow AB, Västervik, SE | www.masterflow.se		●	●	●	●
MHS Heisskanaltechnik GmbH, Würzburg, DE | www.mhs-hotrunners.com			●	●	●
MHS - Mold Hotrunner Solutions Inc., Georgetown, CA | www.moldhotrunnersolutions.com			●	●	●
MHT Mold & Hotrunner Technology AG, Hochheim am Main, DE | www.mht-ag.de				●	
Pedrotti S.p.A., Gavardo (BS), IT | www.pedrotti.it					
Protool AG, Wynau, CH | www.protool-ltd.ch			●	●	●
PSG Plastic Service GmbH, Mannheim, DE | www.psg-online.de		●	●	●	●
Sise, Oyonnax, FR | www.sise.fr					
Strack Norma GmbH & Co. KG, Lüdenscheid, DE | www.strack.de		●	●	●	●
Suma Consulting, Kaltbrunn, CH | www.suma.ch			●	●	●
Synventive Molding Solutions GmbH, Bensheim, DE | www.synventive-europe.com			●	●	●
Thermodyne SIPA Div., Vittorio Veneto (TV), IT | www.sipa.it			●	●	●
Thermoplay S.p.A., Pont Saint Martin, IT | www.thermoplay.com			●		●
Tirad s.r.o., Zeletava, CZ | www.tirad.cz					●
Witosa GmbH, Frankenberg (Eder), DE | www.witosa.de			●	●	●

	Hot Runner Port Plugs/Seals	Hot Runner Systems	Hot Sprue Bushings	Melt-Management Products	Nozzles	Runner-Balancing Products	Stack Mould Hot Runners	Temperature Controls	Tip Heater Products	Valve Gate Controllers	Valve Gate Sequencers
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September 2017				
14–24	IAA	Frankfurt, Germany	*International Motor Show*	www.iaa.de
18–23	EMO 2017	Hanover, Germany	*The World of Metalworking*	www.emo-hannover.de
26–28	TCT Show	Birmingham, UK	*Additive Manufacturing, 3D Printing and Product Development Event*	www.tctshow.com
26–28	Interplas	Birmingham, UK	*UK's leading Plastics Industry Event*	www.interplasuk.com
October 2017				
1–5	Euro PM 2017	Milan, Italy	*Annual Powder Metallurgy Congress and Exhibition*	www.europm2017.com
3–5	Toolex	Sosnowiec, Poland	*International Fair of Machine Tools, Tools and Processing Technology*	www.exposilesia.pl/toolex
9–12	Motek	Stuttgart, Germany	*International Trade Fair for Automation in Production and Assembly*	www.motek-messe.com
9–13	MSV 2016	Brno, Czech Republic	*International Engineering Fair*	www.bvv.cz/en/msv/
17–21	Fakuma 2017	Friedrichshafen, Germany	*International Trade Fair for plastics processing*	www.fakuma-messe.de
24–26	EuroMold	Munich, Germany	*World Fair for Mould and Patternmaking, Tooling, Design, AM and Product Development*	www.euromold.com
Novemer 2017				
7–10	Blechexpo	Stuttgart, Germany	*International Trade Fair for Sheet Metal Working*	www.blechexpo-messe.de
13–16	Compamed	Dusseldorf, Germany	*High Tech Solutions for Medical Technology*	www.compamed.de
14–17	Formnext	Frankfurt, Germany	*International Exhibition and Conference on the Next Generation of Manufacturing Technologies*	www.mesago.de/de/formnext
28–30	SPS IPC Drives	Nuremberg, Germany	*International Exhibition for Electric Automation-Systems and Components*	www.mesago.de/en/SPS
30–Dec 3	Mould Eurasia 2017	Bursa, Turkey	*Bursa 10th Mould Technologies and Related Industries Fair*	www.tuyap.com.tr
December 2017				
6–9	Plast Eurasia Istanbul 2017	Istanbul, Turkey	*International Istanbul Plastics Industry Fair*	www.plasteurasia.com
13–15	Smart Industry India	Mumbai, India	*Driving manufacturing processes of future*	smartindustrysolutions-india.in
January 2018				
