b on top

THE MAGAZINE OF
OTTO BIHLER
MASCHINENFABRIK
GMBH & CO. KG
2018

USE DIGITAL TECHNOLOGY TO EXPLOIT THE POTENTIALS

◄ About the title photo

Mixed reality glasses of the type shown here combine data from the virtual world with the real-life situation to form the so-called “mixed reality”. The digital 3D display using real-time data is particularly well-suited for analyzing and optimizing processes and workflows. In this way, for example, manufacturing scenarios can be simulated and tested effectively without having any impact on actual production.

b. on top
The magazine of
Otto Bihler Maschinenfabrik
GmbH & Co. KG

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Dear readers,

digitalization is being described as the Fourth Industrial Revolution. It has developed dramatically in recent years and its evolution will only continue to intensify in the future, affecting every aspect of life as we know it. Even now, it is opening up many new possibilities and avenues of progress in design processes and business applications by implementing smart manufacturing solutions in very specific ways. The focus is now placed on intelligent production systems which are completely interfaced and integrated with one another, ensuring the highest level of quality, efficiency, flexibility, and reliability. Production systems of this type exploit the full potentials of digitalization and therefore generate increased productivity and ensure competitiveness, which are absolutely necessary in today's marketplace.

This Digital Transformation of processes and business applications harnesses data and, in turn, provides a transparent insight into current trouble spots and inefficiencies, (and in doing so, it helps identify the areas in which effective optimization potentials exist). And this potential is immense. On average, a company can realistically realize a 15-20 percent increase in productivity through digitalization and this type of potential is possible in practically every business.

We see many strategic partners and customers who are actively and successfully implementing digitalization and smart production solutions. Many others, however, are skeptical and hesitate. My advice is, don't wait too long. Instead, take full advantage of the many opportunities the Digital World has to offer you! Whether you are focusing on optimizing an existing process or beginning a new smart project, we will support you from your first ideas right through to final production. Based on our manufacturing technology, we will work with you to develop intelligent production solutions that will meet the challenges of today and tomorrow. And after that, the continuous progress made by our Customer Support Team will help you ensure maximum machine efficiency and productivity.

In our current edition of b on top, we would like to show you how our partners and customers are utilizing the many possibilities of the digital world in their own companies and how they are benefiting from it. I hope you find the current edition both enjoyable and inspiring.

Mathias Bihler

b. on top 2018

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UPDATED AND EXPANDED

THE NEW BIHLER WELDING GUIDE

For many years, the **Bihler welding guide** has been the go-to reference work, providing greater expertise and efficiency for resistance welding in particular. It offers comprehensive, easily understood explanations of upset welding, strand compacting, mash seam welding, nut welding, projection welding as well as resistance annealing and contact welding and brazing. The new version has now been updated to cover the B 20K high-performance welding controller and expanded to include new application examples. The descriptions of the Bihler welding technology hardware coupled with a wealth of valuable practical tips for day-to-day work make the new Bihler welding guide the perfect reference work. The welding guide can be obtained free of charge at: www.bihler.de/en/automation-technology-mechanical-engineering/welding-technology.html. ■

NORMANN BLASIG

»A NEW FORCE IN SALES AND MARKETING«

Since May 2018, **Normann Blasig** has been in charge of sales and marketing at Otto Bihler Maschinenfabrik. Born in Hesse, he studied mechanical engineering in Bochum and Nuremberg and subsequently worked for more than 25 years in international sales and project management for capital goods in the sheet metal processing industry. Now 55, he added to his extensive specialist and practical knowledge in various positions in North and South America as well as in Asia and Africa. With his expertise and many years of experience, he is now making his mark in the sales and marketing unit at Bihler: "It's a matter of optimizing internal structures and working together as a team, openly and in constant dialog with each other and across departments," says Normann Blasig. "The aim is to intensify and extend customer contact worldwide and thus to continue to drive Bihler forward in the future." Normann Blasig succeeds Ludwig Mayer, who had spent an intensive three months familiarizing him with his new tasks. ■

