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THE MAGAZINE OF
OTTO BIHLER
MASCHINENFABRIK
GMBH & CO. KG
2016

DRIVING SUCCESS WITH STANDARDIZATION

◄ **About the cover photo**

In the vehicle production industry in particular, standardization delivers huge benefits in terms of efficiency. At the heart of this lies a standardized chassis that is then configured individually for the required vehicle model. Digital networking opens up further possibilities for standardized work and manufacturing processes.

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The magazine of
Otto Bihler Maschinenfabrik
GmbH & Co. KG

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Dear readers,

There is nothing that shapes today's working environment more than the way in which it is becoming increasingly internetworked. There is an inexorable movement towards the digitization of things, and Industry 4.0 is nowadays no longer simply a vision, but rather the reality in which we live, and that includes Otto Bihler Maschinenfabrik.

And in that context, it gives me particular pleasure to be able to present our new Leantool concept to you today. This is a new, innovative concept that will herald a completely new era in the production of stamped and formed parts, indeed in the entire sheet metal working industry. Taking the form of a modular set of tools, it achieves hitherto unheard-of levels of consistency and transparency across the entire manufacturing process, and makes it possible to visualize and understand it. It thus opens up a wide range of exciting possibilities for optimization, increased productivity and greater efficiency. What is so special about the concept is that these possibilities become visible and can be exploited along the entire, internetworked production process, from the initial inquiry and planning process through the design and manufacture of the tool and right up to assembly, setup and final production.

And for you, our customers, this means that you can cost the entire manufacturing process with absolute precision, respond to customer inquiries even faster and secure the associated orders.

The Leantool concept is one example that shows the potential still slumbering in today's manufacturing and production processes – and how intelligent system technology is able to exploit this potential over the long term. I am certain that the progress being made in digitization will in future lead to even more substantial cost reductions, greater material savings and bigger increases in productivity. Of course, in order to achieve all this, it is necessary for you to join us in our journey down the digital path.

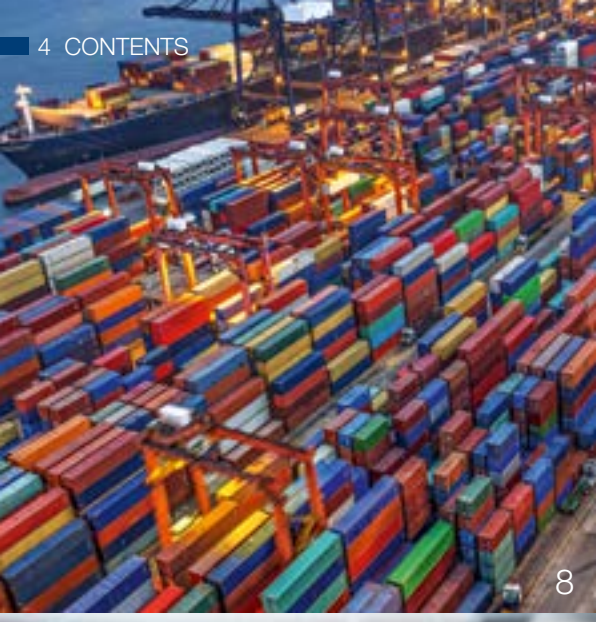
True to our tried principles of strategic partnerships, we not only provide you with ultra-flexible, high-performance technology and work platforms such as the RM-NC and the GRM-NC, but also work together with you to come up with a custom solution that will get you where you want to be quickly and reliably.

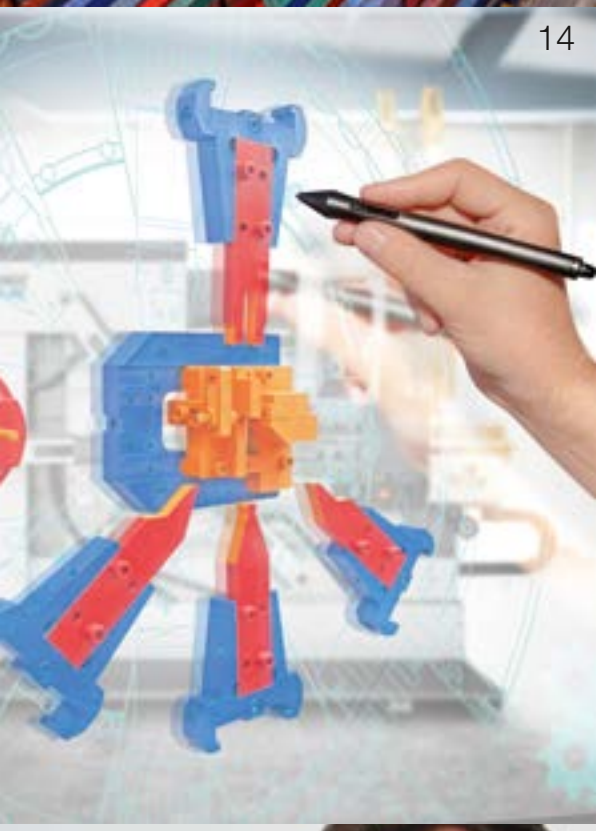
In the following pages, discover the wealth of products and services our company has to offer and find out how our partners use our machine technology and our many years of practical expertise to compete successfully in their various markets.

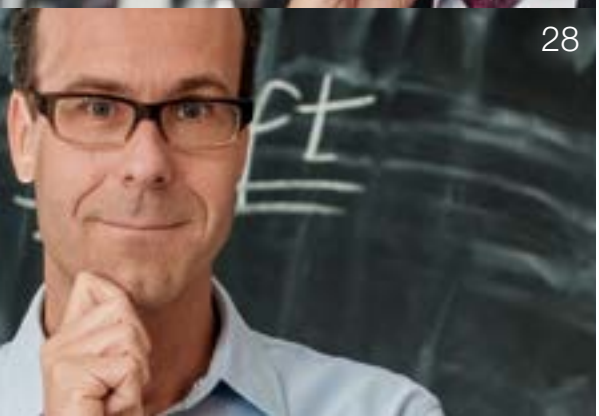
I hope that you will find it an enjoyable and inspiring read!

Mathias Bihler

b. on top 2016







SUSTAINABILITY

IN-HOUSE ENERGY MANAGEMENT SYSTEM

The energy team (from left to right): Christian Kraut, German Reichart, Thomas Schneckenburger and Peter Schicketanz.

Use less resources, protect the environment and at the same time save money. These were the goals that motivated Otto Bihler Maschinenfabrik to set up their own energy team and launch the project entitled "Introduction of an energy management system". The reason is that Germany wants to reduce its primary energy consumption by 50 percent by 2050 compared with 2008. This means that, as of 2015, all companies are obliged to carry out regular energy audits or, alternatively, to provide evidence of an energy or environmental management system.

Within twelve months, the energy team managed to meet all the requirements for accreditation as per DIN EN ISO 50001. The auditor from TÜV Süd confirmed that all the requirements laid down in the standard had been fulfilled in all the areas audited. Christian Kraut, energy management officer at Bihler: "The primary focus of our energy management system is to significantly increase overall energy efficiency throughout the entire manufacturing and product lifecycle. We have set ourselves the target of reducing energy consumption by five percent relative to the energy performance indicator." The planned measures include such things as digital enhancement of the energy monitoring measuring points. ■

OBITUARY

REINER AUGENSTEIN

Otto Bihler Maschinenfabrik remembers former employee Reiner Augenstein, who died on the 7th of February 2016, aged 73.

Skilled negotiator

Imaginative and far-sighted, Reiner Augenstein was a major influence on Bihler's stamping-forming and assembly technology. In 1962, at the age of just 20, he took on the responsibility of heading up design operations. A short while before, the company's founder Otto Bihler had met him in Pforzheim and became firmly convinced of his abilities. He was able to inspire him about his then fledgling company in Halblech. Reiner Augenstein introduced the tool design methodology at Bihler and had a talent for dealing with customers competently and persuasively. In 1963, Otto Bihler asked him to head up the technical sales department. Alongside Mathias Bihler, Peter Peisl and Hans-Jürgen Hörmann, he became a Managing Director in 1992. Reiner Augenstein was a determined, disciplined and ambitious employee, whose approach may at times have been somewhat unconventional, but whose success proved him right. Thanks to his knowledge of process engineering and his many patents, he was a well-respected name in the industry. Reiner Augenstein received Bihler's distinguished service award in gold for his outstanding service and achievements. ■

DYNAMIC AND PRECISE

THE NEW RADIAL GRIPPER FEED RZV 2.1

With its new RZV 2.1 radial gripper feed, Otto Bihler Maschinenfabrik offers a patented, compact feed system for highly dynamic, precise feeding and positioning of strip and wire material. The process module feeds the material into the machine at speeds of up to 3.2 m/s and positions it precisely with an accuracy of two hundredths of a millimeter. Variable feed distances from zero to infinite and different feed distances (forwards and backwards) within one overall feed distance: No problem for the RZV 2.1.

Clamping that does not damage the material

Its hydraulic system uses cams to control the clamping pressure and ensures automatic adjustment to material thicknesses from zero through nine millimeters. The high feed speed and the very small feed angle result in more time for optimized process sequences. Users benefit from smoother running machines, higher output and consistently high product quality.

Setup in a matter of minutes

The RZV 2.1 radial gripper feed has been completely revised. Next-generation materials guarantee an even longer service life. Considerable attention was also paid to usability. Which means that the RZV 2.1 can be set up using the new quick-change system in a matter of minutes. The VariControl machine controller makes for simple programming and easy operation. ■

FOR PLANNERS AND DESIGNERS

TEST THE APP

At this year's EuroBLECH, Bihler will for the first time be presenting its new Web app "Planning". The stamping and forming technology app is the ideal tool for planners and designers.

What stamped/formed part is to be bended and how? – This is one of the many questions answered by Bihler's Web app, which provides a simple, rapid overview of all the aspects involved in creating stamped and formed parts. Supplementary information such as the production speed and processing time for each batch is available at a glance. The free demo version also contains a sample database packed with knowledge from Bihler. The app is a useful source of inspiration for new solutions based on existing similarities and is constantly being enhanced with additional features for part planning and costing. Visitors to the trade show are welcome to test the app for themselves at Bihler's booth E104 in Hall 27. ■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UNIFIED WORK PROCESSES?

SUCCESS FACTOR: STANDARDIZATION

Rising demand for increasingly complex, highly varied products and customer-specific, specialized solutions is restricting economies of scale and impeding lean processes along the entire project management chain. Standardization, modularization and the utilization of platforms and modular component systems can help businesses to counteract these effects by ensuring that work and manufacturing processes are unified, transparent and consistent. They then have the flexibility to offer the breadth of product variants that customers expect but still minimize costs along the process chain and maintain their market strength.

The standardization and unification of processes, production sequences and products have always played an active part in shaping and advancing economic growth. Two prominent examples are, first, the definition in 1961 of standard international dimensions for ISO shipping containers, which have since enabled intermodal goods shipments all over the world by ship, truck and train, and, second, the introduction of global guidelines governing the consistent look of CAD and engineering software. Standards like these enable simplification and modularization in formerly disparate and complex subsystems – a process that has delivered substantial gains in both efficiency and productivity. This is particularly evident in mechanical engineering, where fiercer competition and the need to win new markets have led to a twofold rise in the variety of products in recent years. At the same time, demand in the mechanical engineering sector for increasingly complex products and product variants – including customer-specific, specialized solutions – has grown, resulting in smaller production runs and greater numbers of variants. This complexity is restricting

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economies of scale and impeding lean processes – at the design stage, in order processing, in procurement and in production. Standardization, modularization and the utilization of platforms and modular component systems offer businesses a way to maintain their market strength and to offer the breadth of product variants that customers expect, yet successfully keep costs to a minimum along the process chain.

Cutting costs and complexity

The savings that can be achieved through standardization and modularization are substantial – in fact, the potential in terms of production and materials costs in the international mechanical engineering industry could run to as much as €54 billion a year, according to a study by Roland Berger Strategy Consultants. A recent VDMA study draws a similar conclusion, stating that modularization and standardization can boost competitiveness and deliver efficiency gains of between 10 and 20 percent in the plant engineering sector. What's more, the industry seems willing to standardize and modularize. For almost all of the organizations polled by both of the studies, the primary motivation for implementing a strategy of standardization and modularization would be to cut costs – mainly in connection with planning and with the final product. In addition, modular processes and procedures mean more upfront parts production, which can reduce construction and assembly costs. Another factor is the desire to reduce internal complexity; this can be accomplished by reusing components and systems instead of developing new ones. This also lowers the number of internal interfaces and brings down nonconformity costs significantly.