16–18	Euroguss 2018	Nuremerg, Germany	*International Trade Fair for Die Casting, Technology, Processes, Products*	www.euroguss.de
23–26	Interplastica 2018	Moscow, Russia	*201st International Trade Fair for Plastics and Rubber*	www.interplastica.de
25–30	Imtex/ Tooltech 2018	Bangalore, India	*Metal Forming Exhibition*	www.imtex.in
February 2018				
20–24	Metav 2018	Düsseldorf, Germany	*20th International Exhibition for Metalworking Technologies*	www.metav.com
28– Mar 2	Intertool Kiev	Kiev, Ukraine	*18th International Exhibition for Hardware, Tools and DIY*	www.intertool.kiev.ua
March 2018				
4–6	Asiamold	Guangzhou, China	*Mould-Making, Tooling, Design and Application Industry Trade Fair*	www.asiamold-china.com
6–8	JEC World	Paris, France	*International Composites Show*	www.jeccomposites.com
14–17	Grindtec 2018	Augsburg, Germany	*10th International Trade Fair for Grinding Technology*	www.grindtec.de
15–18	Win Eurasia 2018	Istanbul, Turkey	*Leading Trade Fairs of the Manufacturing Industry*	www.win-metalworking.com
22–24	MECSPE	Parma, Italy	*Technologies for Innovation-Industries 4.0 Exhibition*	www.mecspe.com
April 2018				
9–13	MACH	Birmingham, UK	*Manufactruing Technologies Event*	www.machexhibition.com
17–19	Medtec Europe	Stuttgart, Germany	*Exhibition for Medical Technology Development and Manufacturing*	www.medteceurope.com
23–27	Hannover Messe	Hanover, Germany	*The World's Leading Trade Fair for Industrial Technology*	www.hannovermesse.com
24–25	PRS	Amsterdam, Netherlands	*Plastics Recycling Show Europe*	www.prseventeurope.com
24–27	Control	Stuttgart, Germany	*International Trade Fair for Quality Assuarance*	www.control-messe.de
24–27	Chinaplas 2018	Shanghai, China	*Plastics and Rubber Trade Fair*	www.chinaplasonline.com
May 2018				
7–11	NPE 2018	Orlando, FL, USA	*The Plastics Show*	www.npe.org
14–18	Metalloobrabotka	Moscow, Russia	*19th International Exhbition for Equipment, Instruments & Tools for the Metalworking Industry*	www.metobr-expo.ru/en
22–25	Plastpol 2018	Kielce, Poland	*International Fair for Plastics and Rubber*	www.plastpol.targikielce.pl
27–30	Industrie Paris 2018	Paris, France	*Trade Show for Production Technologies*	www.industrie-expo.com
29–Jun 1	Biemh 2018	Bilbao, Spain	*International Machine Tool Exhibition*	www.biemh.com
29–Jun 1	Plast Milano	Milan, Italy	*International Exhibition for Plastics and Rubber Industries*	www.plastonline.org
June 2018				
5– 7	Rapid.Tech	Erfurt, Germany	*Trade Fair and Users' Conference for Rapid Technology*	www.rapidtech.de
5–7	Lasys	Stuttgart, Germany	*International trade fair for laser material processing*	www.messe-stuttgart.de/en/lasys
5–8	3D Solutions	Posen (Poznan), Poland	*3D Solutions*	www.3dsolutions.mtp.pl
12–13	wfb	Augsburg, Germany	*Trade Fair for Tool and Moulds*	www.wfb-messe.de
12–15	EPMT	Geneva, Switzerland	*Micro Technology Professional Environment*	www.epmt.ch
13–14	Amerimold	Novi, USA	*The Event for Mould Manufacturing*	www.amerimoldexpo.com
19–21	Rosmould	Moscow, Russia	*International Specialised Exhibition for Moulds. Die Moulds & Stamps*	www.rosmould.com
26–29	AMB Iran	Teheran, Iran	*Exhibition for Metal Working*	www.messe-stuttgart.de/amb-iran
June	DMC 2018	Shanghai, China	*Die & Mould China*	www.diemouldchina.com

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