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10 YEARS OF BEP AND BIHLER

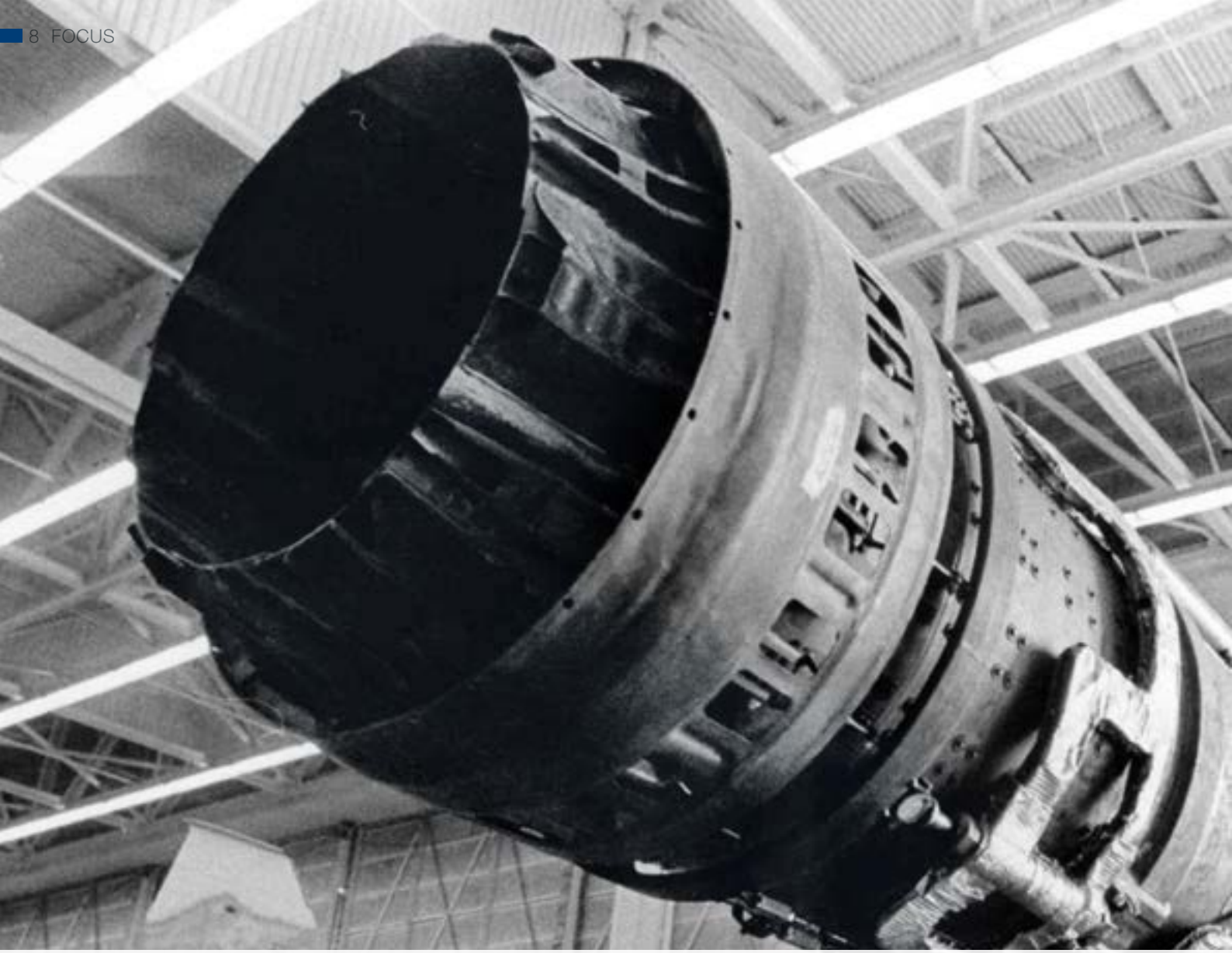
SCANDINAVIAN SUCCESS STORY

For exactly ten years now, Otto Bihler Maschinenfabrik has been working together with **Göran Bragd** from the Swedish company BEP Teknik AB. He is Bihler's representative in Scandinavia and his experience and drive were compelling from the word go. After intensive training in Bihler technology, he and Torben Teter began to explain to customers in Sweden and Denmark the advantages and possibilities offered by Bihler machines. And they were extremely successful. For instance, BEP sold a number of mechanical machines in Denmark and Sweden very early on. And with the introduction of the new servo machines, Bihler then had the ideal solution to meet the demands of the high-wage Scandinavian markets for the shortest possible tool change times. In 2012, the very first GRM-NC servo stamping and forming machine went to Lesjöfors Banddetaljer AB in Sweden. In 2014, the Danish company Balyfa AS acquired an RM-NC, and a major Swedish customer ordered three BIMERIC BM 4500s in 2016 and 2017. This year a LEANTOOL-equipped GRM-NC will be delivered to Spring Systems AB in Sweden. "We are proud of what we have achieved, but of course we are also looking forward to further cooperation in a spirit of partnership," explains Göran Bragd. "We will do everything we can to ensure that the success story of Bihler and BEP continues for a long time to come". And three independent companies are now working hard in support of this goal. These are ORIGIN Tool AB, which designs and sells tools for Bihler machines, Kinne Teknik AB, which supports customers in tool and machine optimization and provides strategies for efficient production, and Industrilogik AB, which offers maintenance and service support. ■