Standardization in four focus areas

But how and where are modularization and standardization feasible in plant engineering and mechanical engineering? And what modularization or standardization methods or approaches can organizations apply, and in what contexts? For businesses looking to manage the variety of parts and products that customers require, to protect their own flexibility and, most importantly, to reduce costs, there are four recommended areas in which they can standardize and modularize. The first is optimization of the product lineup with a view to achieving greater product variety with fewer parts. This allows processes to be streamlined, and procurement and production costs lowered. In addition, businesses can move the manufacture of various products to the end of the production process and, at the same time, accommodate customer-specific assembly and equipment preferences more efficiently. Supply chain segmentation and integration – alongside an optimized product lineup – also play an important part when it comes to supplying a diversity of market segments. The more flexible the supply chain, the faster manufacturers can meet current market demand, particularly for niche products. Efficient networking and integrated communication between an organization's own people and outside suppliers, too, are important, as is the integration of globally unified IT and key performance indicator systems. Lastly, standardization and modularization enable businesses to achieve much greater flexibility in their own production operations. Given the increasing product variety they are expected to accommodate, they need to segment their production processes and introduce flexible manufacturing areas. What's more, to be able to respond with greater agility to shifts in demand, they must cut throughput times in job processing and production.

Standardization is an investment in the future

Implementing suitable standardization strategies and initiatives not only improves performance, it also helps companies to future-proof their business and gear up for Industry 4.0. Just as with the introduction of standardized ISO shipping containers in the past, the key factors today, with the digital era fast approaching, are the standardization of data packets shared between organizations and systems and the availability and use of defined interfaces.

These interfaces, like the data itself, need to be consistent, transparent and unified, process-wide – from the sensor and machine level all the way up to the platforms that process the data and information captured. The comprehensive digitization of manufacturing processes, along with the device data this provides, not only creates value for users, it also adds immense flexibility – to the extent that odd lots can be manufactured with the same efficiency as mass-produced items. Connecting machines, storage systems and

production equipment across networks on a global scale will pave the way for tomorrow's smart factories, where intelligent machines share information and self-optimize independently. As a result, production processes and supply chains will be far more efficient than before, and the materials and energy consumed will be reduced to a minimum. Standardizations being introduced in the IT sector today are laying the foundations in mechanical engineering for successful implementation of Industry 4.0, or the fourth industrial revolution.

The dimensions of ISO containers were set in 1961. This standard revolutionized international logistics and is still valid today.

Adding value with Bihler standards

Standardization has always played an important role at Otto Bihler Maschinenfabrik. The company has come to embody exceptional quality standards and is an acknowledged world leader in stamping and forming, welding and assembly technology. Moreover, during the course of our history, we have set a number of landmarks in standardization. These include the introduction of radial stamping and forming machines – revolutionary at the time – and the development of NC technology, which likewise heralded a new era in stamping and forming. The success of these innovations was ultimately down to the fact that they revised, unified and simplified formerly complex, laborious and costly processes. "These technology standards have helped our customers to significantly increase the value created by their processes and, thus, set themselves apart from market rivals," says Mathias Bihler.

A new standard: The Leantool Concept

Today, Otto Bihler Maschinenfabrik is again establishing a new and revolutionary standard – this time with its Leantool Concept. This, the first modular tool system intended specifically for the RM-NC and GRM-NC servo-controlled stamping and forming machines, makes the entire manufacturing process simpler, faster and cheaper. Every step involved – from planning, design and tool-making to assembly, installation and production – follows a standardized pattern. "We now have visibility and traceability throughout the process chain, allowing it to be optimized precisely to deliver substantial productivity gains for organizations. This is their key to remaining competitive in the global arena," explains Mathias Bihler.

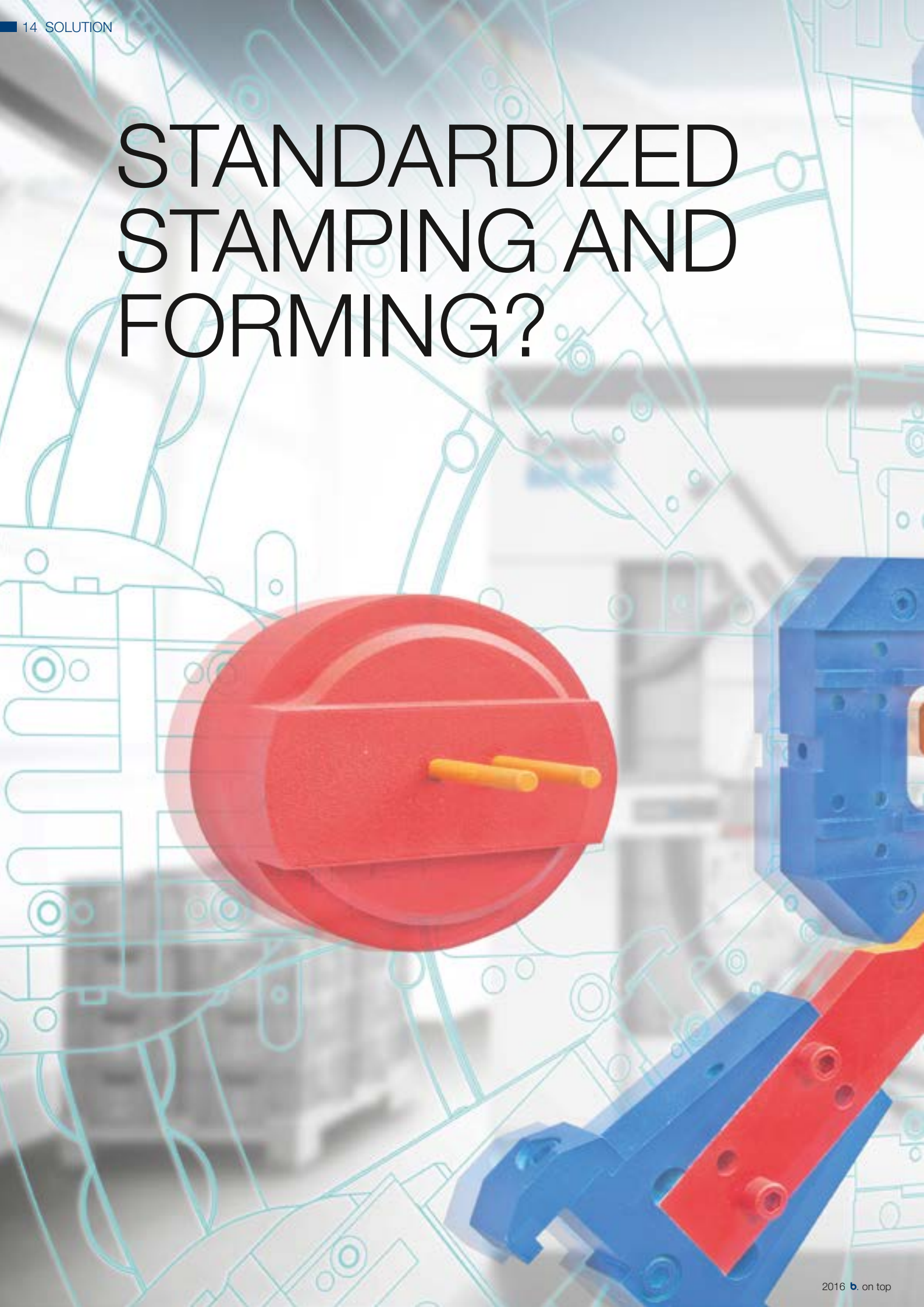
Delivering Industry 4.0

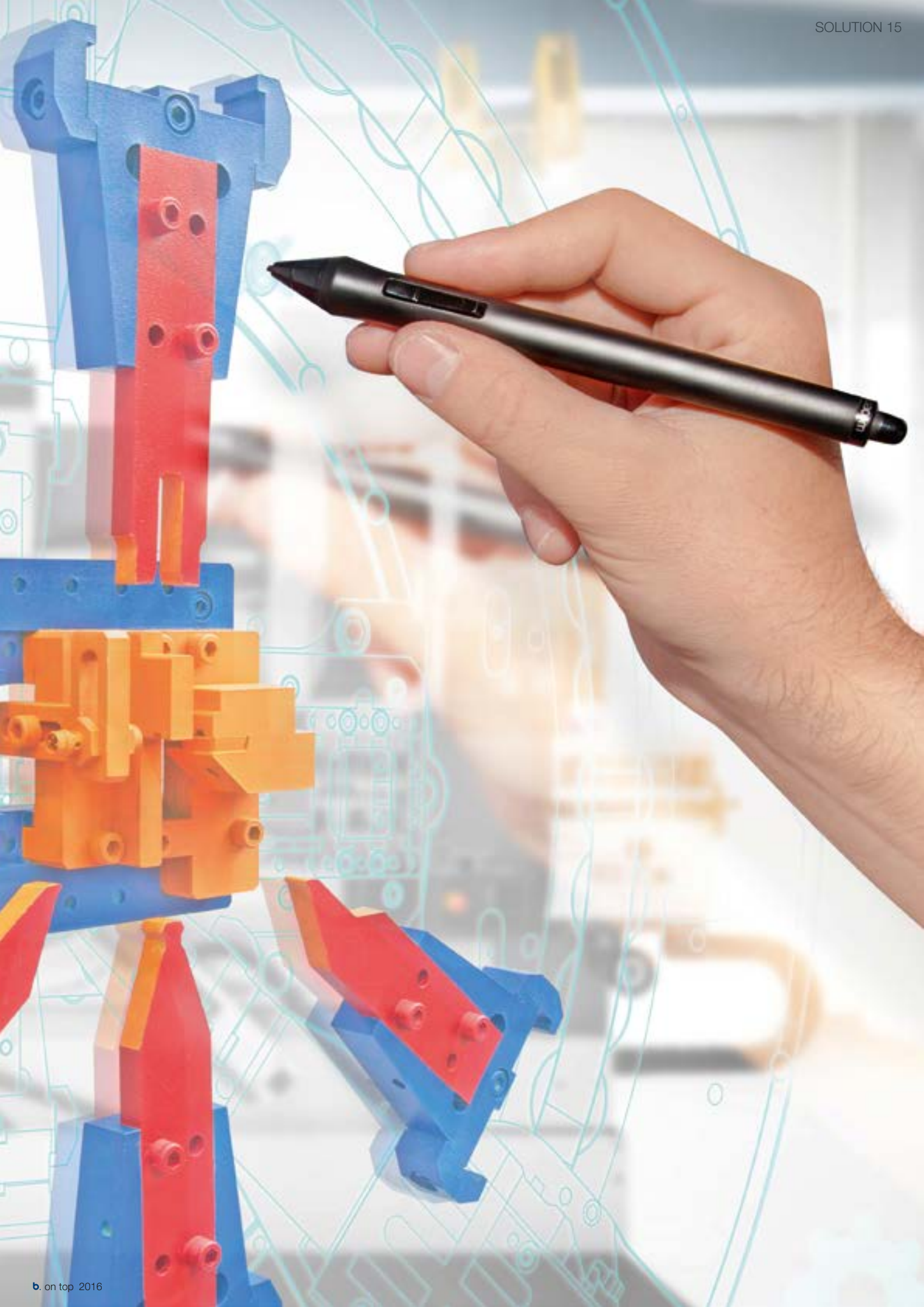
The Leantool concept offers a degree of availability, uniformity and digital efficiency that adds impetus to the digital revolution. "It combines knowledge and technical capabilities in a fashion that exemplifies Industry 4.0's principles of end-to-end design and transparency," says Mathias Bihler. The servo-controlled NC machines, with their seemingly limitless manufacturing capabilities, set the technical standard, whereas the knowledge is provisioned through a database that users can access whenever needed. The database unites exceptional clarity and detail with ease-of-use, and gives customers rapid access to the information essential to their projects. It offers highly tangible, practical benefits: "In no time at all, users can work out how to make a given product, how fast they can produce it, and at what price," explains Mathias Bihler.

Geared up for the future

This makes Bihler customers exceptionally well equipped to meet the needs and expectations of today's and tomorrow's markets. "The ability to respond swiftly to inquiries and to take on a wide range of tasks with a high degree of flexibility is very much in demand. With our Leantool Concept and database, we enable our customers to submit cost estimates in response to inquiries in next to no time." The faster they are, the greater the likelihood that they will win the order. And that is what we aim to achieve at Otto Bihler Maschinenfabrik: "Our customers' success is our success," says Mathias Bihler. ■

STANDARDIZED STAMPING AND FORMING?

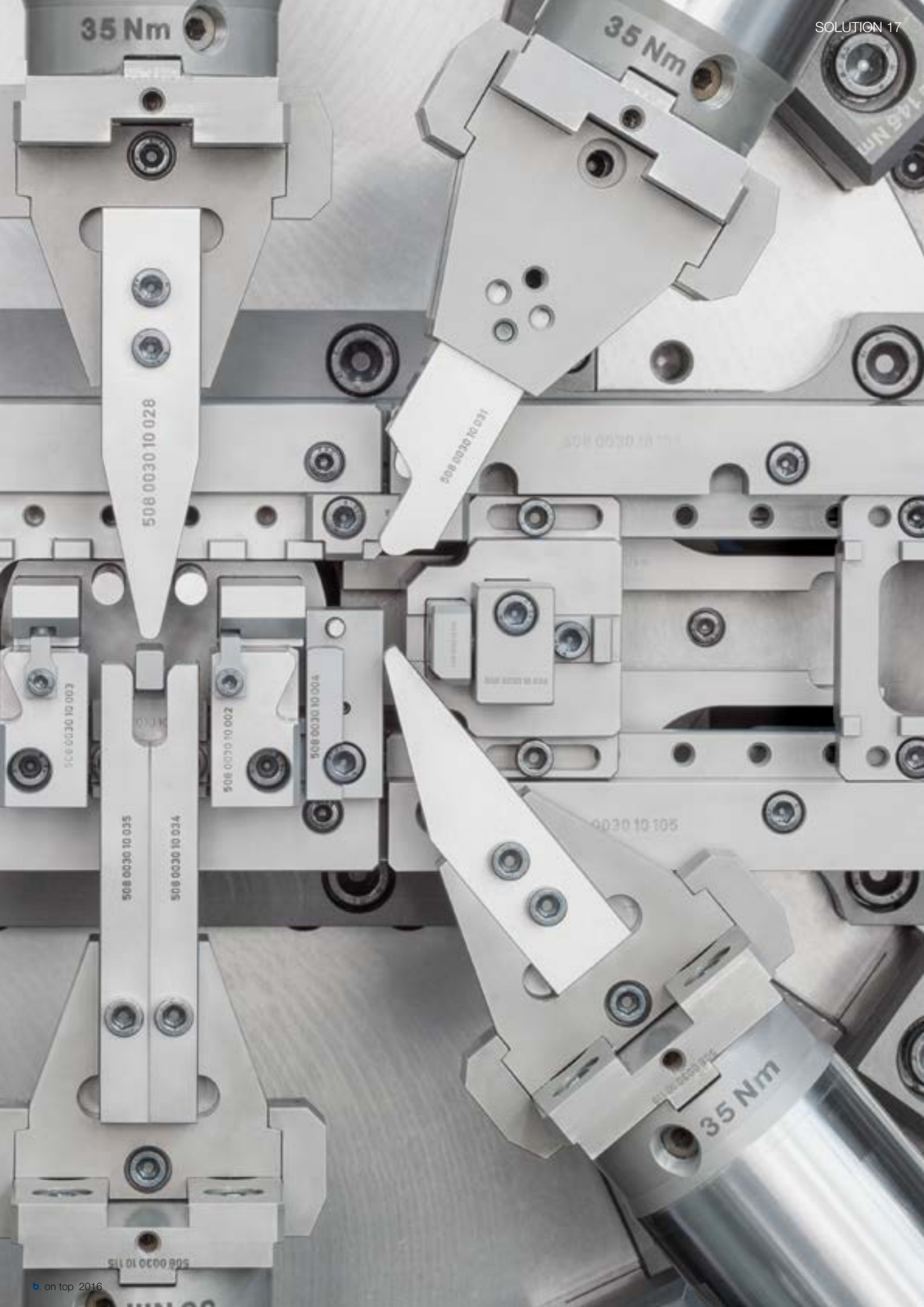




THE BIHLER LEANTOOL CONCEPT

The new Bihler Leantool concept is the first modular tooling system with which, as of now, all customers can obtain new tools for their RM-NC and GRM-NC stamping and forming machines even more easily, quicker and at lower cost. And that really pays for itself, in the form of minimal implementation times, cost savings of more than 50 percent and extremely short times to market, even for very small batch sizes. The Leantool concept takes account of all process steps, from planning and design, through manufacturing and assembly of the tool, right up to setup and final production.

With its Leantool concept, Otto Bihler Maschinenfabrik has achieved nothing less than the standardization of stamping and forming technology. It is the first modular tooling system that allows all customers to build tools specifically for their RM-NC and GRM-NC stamping and forming machines even more easily, quicker and at lower cost – in a single, standardized process and from a single source. The modular system concept takes into account all process steps and enables very short implementation times, allows manufacturing costs to be more than halved and permits extremely rapid and 100-percent repeatable retooling operations. In this way, the new Leantool concept offers decisive advantages for all users, since they are now able to provide their customers with extremely informative, attractively priced offers very quickly, and thus improve the state of their order books significantly. And when the order is placed, the rapid implementation times from the initial inquiry to live production will generally result in savings of more than 50 percent compared with bending tools on mechanical machines. The Leantool concept now allows all users to bring new products to market far quicker and at lower cost than their competitors, especially in small batch sizes. Which means that they are ideally prepared, not only for their current manufacturing challenges, but also for any that the future may bring.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PROJECT PLANNING

The Leantool concept starts with the planning of a project that is specific to the order and reflects the actual needs. And even in this early phase, the findings of the feasibility analysis very quickly deliver initial results. The bending workspace for the stamped and bended wire or strip part is clearly defined, the sequences of bending operations are simple and quick to plan, and costing becomes extremely realistic thanks to the use of simple tools. The Bihler database stored on the system contains around 5000 stamped and bended parts and forms the basis for the feasibility analysis. The wealth of experience represented in this database makes it possible to draw up suitable manufacturing methods, which in turn allow phase plans and step-by-step plans to be defined. These are then used to implement most, and at least 80 percent, of all stamped and bended parts. In this way, new projects can be planned twice as quickly as before on the basis of the Bihler type collection. The planned implementation carries far less risk than is the case when planning from scratch, and furthermore, the automatically generated feasibility study, which is immediately available, saves valuable staff time.

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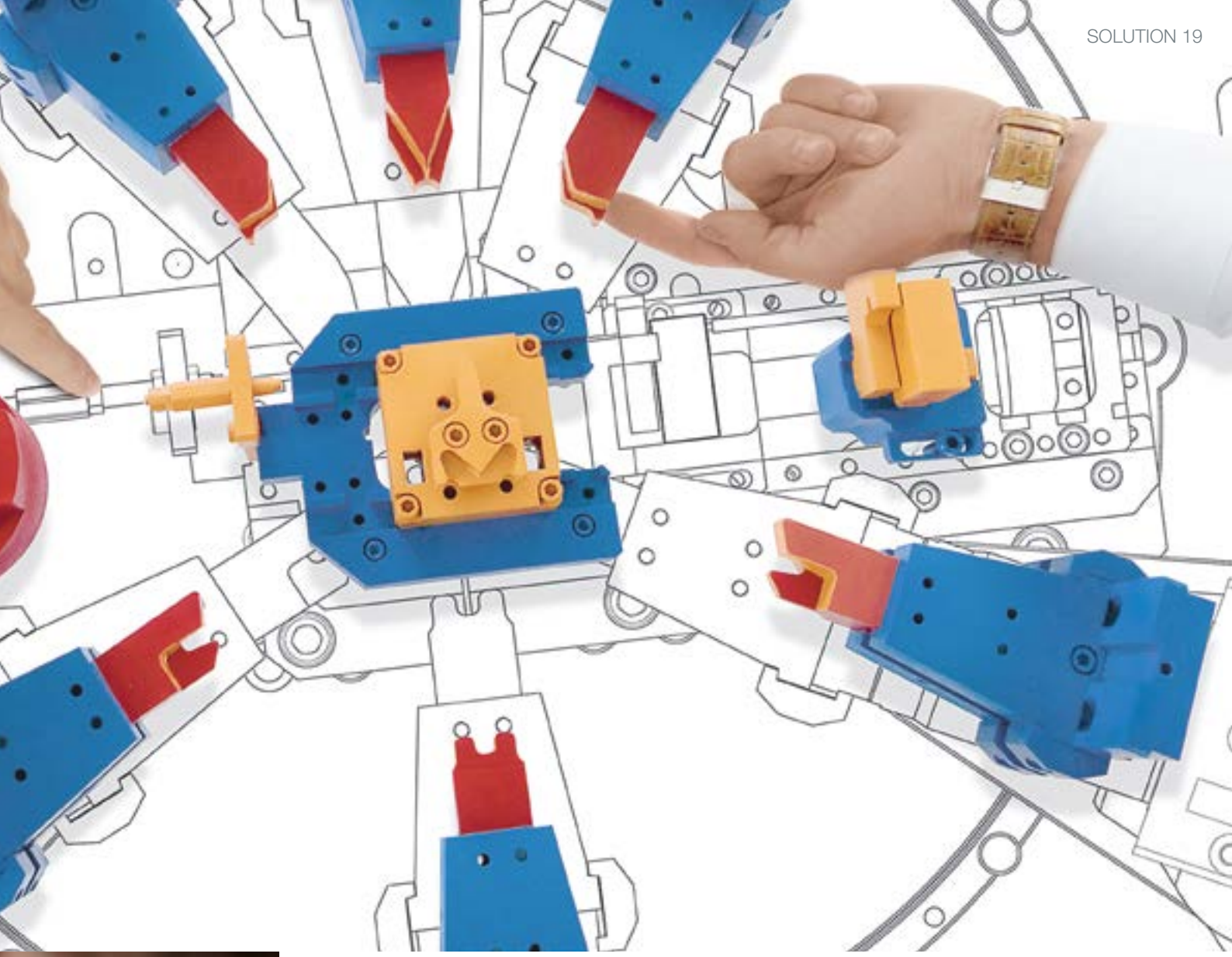

TOOL DESIGN

After component planning is complete, the appropriate tools are designed, a process which is particularly simple and clearly structured in the Bihler Leantool concept. The foundation for this is the design methodology in the bNX technology software, which is a common thread throughout the entire concept. The method plans and phase plans created during planning are implemented in the Leantool modular system. Here, all the machine components and standard elements are predefined and are specified parts in the reuse library, where they ensure extremely lean tool design. For the first time, it is possible to make use of a standardized template for bending tools and many typical sample applications. And engineering kinematics provides templates to support the entire simulation process. The results of these simulations can be transfered directly to the VC 1 controllers of the NC machines. Finally, the parametric Leantool tool model simply has to be adjusted to the stamped and bended part that is to be manufactured. All this means that custom solutions can be avoided from the outset, thus saving costs, particularly as storage costs are also reduced. Leantool is thus an end-to-end, clear design concept that guarantees that any stamped and bended design can be created cost-efficiently and delivered on time with a minimum of effort.

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TOOL MANUFACTURE

Once the design phase is complete, work can start on manufacturing the tool. With the Bihler Leantool concept, this is a particularly cost-effective, fast and efficient process. After all, the high level of standardization of the innovative modular system reduces the number of required tool components from an average of 75 to just 35. And more than half of even these parts will generally be standard parts, thus reducing the requirements for custom tool components to a minimum. All the required tool components can then be machined overnight, for example, and can be manufactured quickly, just in time, from the predefined blanks. This manufacturing process is a tightly meshed, bidirectional process, where the data is exchanged backwards and forwards between the design and manufacturing departments, resulting in a constant comparison of nominal and actual values between the controller and the workpiece.

The bottom line is that it is more than 50 percent cheaper to manufacture tools using the Leantool concept compared with the conventional method. Not only that, the process is thoroughly transparent, unambiguous and consistent. A further benefit is that the manufacturing logistics chain is shorter, thus freeing up additional capacity.

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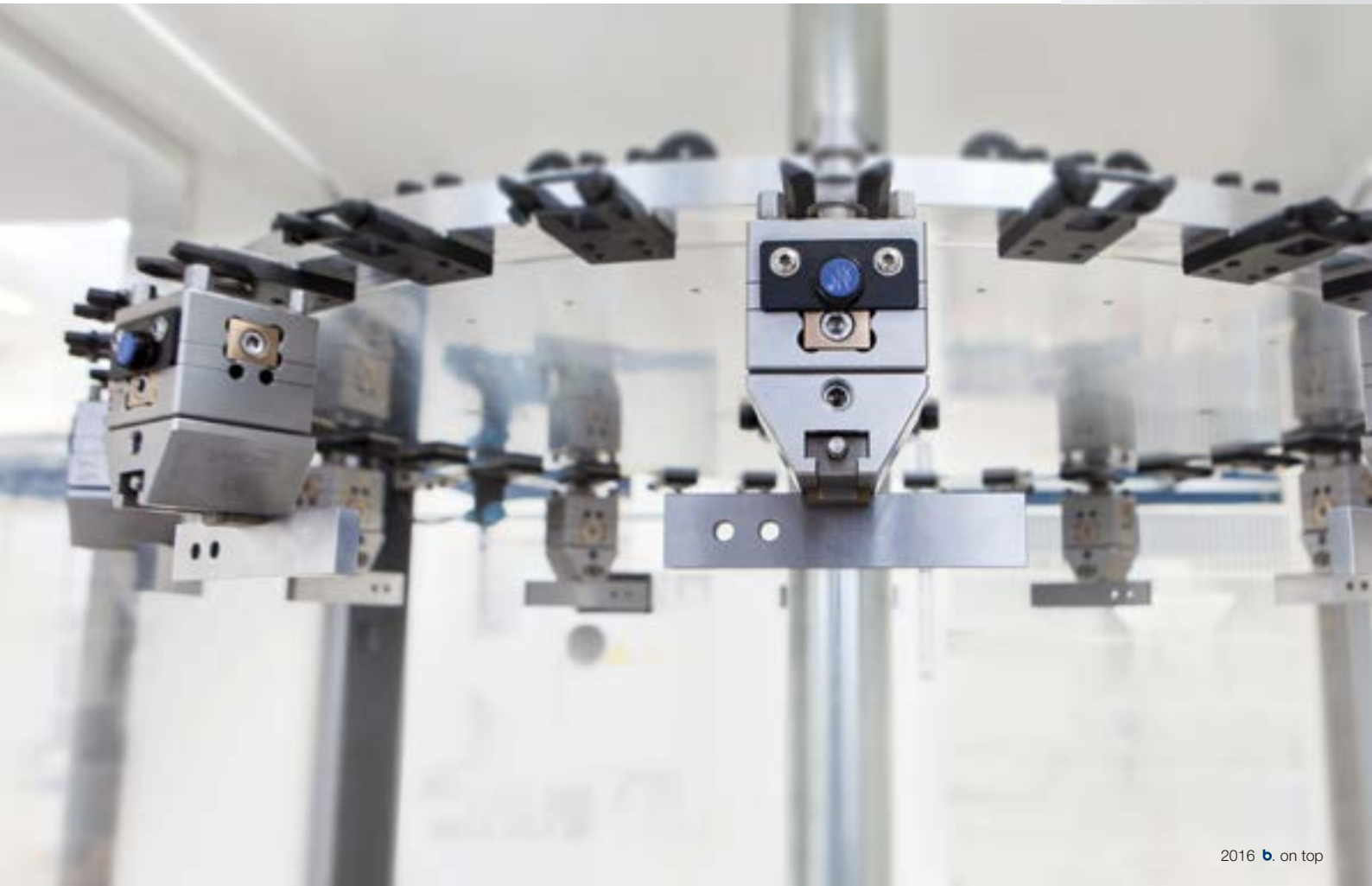

ASSEMBLING THE TOOL

The completed tool is now fitted to the RM-NC or GRM-NC servo stamping and forming machine. This is done quickly and easily thanks to keyed snap-on connectors and the integrated quick-change system. This eliminates the fuss associated with screwed joints and adjustments, since there is no custom tooling plate and cam disks are no longer needed, thanks to the servo technology. Indeed, tool components such as dies and cores are pre-fitted directly on the standard tool modules by means of standardized die holders. This means that the die holder is an integral part of the NC unit and the die is secured and guided directly by the NC unit. The high level of rigidity and precision of the NC machines means that no additional tool guides are needed. Thus, the average overall time taken to install a Leantool tool on an NC machine is only around 45 minutes, which is many times faster and simpler than setup operations on conventional, purely mechanical machines, which generally take several hours.

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SETTING UP THE MACHINE

Tool assembly is closely followed by setup of the NC machine. And this is another step that is particularly fast and simple on the servo-controlled NC machines, thanks to the Leantool concept. This is because the entire machine setup process on the NC system, including all tool settings, is fully automated using the VC 1 controller. This allows all the components such as bending dies and slides to be positioned directly and extremely precisely. The standard tool modules feature an automatic quick clamping system that secures them on the machine firmly and accurately. Furthermore, fine adjustment of the tools is done fully automatically on the machine itself, without the need to spend time and effort removing, adjusting and refitting the tools. And the same applies to all subsequent adjustments in the event that a movement is not performed perfectly first time. This is because the combination of the Leantool concept and servo control means that the result of the bending operation can be corrected directly and immediately, simply by repositioning the relevant slides or dies. Once they have been assembled and set up, the GRM-NC and RM-NC machines guarantee 100-percent reproducibility of all settings, delivering flexible production as and when it is needed.

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Watch our video to discover how fast and simple the Leantool concept makes the setup process in practice.

PART PRODUCTION

After tooling and machine setup, the last step in the Bihler Leantool concept is production of the parts themselves. And this is where the servo-controlled NC systems can really flex their muscles, manufacturing top-quality, high-precision components extremely productively. The precision of the components manufactured with the Leantool concept is equal to that achieved with conventional manufacturing methods, as has been confirmed by extensive measurements during development. Beyond this, all users benefit from fast cycle times and extremely short setup times, easily allowing production efficiency to be more than doubled. Not to mention automatically reproducible setup and full accessibility of the tools. Other process technologies can also be integrated in the servo-controlled stamping and forming machines without any difficulty. Overall, this means that the GRM-NC and RM-NC series machines deliver highly efficient, reliable process solutions, maximum flexibility and considerable potential for boosting a company's value added.

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TRAINING AND SERVICE

To present the new Leantool concept, Bihler is offering a two-day training seminar. All participants are familiarized with the new concept and learn how they too can use the new standard in stamping and forming technology for their own applications. The course covers the details of planning parts, introduces the working environment and presents the opportunities for manufacturing that the concept opens up. The primary focus is on how the right choice of standard Leantool tools enables a clear, structured approach to designing the bending tools – with all the relevant parameters and using uniform terminology. Practical exercises and simulations also feature in the course, as well as the final element, namely training for possible approaches to dealing with project inquiries from the participants' own customers.

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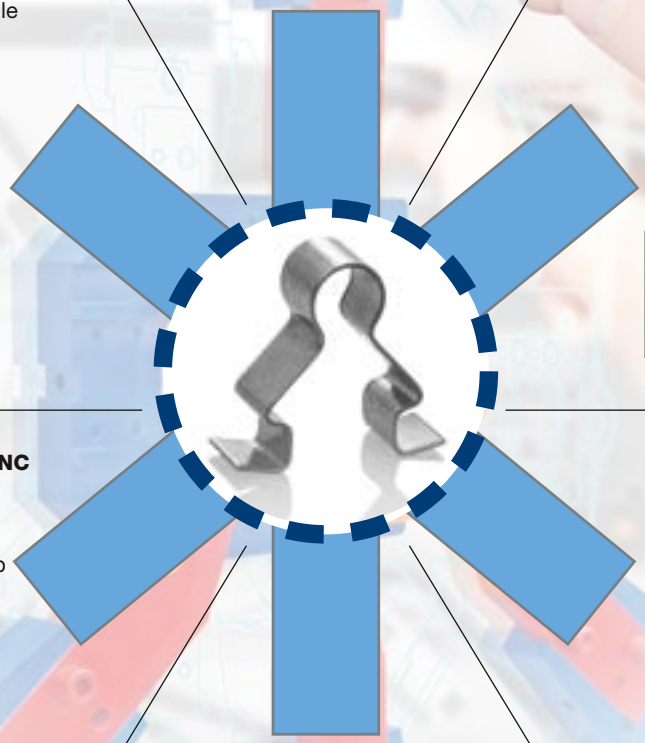
BIHLER LEANTOOL – THE NEW STANDARD IN STAMPING AND FORMING



1. PLANNING

Simple, fast statement on feasibility

- Clearly defined bending workspace
- Quick and easy planning of bending sequence
- Plausible costing thanks to simple tools

2. DESIGN (bNX)

Simple, clearly structured design

- Predefined machine environment and standard parts
- All Lean standard parts specified in reuse library
- Simple design methodology
- Typical application examples included

3. MANUFACTURE

Fast, efficient manufacture

- Small number of tool components (approx. 35 items)
- High degree of standardization (50 % standard parts)
- Reduces custom tool parts to a minimum

4. ASSEMBLY

Simple, fast tool installation

- No tooling plate required
- Tool parts (dies, cores) already fitted directly on standard tool modules
- No cam disks

5. SETUP

Simple, fast tool setup

- Direct positioning of bending dies and slides via VC 1
- Fast automatic clamping of standard tool modules
- Immediate correction of bending results by repositioning the slides (dies)

6. PRODUCTION

Highly productive and accurate production on RM-NC and GRM-NC

- Fast cycle speeds
- Extremely short setup times
- Automatically reproducible setup
- Full tool accessibility

MICHAEL MACHT

"STANDARDIZATION WITH A WIDE RANGE OF VARIANTS"

Expanding electromobility in Germany and intensifying international competition are two core challenges facing the automotive industry today. Michael Macht talked to *b on top* about the strategies automakers and their suppliers need to pursue if they are to sustain their success in the long term.

b on top: How is the automotive industry changing and what challenges does it currently face?

Michael Macht: One challenge in the automotive sector at the moment is the expansion of electromobility, which policymakers are promoting in the interests of long-term carbon reduction. This expansion consists not just in advancing the technology, establishing standards and ensuring broader take-up, but also in incorporating this whole technology segment into organizations' business models, even though it remains a big loss-maker, as we can see from current e-vehicle vendors. Automakers like Tesla are still running up huge losses and will only start turning a profit in a few years' time, when they can sell vehicles like the Model 3 in greater numbers. German automakers are taking a more conservative approach.

b on top: What does this mean in terms of production and manufacturing, particularly from a supplier perspective?

Michael Macht: Electrification and digitization will play increasingly important roles, particularly with regard to the development of new components like electric braking and air-conditioning systems. It's important that suppliers embrace these technologies in order to be in a position to offer competitive products in the future. This applies particularly to those suppliers currently specializing in components that electric vehicles don't need. Aside from the technology, the use of lightweight materials and the integration of smart solutions into systems are also crucial. Looking at major OEMs' e-vehicles, we can see that advancements are happening at a phenomenal rate. Even so, it's important to bear in mind that, although the automobile market through to 2020 will run to around 100 million new vehicles, the demand for e-vehicles will not be global in scale. On the contrary, opportunities to do business with the classic combustion engine will persist for a long time to come, particularly in large markets like China, the USA, South America, India and Russia.

b on top: How important is standardization in the industry?

Michael Macht: Standardization can apply to products and to processes. In the case of the former, standardizing components creates economies of scale; this brings down component production costs, creating advantages for manufacturers and customers alike. Take car instrument clusters, for example: They may vary significantly from one vehicle model to the next but they might be identical nonetheless in terms of the underlying panel and structure. Standardization therefore needn't necessarily preclude retaining the flexibility desired in production. On the contrary, lean, standardized production processes that permit a wide range of variants are a recipe for success among leading suppliers.

Lean production remains a highly current topic in the context of manufacturing processes because it continues to offer huge potential. The key is to first define the product standards and, thus, the process standards. This is the only way to create a foundation for future optimizations which, in turn, will become the new standards. Pursuing continuous optimization like this can deliver annual productivity gains as high as 8 percent.

b on top: What can automotive industry suppliers do to stay competitive in the future?

Michael Macht: Standardization and optimization are the tools that enable them to maintain a competitive edge. They also need to be consistently quicker than their fellow market players. These are goals that organizations need to define exactly and pursue rigorously. It takes effort and commitment, but this is absolutely fundamental to their success, particularly when competing in a global arena now being shaped by technical advances in countries which, in the past, have been less specialized and have the advantage of low labor costs. This means that automotive suppliers that don't internationalize will struggle to compete at the global level. Even if they're making, say, a high-tech product that they can export successfully now, the patents will eventually expire, putting the technology within their rivals' reach. For small or midsized enterprises, the strategy has to be to establish a local presence in the growth markets of tomorrow – regions like Southeast Asia. At the same time, they need to maintain their strength as innovators in the domestic arena. This, along with a well-trained employee base and their own corporate structure, is the foundation they need in order to succeed at home and abroad. ■

MICHAEL MACHT

Born in Stuttgart, Germany, in 1960, Michael Macht studied mechanical engineering at the University of Stuttgart before joining the Fraunhofer Institute for Industrial Engineering in Stuttgart. In 1990, he moved to Porsche AG as an engine planning specialist, where he later headed the Planning department. In 1994, he became managing director of Porsche Consulting GmbH, before joining the board of Porsche AG in 1998 as the head of Production and Logistics. In 2009 he was appointed chairman of the management board of Porsche AG and a board member at Holding Porsche SE. From 2010 to 2014 he served as the board member responsible for Group Production at Volkswagen AG.

PROF. FRANK PILLER

"PLATFORMS BEAT PRODUCTS"

How important are innovations today, what role does increasing digitization play in innovation, and how should organizations go about developing and implementing new products and processes in the future? *b on top* asked Prof. Frank Piller, an innovation researcher at RWTH Aachen University.

b on top: What constitutes an innovation today?

Prof. Frank Piller: As an economist, I don't view innovations purely in terms of creative invention. Instead, I consider how an innovation might be utilized and taken to market. Research is a process that turns money into knowledge. Innovation, by contrast, turns knowledge into profit. What's exciting about innovation is that there's no obvious linkage between the input and output. Innovation is an inexact, unstructured, nonlinear process.

b on top: How important is innovation for businesses?

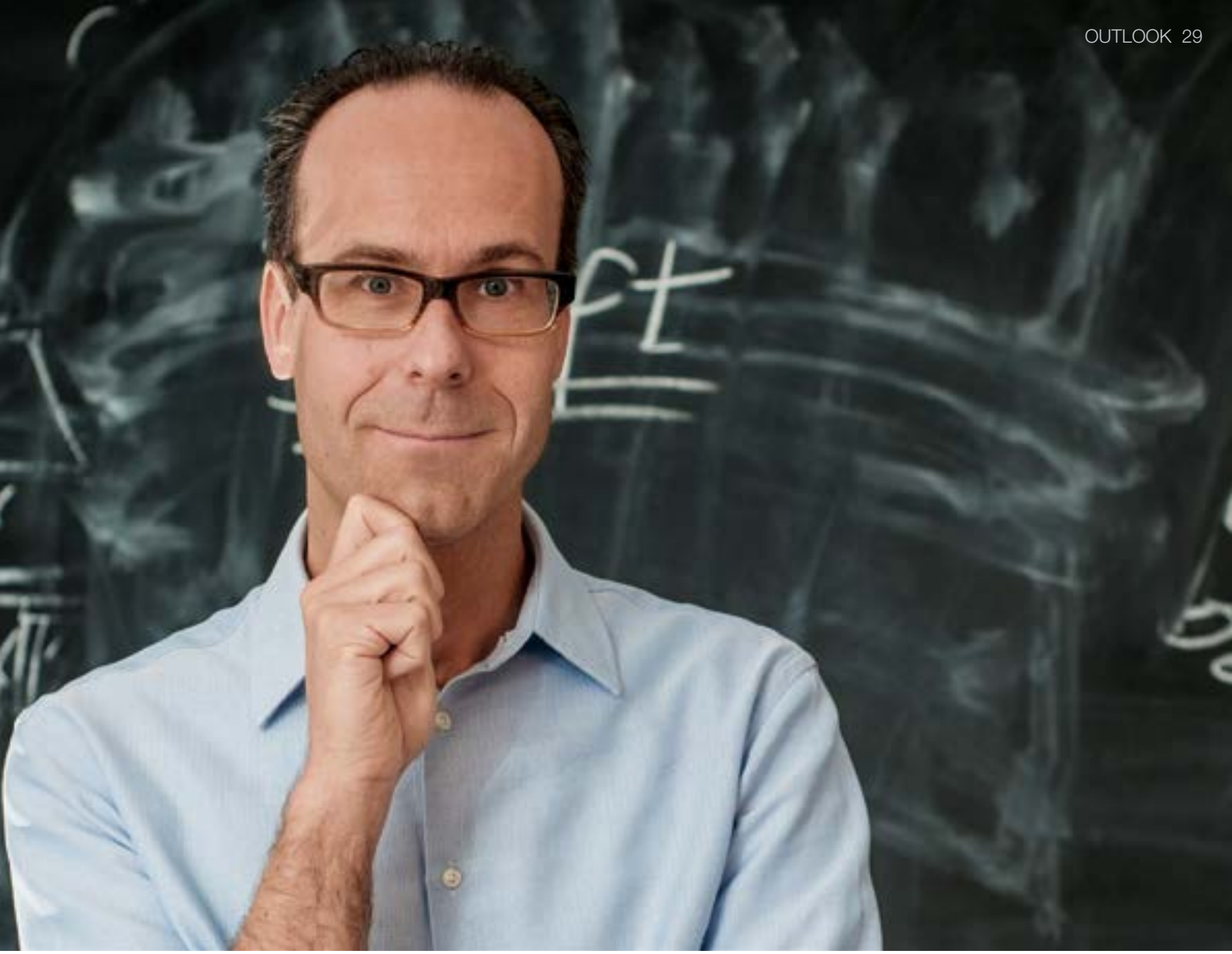
Prof. Frank Piller: Innovation is essential to businesses' survival. The question today is no longer whether I should innovate or why, but how I can innovate successfully. This is because growth can only be sustained through renewal. Even businesses that focus completely on cost leadership are highly innovative, especially in areas like logistics and processes. Now, there are, of course, still plenty of companies, particularly in Germany, that stand out by virtue of their product innovations. But it's the process and business model innovations that are really shaking up markets now. The iPhone is an excellent example: It's a combinatorial innovation that, more than anything, has revolutionized the way music is sold and, by extension, an entire industry.

b on top: What processes are shaping the way products and solutions are created today?

Prof. Frank Piller: One aspect of innovation today is that companies are trying to push technical capabilities to the maximum and are packing in everything they can without pausing to consider how this will benefit the customer. However, it's now more important than ever to understand and focus on customers' needs. By the same token, what's exciting today is that so many products are smart – in other words, they're connected and adaptable. This means they often acquire an altered or enhanced usefulness – say, because individuals write new apps for them. And this happens during the utilization phase, in other words after the process of innovation in a conventional sense has ended.

b on top: How are networks and digitization influencing the way innovations arise?

Prof. Frank Piller: Networks and sharing are what drive innovation. Today, the process is facilitated by dedicated internet platforms. Take the open innovation paradigm, for example. This is a formal, systematic process, designed to discover "unobvious others". Imagine the following: A sales rep notices a machine that a customer has modified. The rep's initial reaction is, "The warranty's void." But what's really happened is that a keen expert has refined the machine because he needed it to do something that it couldn't before. Advanced users like this are indispensable innovation drivers. In the past, they were hard to spot, but today there are open innovation platforms, set up specifically to identify them. Particularly for small and midsized enterprises in the capital goods sector, tools like this are interesting because, increasingly, they're giving rise to demands for entire solutions as opposed to individual products. This process relies on broader knowledge in areas beyond an organization's core expertise, and open innovation provides access to that knowledge.



b on top: What can be done to foster and implement innovations in the context of Industry 4.0?

Prof. Frank Piller: The term Industry 4.0 suggests that industry is merely undergoing an update, but it's actually experiencing a major structural overhaul. This change is about more than just the digitization of products and the development of new business models on that basis. It's also about agility and a passion for experimentation. Here in Germany, we perhaps struggle with that more than other nations. At the same time, digitization is radically reducing development costs in many areas. Businesses therefore need to rethink: Instead of laboriously selecting an idea in which to invest €500,000 and then implementing it to perfection, they should experiment initially by supporting ten ideas, each with €5,000 of funding. You can discover a lot that way, even in an industrial context. For instance, you could build an actual prototype, or you could sign 200 consumers up to a panel to test an idea. The ability to experiment broadly and quickly and to have an idea validated in the marketplace is becoming the key success factor in innovation today. ■

PROF. FRANK PILLER

Born in Munich, Germany, in 1969, Prof. Frank Piller obtained a degree in business administration and economics from the University of Würzburg, where he also went on to gain a Ph.D. in operations management. He then worked at the Technical University of Munich, where he headed the Customer Driven Value Creation research group and completed his post-doctoral degree on Innovation and Value Co-Creation. Until he was offered a professorship at Aachen, he worked in the USA as a research fellow, at the MIT Sloan School of Management, in Cambridge, Massachusetts. Since May 2007, he has held the chair of Technology and Innovation Management (TIM) at RWTH Aachen University, where he also heads the executive MBA (EMBA) technology management program.

EVERYDAY ARTIFACTS

No matter whether they come in the form of hose clamps, cookie cutters, fan impellers or head restraint detents, stamped and formed parts made on Bihler machines are something that we see in almost all areas of our daily lives. And no matter how varied their fields of application, all these parts have one thing in common, namely their particularly high quality, which makes them reliable in use and ensures that they deliver real benefit. And something else that the parts have in common is that they are all manufactured particularly economically, efficiently and with a minimum use of resources – on the tried and tested stamping and forming machines from Otto Bihler Maschinenfabrik.

RELIABLE SUPPORT

Since the seventies, it has been the law that every new car in Europe must be fitted with a head restraint. And with good reason, since they prevent serious neck and spine injuries – in particular whiplash injuries, where the occupants' heads are thrown backwards following a collision. While early head restraints were simple padded elements, they nowadays incorporate a range of comfort features and often also include displays for rear passengers. Irrespective of such features, correct height adjustment is crucial for safety. This is done by pulling the restraint out from the seat until its top edge is at the same height as the top of the passenger's head. The two shafts of the head restraint have notches at regular intervals. These engage with detent mechanisms in the back of the seat, where they are kept at the correct height with locking bars. These metal parts are successfully produced on a GRM 80E stamping and forming machine – at an output rate of 100 units per minute. In day-to-day practice, the benefits of the compact Bihler manufacturing system lie in the easy accessibility of the tools and the optimum arrangement of the bending dies in the linear tool. Each bend can be set separately, and the various processing steps are clearly assigned. This ensures not only ultra-precise components, but also long tool service life. ■

WELL CONNECTED

Wherever pipes, tubes and hoses need to be fitted to rigid connections, you will find hose clamps – on engines, pumps and washing machines as well as in sanitary facilities, in fire tenders or in the petrochemicals industry. And worm-gear hose clamps are especially widespread. They comprise a circular metal band that is tightened using an adjusting screw. The threads of the adjusting screw engage exactly in the perforated metal band or in the embossed grooves in the clamping band. This reduces the internal diameter of the hose clamp, and the hose underneath is pressed securely and tightly onto the connector.

Bihler's BIMERIC BM 1500 NC production and assembly system is the perfect choice for manufacturing the hose clamps. It delivers 100 fully assembled hose clamps per minute and is a particularly flexible manufacturing system that easily covers even the wide variety of clamps with diameters of between eight and 120 millimeters. At the same time, the BIMERIC BM 1500 ensures extremely short setup times of less than 30 minutes. In this case, only very few tool components need to be changed, which is an easy operation, as the compact manufacturing system ensures optimum accessibility. ■

PERFECT FLOW

Fans and fan impellers are to be found in virtually all aspects of our daily lives, such as in car engines, computers, extractor hoods or air conditioning systems. From a physics perspective, they are continuous-flow machines that transport air, usually by means of a wheel rotating inside a housing. Depending on their design, they can create a significant pressure differential between the inlet and outlet sides. Depending on the construction, the wheels can have vanes or rotor blades that are straight or curved forwards or backwards, and can be single-entry or double-entry systems, taking air in on one or both sides.

The important thing with all fans and fan impellers is that they are constructed exactly to a particular shape in order to handle the sometimes considerable rotation effects. Therefore, small and medium-sized, double-entry fan impellers are manufactured on the Bihler GRM 80E stamping and forming machine. Suitable for any application, this machine system for manufacturing precision parts delivers fully assembled fan impellers, each with 48 rotor blades. A total of nine different models of fan impeller are produced with the compact manufacturing system. The particular advantages of the GRM 80E include short setup times, optimum accessibility and consistently high component quality with maximum process reliability. ■

SHAPING GOOD TASTE

The German tradition of homemade Christmas cookies means that moon-shaped cookie cutters like the one shown are seasonal goods and have to be manufactured to order particularly quickly and flexibly on short production schedules. A standard set of cutters will usually comprise ten shapes, from trees and bells, hearts and comets up to moons and stars. An optimum production process demands that the tools for the different cutter shapes can be changed quickly and easily. Which is why these cookie cutters are manufactured on an RM-NC. Despite the large number of variants, this servo-controlled stamping and forming machine offers particularly short retooling times: Just a third of the time compared with traditional, mechanical manufacturing with retooling times of between four and 48 hours. Changeover is a virtually automatic process that is done by adjusting the parameters using the controller.

Another challenge in the manufacturing process is the bended joint of the cutters. Unlike many other models, it is not welded, which guarantees a particularly long life for the cutters. It is the precision of movement of the individual NC units that ensures that the joint is located cleanly and precisely and permanently closed at the end of the entire bending process. The word “Germany” embossed on the side, on the other hand, is applied to the blank strip beforehand by the stamping tool. ■

BIEGEFORM DITTMANN GMBH, LÜDENSCHEID

PRODUCTIVITY TRIPLED

The Lüdenscheid-based company Biegeform Dittmann GmbH specializes in the manufacture of small to medium runs of complex bended wire and stamped/formed parts. Two years ago, the company switched over to servo technology in the form of a GRM-NC and has successfully tripled its in-house production.

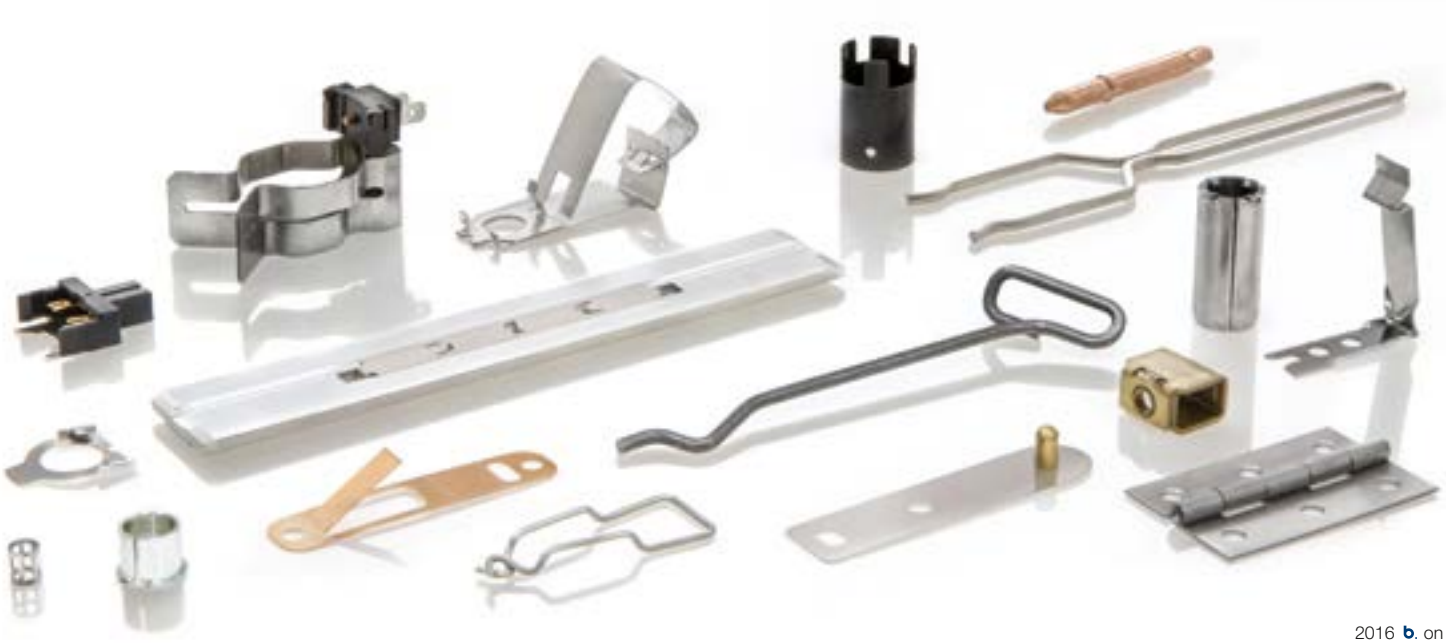
Fast, precise and customer-oriented – this is the philosophy that has brought Biegeform Dittmann GmbH in Lüdenscheid, Germany its success in the metalworking industry for over 35 years. Alongside pure bended wire and stamped articles, the company's product portfolio includes spring clips, springs, contacts, mounts, bushes and assemblies in thicknesses of 0.1 to 3 mm. The enterprise is a long-standing partner to the automotive (supply), electronic engineering and "white" goods industries, as well as to businesses operating in the medical engineering sector and manufacturers of regenerative energy recovery and heating systems. It excels through its in-house CAD-based tool engineering department as well as, of course, its modern machine pool. The majority of the systems installed at Biegeform Dittmann GmbH are sourced from Otto Bihler Maschinenfabrik. In total, the site operates some 17 Bihler machines, the first of which, a GRM 50, was commissioned as long ago as 1973.

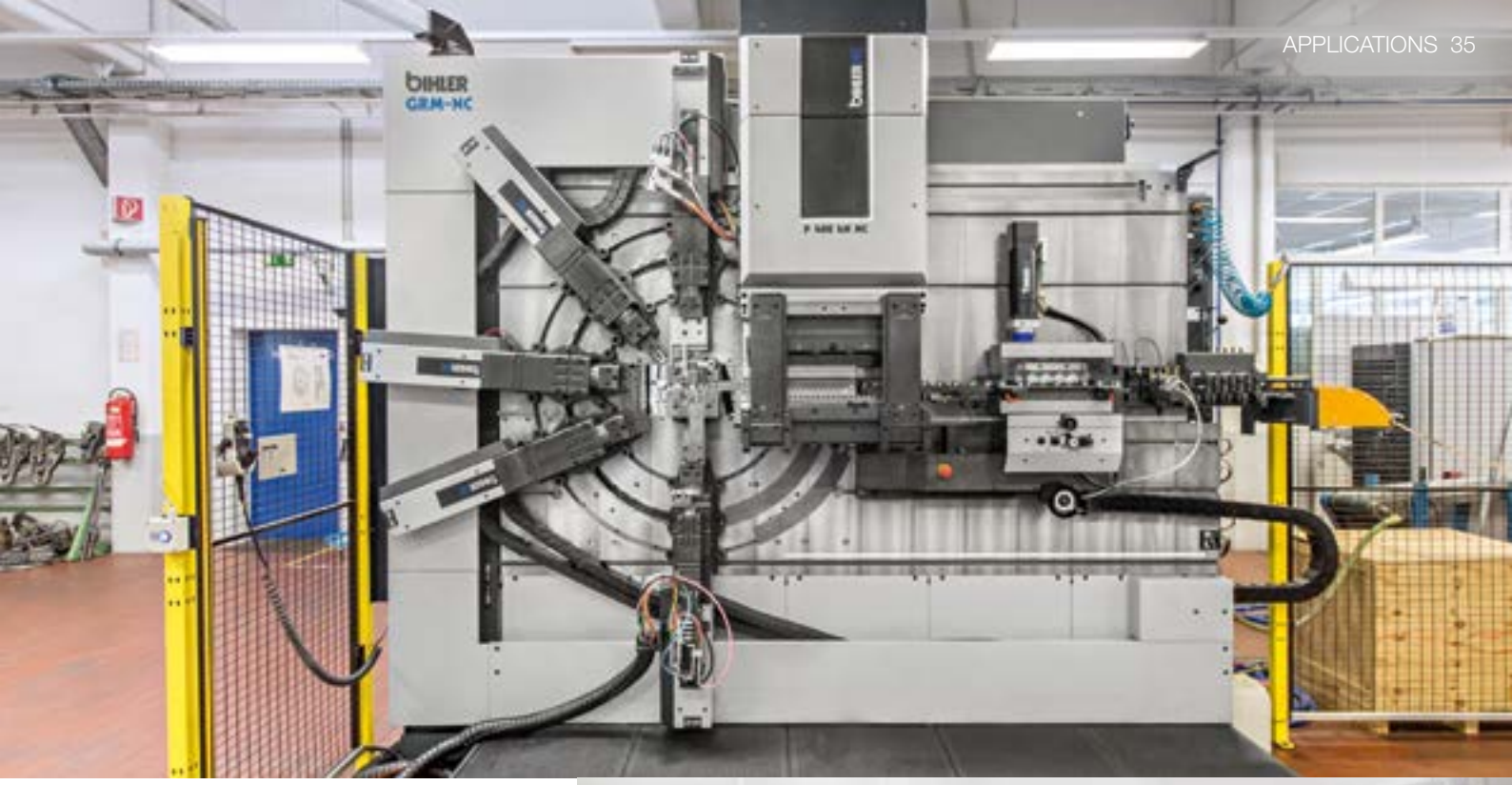
Bihler opens up niche series production opportunities

"At the level of the installed systems, we have concentrated comprehensively on Bihler and have been benefiting from Bihler's proven quality for decades," explains Managing Director Leitgeb. "This provides us with optimum coverage for our product spectrum, which predominantly consists of small and mid-sized runs of 25,000 or more."

Performance boost thanks to NC technology

It was precisely because of these many small series with frequent tool changes that Biegeform Dittmann GmbH decided in late 2013 to further extend its gradually accumulated range of Bihler systems – more specifically in the form of a Bihler GRM-NC which came online at the site in July 2014. "With our new Bihler GRM-NC, we have invested in the future and are now even able to respond to short-term customer requirements," explains Leitgeb. "Overall, we have been able to increase productivity by up to 300 percent thanks to the new GRM-NC, while simultaneously cutting setup times from nearly ten hours to an average of 150 minutes." On its own,





With the new GRM-NC, Managing Director Ralf Leitgeb has been able to increase productivity threefold and dramatically reduce setup times and time-to-market. The new machine joins the existing inventory of 17 Bihler machines on site, which include a Bihler RM 40B bush forming machine.

the GRM-NC does the work of four conventional mechanical machines at Biegeform Dittmann GmbH. The machine is currently being used to manufacture S-hooks and has made it possible to increase throughput from 25 to the present value of 70.

Even faster than before with the Bihler Leantool concept

"For us, the decision to switch over to servo technology has more than paid for itself," says Leitgeb summing up. "We have not only been able to boost productivity and cut setup times but have also reduced our time-to-market by approximately 30 percent." This has allowed the company to improve its market position and win over new customers. A further plus is the system's ease of operation which has made it particularly popular with all the company's employees. And the adoption of NC technology itself proved to be completely unproblematic: "The support we received from Bihler was crucial for our success, due in particular to the fact that we visited Halblech for several weeks to attend training courses," explains Leitgeb. At the same time, five tools were fully adapted for use with the NC technology. "Bihler's bNX software, which can be used to import earlier curve plots into the NC system, was particularly useful during this task". And to boost performance even further in the future, the company is planning to introduce the new Bihler Leantool concept. "We expect this to bring about a further increase in our production speeds, shorter setup and associated times as well as more economical tools for our customers," is Leitgeb's opinion of this project. ■

www.biegeform.de

Biegeform
Dittmann GmbH

BALYFA A/S, GLOSTRUP (DK)

SUCCESSFUL INTRODUCTION OF NC TECHNOLOGY

For more than 50 years, Balyfa a/s, a company headquartered in the Danish town of Glostrup, has been using systems manufactured by Otto Bihler Maschinenfabrik. With a new RM-NC, the company recently switched to NC technology – and is now reaping all the benefits the solution brings.

Since it was founded in 1931, Balyfa a/s, based in Glostrup, Denmark, has been a manufacturer of a wide range of springs, connectors and other punched and bended parts. The company, which has ISO / TS 16949:2009 and ISO 14001 certification, specializes in parts for the automotive, electronic engineering and other high-tech industries. At its Glostrup site, it also has its own tool manufacturing unit.

Almost as old as the company itself is its partnership with Otto Bihler Maschinenfabrik. This goes back to the early 1960s when Balyfa ordered a UFA wire forming machine. The company now manufactures on 19 Bihler systems, 15 of which are located in Glostrup and the other four in the Balyfa subsidiary in Hungary. "We are Bihler specialists," says CEO Niels Ojen Andersen. "Thanks to Bihler and our own, long-standing experience, we are even able to manufacture demanding parts with multiple bends and special features. Another very important aspect is the fact that Bihler spare parts are delivered to us within 24 hours – even in the case of older machines."

Minimum tolerances, maximum production reliability

And with Bihler, the company is also optimally equipped to meet the growing demands of its own customers. "Our customers are demanding ever higher, unvarying parts quality with only minimum tolerances, as well as increasingly complex parts," explains Andersen. "They also want an exceptionally high level of production reliability and failure-free production."

These requirements can be ideally satisfied with the new Bihler RM-NC which started operation at Balyfa in February 2015. "The future belongs to NC technology and the RM-NC is our launchpad into this era," says Andersen. "NC technology offers a whole range of advantages compared to conventional mechanical systems," adds Kristian M. Christensen, QA and Lean Manager at Balyfa. "These include significantly shorter setup times and simple tool changes. At the same time, the tools are cheaper and demand less work on the part of our toolmakers. Last but not least, NC technology offers all kinds of adjustment capabilities."

Precision adjustment, unvarying top quality

And these adjustment capabilities are also necessary, for example in order to successfully compensate for even the tiniest material and quality fluctuations when changing coils. "NC technology allows us to maintain the required parts quality precisely in the middle of

Enthusiastic about the new NC technology: CEO Niels Ojen Andersen (left.), QA and Lean Manager Kristian M. Christensen (right) and Technical Operator Jim Jensen.

Balyfa uses the new RM-NC to manufacture medium batch sizes of complex bended wire parts with extreme precision and a particularly high level of production reliability.

the tolerance range at the touch of a button – and to be able to guarantee this at all times in accordance with the required Cpk process capability index," says Christensen. At present, the RM-NC is used to manufacture medium batch sizes of 500,000 to one million parts per year.

Equipped for future customer requirements

New projects can also be implemented faster and more precisely thanks to the NC technology. An important role here is played by the support provided by Otto Bihler Maschinenfabrik. "The cooperation is ongoing, close and functions perfectly," explains Christensen. "We get answers to all our questions immediately, for example concerning new projects or manufacturing optimizations to existing processes." And all this is backed up by the on-site training courses and instruction provided to Balyfa's employees by Bihler. The result is that the company is ideally equipped for future challenges. "Our customers are demanding an ever more exacting quality level and so their demands for the corresponding certification on our part are growing all the time. In combination with the capabilities that NC technology has given us, we are confident about the future," summarizes Andersen. ■

www.balyfa.com

BALYFA

STEINTEX WALTER VOM STEIN OHG, WERMELSKIRCHEN

EFFICIENCY FROM A SINGLE SUPPLIER

Walter G. vom Stein (right) and his son Leonhard now manage the family-owned company which was founded in 1892 and manufactures accessories for textile machines.

New fiber yarns such as carbon and aramid demand that the looms used to process them are equipped with particularly high-quality materials. That is why Steintex Walter vom Stein OHG, which is headquartered in Wermelskirchen, relies on its BIMERIC BM 4500 for its heald production operations. The machine enables it to perform all the necessary steps at a single system, to manufacture faster and at a higher quality than before, and to integrate innovative new material features.

Since it was founded in 1892, Steintex Walter vom Stein OHG, which is headquartered in the German town of Wermelskirchen, has operated as a successful manufacturer of accessories for textile machines. Its product portfolio includes injection-molded items as well as healds, heddle rod holders, reeds, balloon springs and other formed wire parts for the textiles industry. This is a dynamic, innovative sector that has been revolutionized in recent years through the introduction of new fiber yarns such as carbon and aramid. These are used in the manufacturing of products for special applications such as brake parachutes, geotextiles, tire baskets and other highly wear-resistant parts, for example for the automotive industry. "We have always stood out for our exceptional dynamism and that is why we are able to take advantage of these new developments," explains Walter G. vom Stein, who represents the fourth generation of the family to manage the business.

Minimum time loss

One impressive example of this dynamism is the new Bihler BIMERIC BM 4500, a new, multifunctional machining center that was acquired to complement the existing machine pool in late 2014. "With our new BIMERIC, we are now able to produce complex stamped parts involving different operations in a single end-to-end manufacturing process," explains Walter G. vom Stein. "In particular, the RZV radial gripper feed is ideal for our thin material."

What is more, the new system has made the laser marking of the materials possible for the first time and everything can be done much more efficiently than before: "We can now reduce our manufacturing times by between 25 and 30 percent," says Leonhard vom Stein who is responsible for Marketing and Controlling. "And retooling times have also been cut from six to eight hours in the past to an average of two hours now."

Custom process design

At present, the BIMERIC is being used to manufacture the healds that are used to guide the new high-performance yarns. The metal strip,

With the new BIMERIC BM 4500, it is now possible to manufacture complex stamped parts in a single, end-to-end production process. The system also features a packaging and magazining unit.

which is usually some five millimeters wide and 0.2 millimeters thick, is fed to the RZV via an alignment mechanism. This is followed by the application of the laser marking and the punching out of the central recess. It is through this hole, the so-called "thread eyelet" in the center of the heald, that the threads will subsequently pass on their way to the loom. A laser is also used to round off the edges of the thread eyelet in order to prevent carbon fiber yarns, for example, which consist of up to 40,000 individual filaments from breaking or fraying. It is then rotated slightly to open it out so that the thread can subsequently be inserted more easily. Once the healds, which vary between 15 and 100 centimeters in length, have been separated, they are subjected to a downstream visual inspection to ensure their quality. "The fact that practically any number of individually configured processes and machining stations can be integrated in the system as a function of requirements is another of the BIMERIC's great advantages," confirms Walter G. vom Stein. To assist in the manufacture of healds, the company also plans to commission a packaging and magazining unit with an integrated quality assurance process.

Further machine already planned

After approximately two years of operation, the new BIMERIC BM 4500 has already more than proved its worth, thanks in particular to its stability and trouble-free performance. At the same time, it provides the perfect basis for all the company's current and future requirements. "These include the new yarns for technical applications, which represent another area of new business opportunities for us. In addition, the system opens up new possibilities for manufacturing hybrid plastic parts." This is why the company has already taken the decision to acquire a further BIMERIC BM 4500 next year. ■

www.steintex.de

steintex

MAXFELD STANZBIEGETECHNIK GMBH & CO. KG

SERVO TECHNOLOGY FOR MID-SIZED COMPANIES

Two years ago, Maxfeld Stanzbiegetechnik GmbH & Co. KG, which is headquartered in Langenzenn, became one of the first of the smaller mid-sized companies to invest in NC technology from Otto Bihler Maschinenfabrik. And the investment in two BIMERIC machines and one RM-NC is already paying for itself: through improved quality, increased productivity and new customer projects.

Since it was founded as Drahtfabrik Maxfeld in 1901, the company has developed to become a well-known supplier of stamped and formed parts as well as of integrated process solutions. And as early as the 1970s, the company decided to invest in the, at that time revolutionary, wire forming machines from Otto Bihler Maschinenfabrik – with great success as the enterprise's long history testifies. Recently, the company, as a fairly small mid-sized company with many years of experience, decided to invest in Bihler's NC technology, and once again the choice proved to be a success. "With the introduction of NC technology, we are making a similar leap at the technical level as we did back then," says Managing Director Udo Lechner with certainty. "Our first investment, in 2014, was in a BIMERIC which allowed us to integrate a manufacturing process consisting of three different operating steps, some of which had been outsourced, on a single system." The product in this case was shielding plates for the automotive industry that are still being manufactured ready for immediate use and packaged at the rate of 120 parts per minute.

Telling competitive advantages

"Our main focus at the time was not on the savings we could make but on the successfully achieved quality improvements and increased production reliability," explains Lechner. However, another factor that weighed heavily in the decision was Bihler's extensive range of training services, including the first tool adaptations, which were performed jointly with the customer.

Lechner sums up as follows: "NC technology enables us to go a step further and offer integrated solutions that allow us to differentiate ourselves from our competitors. We also benefit from the ease with which our tools can be adapted and a significant increase in production speeds." Thanks to the NC technology, magazined and specially packaged parts can now be produced as easily as automated manufacturing solutions for highly complex components. "And with the BIMERIC, we can produce parts that meet technical requirements in terms of product purity, adds Works Manager Andreas Pusch. "In this context, the VC 1 controller, which acts as a universal interface unit is particularly beneficial, especially when working with third-party applications."

Expertise that attracts customers

Taken together, all these benefits of NC technology encouraged Maxfeld Stanzbiegetechnik GmbH & Co. KG to go on to acquire a second BIMERIC as well as an RM-NC. "Alongside the increased throughput, what was decisive for us was naturally also the shorter setup times and the flexibility this gives us to produce even quite small batch sizes faster than before," explains Lechner. While many adapted series produc-

Managing Director Udo Lechner (right) and Works Manager Andreas Pusch can guarantee outstanding quality and production reliability thanks to Bihler's NC technology.

The new BIMERIC BM 3000 provides higher throughput, shorter setup times and the flexibility needed to manufacture small batch sizes.

tion tools are used at the RM-NC, the latest BIMERIC has given the company access to a completely new market segment. "This takes the form of fittings for the furniture industry, which the company is manufacturing at the rate of ten million per year," explains Pusch.

"It is particularly pleasing that it was through Bihler that we were able to win this customer which had asked the company if it knew of anyone with the appropriate production expertise." In total the company's machine pool now includes 23 systems from Bihler.

Ready for future challenges

Maxfeld Stanzbiegetechnik GmbH & Co. KG is now an established operator of NC technology – and is well positioned to meet the challenges of the future: According to Lechner, "Together with conventional stamping and forming technology and simple punching technology, NC technology is now the third string to our bow." "In particular, it is the optimum response to growing customer demands for perfect parts quality and maximized production reliability." ■

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MAXFELD®

MANAGING TECHNICAL SUPPORT PROJECTS

CUSTOMER SERVICE GETS A HELPING HAND

At Bihler, our ability to handle customer inquiries, conduct highly complex projects and coordinate service operations quickly, proficiently and reliably ensures that all our customers can reap the benefits of maximum machine availability and smooth, efficient manufacturing processes. A new project manager, Hubert Werner, is now assisting Technical Support to make Bihler's proven service delivery even faster and more efficient, and to enhance customer satisfaction still further.

Bihler machines' outstanding availability and minimum downtime have earned them an enviable reputation for reliability. There are many Bihler systems in service that have essentially run trouble-free, not just for years but even decades. And on those occasions when issues or faults do arise that customers can't resolve on their own, Otto Bihler Maschinenfabrik's customer service teams are on hand to offer help and advice. Bihler's hotline, available from 7am to 7pm on workdays by calling +49 (0)8368 18200, provides support on machines, electrical equipment, controllers and welding systems. Bihler also operates a remote service, which offers valuable assistance by enabling faults to be analyzed – and often cleared – instantly, at the press of a button. And, lastly, there is Bihler's worldwide rapid-response repair service that attends to customer systems in the field and gets them back up and running in as little time as possible.

New core expertise

The growing complexity and sophistication of our machines and systems in recent years have gradually increased the demands placed on Bihler's customer service and support. Today, more inquiries concern electronics and NC technology than mechanical issues, and demand for controller conversions has risen sharply. For Bihler, this means service operations are becoming more and more complex; they also require

greater preparation than in the past because they involve coordinated action by different departments, service managers, hotline agents and service engineers. To make sure that we can continue nonetheless to deliver the support our customers need – quickly, efficiently and with the desired outcomes – Technical Support now has a new project manager, Hubert Werner. "My role revolves primarily around preparing service operations, planning and supporting complex projects, and coordinating service units and departments," Werner explains. "I also supervise assembly engineers' training programs, and will be acting as the service manager's deputy."

Optimized org structure

The new project manager's day-to-day work includes specific tasks such as handling inquiries concerning NC axis and RZV feed unit upgrades and retrofits, or software updates. He also follows up on service operations involving electrical and control technology, and provides second-level support for the Bihler hotline. Throughout these activities, his focus is on optimizing technical support by establishing the right procedures and frameworks. This means that complex projects – such as converting customer machines in the field to new VC 1 or VC 1E controllers, replacing individual control components with a VC 1 standalone solution, or carrying out extensive retrofits and conversions on individual NC process modules – can now be completed faster and more efficiently than in the past.

Customer satisfaction first

The work carried out by our new project manager underpins different areas of customer service in different ways: The hotline and electronic ticket handling benefit from additional support; service engineers receive more in-depth preparation; and company departments now have a new point of contact, plus access to specialist resources in electronic engineering. Overall, the benefits for Bihler customers are substantial. They can rely on a more dynamic and solution-driven customer service, better equipped than ever to resolve issues with Bihler systems quickly and efficiently. ■

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… PROFESSOR DANIEL A. MILLER, DR. BRETT GUNNINK, PROFESSOR DURWARD K. SOBEK, PROFESSOR WOLFRAM VOLK AND GEORGE KEREMEDJIEV

GERMAN/ AMERICAN COOPERATION

At the start of June 2016, Otto Bihler Maschinenfabrik had the pleasure of welcoming Dr. Brett Gunnink, Professor Daniel A. Miller and Professor Durward K. Sobek, the leading members of the Department of Mechanical and Industrial Engineering at the Montana State University. The guest list also included a visit from Professor Wolfram Volk, full professor at the Institute for Metal Forming and Casting (UTG) of Munich Technical University. The purpose of the visit was to guide the development of a new, international partnership. *b on top* spoke with Mathias Bihler, Managing Director of Otto Bihler Maschinenfabrik, the representatives of the US university, Professor Wolfram Volk and George Keremedjiev, President of Tecknow Education Services, about the collaborative project and the added value of such projects for industry and higher education.

b on top: What demands are industry and the economy currently placing on the education and training of young people?

Mathias Bihler: As globalization progresses, markets are becoming increasingly interlinked. Naturally, this also applies to the people in the enterprises involved and will demand ever more intensive interaction and communication between them in the future. And not only at the level of the actual collaboration between them but also in the way these individuals are trained. That is why the cooperations and partnerships between industry and higher education are constantly growing in importance. It is therefore a great pleasure for me to be able to welcome our guests from Montana State University and in this way help to promote more and closer partnerships of this type in the future.

Dr. Brett Gunnink: At this point,allow me to thank you very sincerely for your great hospitality and the wonderful time we have spent here. This type of interaction and cooperation is also of particular value to us because we, too, understand the need for it within the framework of university education. Of course, we also try to instill the underlying concepts and principles from the industrial and economic worlds in our students. Despite this, at our institute, technical training, and in particular the conduct of shared industrial projects are not as deeply integrated in our teaching practices as they are here. That is why it is so interesting to find out about the structures in use here, and the resulting benefits for everyone involved are clear to see.

b on top: What form might a partnership between the Montana State University, Munich Technical University and Otto Bihler Maschinenfabrik take?

Professor Daniel A. Miller: We would love to extend our partnership with Otto Bihler Maschinenfabrik and the Munich Technical University and initiate a long-term partnership. One way of doing this might be to organize a two-way exchange of students who could work on joint projects in the two countries. As soon as we get back, we will check out the possibilities and move this project forward.

Professor Wolfram Volk: As far as student exchanges are concerned, it would make sense for our students to study with you in Montana and for your students, for example, to write their master's dissertations here with us. Provided that the qualifications are recognized, this would represent a defined period of six months, during which it would be possible to provide grants for the students. This would be the easiest way to establish a two-way contact. And this would also include masters-related research projects with our industrial partners such as Otto Bihler Maschinenfabrik, which has

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Initiating an international joint project: Professor Wolfram Volk, Professor Durward K. Sobek, Dr. Brett Gunnink, Professor Daniel A. Miller, Mathias Bihler and George Keremedjiev (from left to right).

Mathias Bihler, Partner and Managing Director of Otto Bihler Maschinenfabrik:

"The collaborative partnership equips students with the intercultural skills that are crucial for success on the international stage."

Professor Durward K. Sobek, Department of Mechanical and Industrial Engineering, Montana State University:

"The planned collaboration allows our students to gain solid practical experience and to have an effective way of enhancing their theoretical knowledge with Bihler."

► made one of its BIFLEX NC laser cutting and forming systems available to us.

b on top: What research projects are currently being conducted using the BIFLEX?

Professor Wolfram Volk: We are currently looking at the problem of pulled slugs that emerge for reasons that are so far unclear and can cause damage to the tools. On the BIFLEX, we can examine the dimensions and effects of factors such as adhesion, adherence of burr at the die and underpressures due to springback to a very high degree of precision. Moreover the Biflex allows us to quantify these effects for the very first time. To do this, we use tools that are equipped with sensors that measure even the minutest manifestations of these forces. The great accuracy and precision of the BIFLEX are perfectly suited for these tasks. The aim is to develop design characteristics that make it possible to develop cutting tools that will prevent the occurrence of pulled slugs. By contrast, the Optibend project has now been successfully completed. This project examined the influence of the forming speed on springback and the stretched length of bended parts. Thanks to our investigations at the BIFLEX, we have been able to derive design rules for issues such as overcut, stretched length and springback. These are now available and are of value for assessing the material and flow speeds.

b on top: What is the role of Otto Bihler Maschinenfabrik in the planned partnership?

Professor Durward K. Sobek: Collaborative projects in partnership with Otto Bihler Maschinenfabrik would be perfect for our students. Such projects would offer them the possibility of gathering concrete, practical experience and extending their theoretical knowledge through valuable know-how obtained in association with Bihler as a world-leading supplier of stamping/forming, welding and assembly technology.

b on top: So the students would benefit in many different ways, and not just at the technical level, from the shared ideas and two-way exchange.

Dr. Brett Gunnink: Indeed, and especially because mechanical engineering, in particular, involves more than purely technical knowledge. Beyond this, the ability to work as part of a team and collaborate with others are very important and greatly prized by employers. In the training we offer, we try to convey this at the practical level, for example by getting our students to work with older, experienced engineers in an industrial environment.

George Keremedjiev: And in addition to these soft skills, intercultural exchange is also important. Consequently, a partnership with Munich Technical University and Otto Bihler Maschinenfabrik would be a perfect opportunity for our students to acquire these valuable and important skills and abilities which will be of great benefit to them in the long term.

b on top: What is Munich Technical University's position regarding the current training requirements expressed by the industrial and economic worlds?

Professor Wolfram Volk: The training we provide here at the Munich

Professor Wolfram Volk, full professor at the Institute for Metal Forming and Casting (UTG) of Munich Technical University.

"Masters theses in an international environment are a proven way of gaining these soft skills."

Technical University is very strongly geared to industrial and economic demands. This can be seen, for example, in the many joint projects that are fully financed by businesses. In 2015 alone, the University's Faculty of Mechanical Engineering had a budget of some 56 million euros resulting from this type of industry project. This gives us the resources we need, for example to remunerate our doctoral students. At the same time, we have also been very successful with this model at the international level and are playing a leading role in combination with our partners from the industrial and economic worlds. Last but not least, we also benefit from the immediate proximity of our location to many well-known names from the automotive industry.

b on top: What importance do you attach to the international dimension and global learning and working?

Professor Wolfram Volk: In addition to the purely technical subjects, we must look much more closely at the soft skills that we have already mentioned and teach these to our graduates, in particular given that they are increasing likely to start their professional careers immediately in an international environment. Masters work undertaken in an international environment is a tried-and-tested way of learning these skills, for example by understanding what the rules of business are in Asia. And our students are extremely interested in these subjects because they know how important these international competences and soft skills are for their professional careers. We, in turn, are happy that we have the contacts needed to make overseas internships in a discipline-specific context possible. That is why collaboration between the Montana State Universitiy and Otto Bihler Maschinenfabrik would also be for us another important aspect of the technical and intercultural training we offer our students.

b on top: What is the role of teamwork capabilities and intercultural skills for industry and the economy?

Mathias Bihler: Success is only possible if everyone works together as a team. At the international level, this means first and foremost an understanding of the other culture and of the mentality and working approach of the employees. These skills cannot be learned at university. Instead, they have to be acquired through practical experience, and in particular through partnerships of the type we want to build. Many enterprises that move abroad fail due to their lack of precisely these skills, even though they often supply top-class products. Of course, it takes time and patience to adapt one's own way of thinking and of organizing one's work to a different cultural context and approach. However, this is the only way to be successful at the international level in the light of the increasing competition and takeovers from the Far East.

And a collaborative partnership provides unique qualifications. It gives rise to the strength and competitive abilities that we need if we are to be successful in the global market. ■

MONTANA STATE UNIVERSITY

Founded in 1893, Montana State University is a state university located in Bozeman in the southwest of the US state of Montana. With more than 15,000 students, the university is the largest higher education establishment in the state. The College of Engineering is one of nine colleges at the university and is home to the Department of Mechanical and Industrial Engineering. Dr. Brett Gunnink is the dean, Professor Daniel A. Miller is head of the department, and Professor Durward K. Sobek is the program coordinator for Industrial and Management Systems Engineering.

SERVO DRIVE OPENS UP MORE POSSIBILITIES

NC WELDING

Alongside traditional stamping and forming technology, welding is one of the core fields of expertise of Otto Bihler Maschinenfabrik. And with its new, servo-controlled welding system B 5000-NC, the company is opening up innovative possibilities to all users for extremely flexible and efficient contact welding.

Otto Bihler Maschinenfabrik is the world's leading supplier of stamping and forming, welding and assembly technology systems. But ancillary fields such as welding technology also number among the company's core competencies. After all, Bihler has more than 40 years of experience in integrating welding processes in automation solutions in order to deliver maximum process reliability, the very highest level of productivity and excellent weld quality.

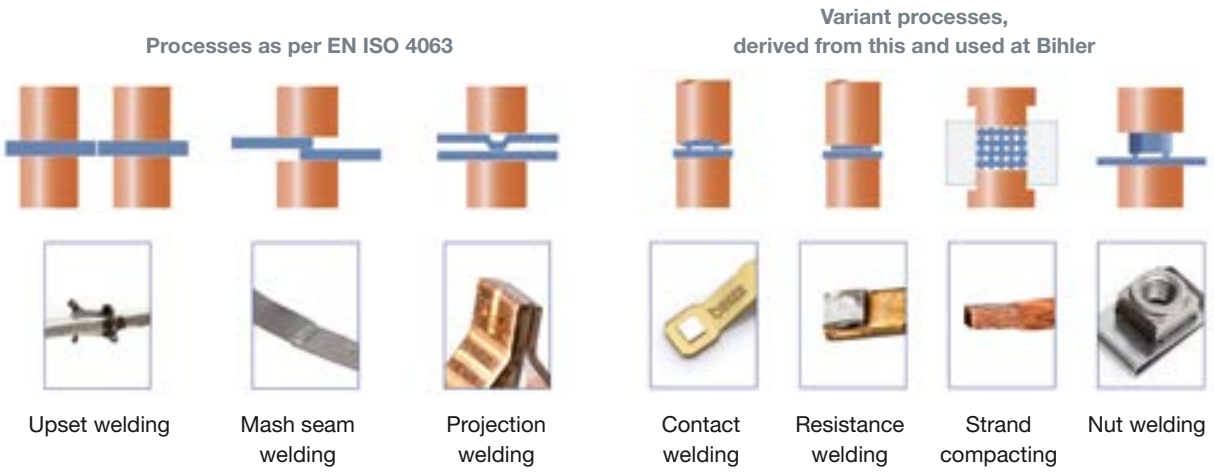
The particular strengths of Otto Bihler Maschinenfabrik can be found in resistance welding. This can be subdivided into a number of different welding techniques, such as upset welding, mash seam welding and projection welding. These techniques are described in EN ISO 4063 and differ from each other in terms of the type of joint, the way in which energy is applied and the given application. At the same time, however, they form the basis for the welding techniques that Bihler has developed from them. These include contact welding, resistance brazing, strand compacting and nut welding.

A close look at NC contact welding

NC contact welding opens up completely new dimensions in respect of boosting productivity and increasing production flexibility. The technique involves actuating the electrode holders using NC drives that can be flexibly programmed using the operating panel. As a result, all the welding processes can now be carried out independently of the working rhythm of the primary system and can thus be implemented without reference to aspects such as the press stroke or press speed. This allows users to achieve higher process speeds, simplify the peripheral units and boost manufacturing quality. This opens up entirely new perspectives for your production operations, particularly in the field of progressive production technology.

B 5000-NC: Complete system for maximum flexibility

And that is precisely the reason that Bihler is offering the B 5000-NC welding system. It brings together two tried and tested, high-performance systems: On the one hand, the B 5000 welding control system, that is used to set, adjust and moni-



The B 5000-NC is the complete NC welding system that works independently of the working rhythm of the primary system.

tor the welding parameters for optimal results over a huge array of different tasks, and, on the other hand, the highly flexible VariControl VC 1 machine and process controller. This offers a maximum of freedom in programming NC axes, for example for actuating electrode holders, performing forming movements or feeding material. The standard B 5000-NC system is configured for simultaneous operation of up to two welding stations. When expanded using modular control cabinets, the system allows a maximum of eight welding inverters with a transformer output of up to 250 kVA. The system can be extended to include any number of NC controllers and process modules. Beyond this, the B 5000-NC welding system can be operated synchronously using an encoder system or asynchronously with the primary system.

Value-added from a single source

The B 5000-NC allows users to avoid interface problems, reduce effort, time and costs when planning automation tasks and benefit from rapid initial commissioning. This is because Bihler offers everything from a single source, from complete welding equipment systems with flexible contact welding machines featuring speeds of up to 600 weld operations per minute, right up to high-performance transformers. Furthermore, the modular concept permits changes to be made at any time subsequently and allows custom extensions to the system. In this way, it is possible to realize new processing tasks flexibly and economically. Not only that: Bihler's wide-ranging portfolio of high-performance process modules means that the entire range of manufacturing and assembly technology applications for all aspects of sheet metal forming are available. ■

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TOOLS AND PROGRAMMING

ENHANCED SUPPORT

Klaus Scheiber joins Bihler's customer support team. He provides support to all our customers on aspects relating to tooling and programming.

Having previously worked in programming in the Bihler toolmaking shop, Klaus Scheiber is now also responsible for customer support with immediate effect. He is the central point of contact, providing support to all our customers who have questions about tools and programming. His responsibilities also include assessments of the practicability and technical feasibility of specific system concepts, along with training courses and presentations. In this way, Bihler is enhancing the support it provides and is once again helping to boost customer satisfaction. ■

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B ON TOP CYCLING TIP

TOUR DE LAGO

Germany's Allgäu region is a paradise for cyclists. With its spectacular, sweeping mountain panorama, rolling Alpine foothills and countless lakes, it's the perfect place to explore on a tourer, racer or mountain bike. The region has something to offer riders of all abilities – everything from steep hill climbs with plenty of altitude to gentle, on-the-level rides along the lakeshore of the Forggensee or the banks of the river Lech. The ideal first outing for any keen cyclist is a circuit around Forggensee, which comes complete with a view of Neuschwanstein castle.

Our 31.2-kilometer beginners' tour starts in the historic town of Füssen, a former Roman settlement. Covering the Königswinkel area of Allgäu, it's great for tour or trekking bikes and not too challenging in terms of fitness as it involves a total ascent of just 170 meters. It typically takes a good two hours to complete, but there are plenty of places to stop for a rest or refreshments along the way, so it's best to leave plenty of time. Our starting point is the marina in Füssen. We head off clockwise around Forggensee, Germany's largest artificial lake, along the west shore. Passing through Rieden, we reach Rosshaupten and, soon after, the lake's mighty dam. The countless boat sails that can be seen across the expanse of water underscore Forggensee's popularity as a sailing venue – and what could be finer than skimming across the water or cycling along the lakeshore with the mountain chain for a backdrop? But back to our tour: Having passed the dam, we reach our way station, the appositely named Panoramastadl (www.panoramastadl.de), with its panoramic mountain vista. After a good long rest, we head on toward Illasbergsee, a small tributary lake next to Forggensee. Soon, we reach the delightful Hegratsrieder See, a perfect photo opportunity with its picturesque chapel. Continuing through Brunnen, our next way point, we head back to Füssen, but not without a quick stop before the finish line to reward ourselves with an ice cream for all the exertion – a fine finale to a fabulous tour through east Allgäu. For more information, visit: www.fuessen.de ■

Photo credits: Wolfgang B. Kleiner / mk publishing, Füssen Tourism and Marketing / Gerhard Eisenschink

View from the west lakeshore toward Tegelberg

Forggensee is particularly popular among dinghy sailors

Picturesque Allgäu:
The chapel at Hegratsrieder See

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