NEW SKI BINDING DEVELOPED

BODE MILLER AT BIHLER

American skiing legend **Bode Miller** visited Bihler in Halblech in the spring of 2018. The multiple world champion and Olympic champion was there to find out about optimizing his new "Bomber Ski" binding, which was the result of intensive discussions between Bode Miller and Mathias Bihler. While he was there, he was able to inspect the first prototypes of the new ski binding plate. This had been developed, simulated and then redesigned by the experts at Bihler using Bihler's bNX technology software. One special highlight of the binding plate is its spring feature with up to 4 millimeters of adjustable spring travel and variable spring force. It thus ensures extremely precise transmission of body tension through the ski boots to the skis. The binding and the ski thus react as a synchronized, intelligent unit that promises even better handling as well as significantly more fun and safety. The new binding plate is currently being tested by Bode Miller personally in the New Zealand Alps. His feedback flows directly into further adaptations, which Bihler is then able to implement in the best way possible, thanks to their many years of expertise as an experienced development partner. ■



HOW TO INCREASE PRODUCTIVITY?

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USE DIGITAL TECHNOLOGY TO EXPLOIT THE POTENTIALS

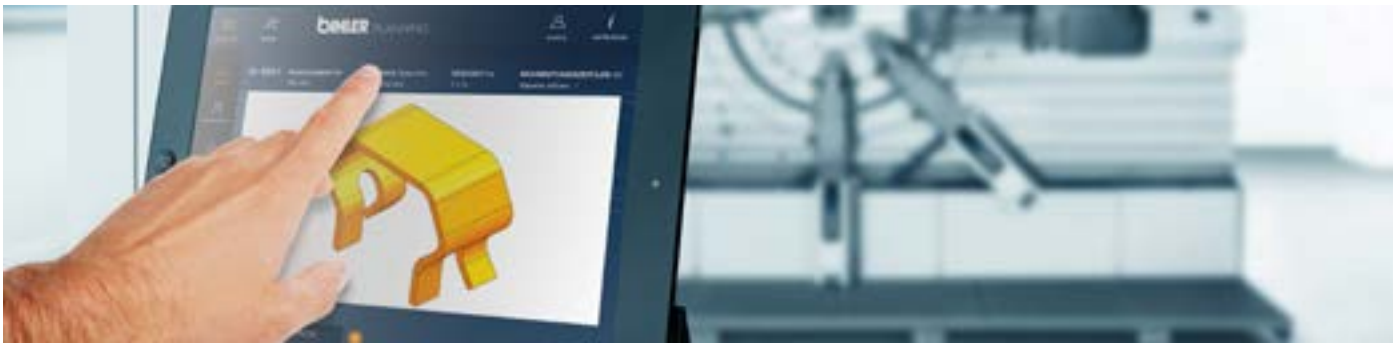
Photo credits: Microsoft

Otto Bihler Maschinenfabrik offers a wide range of products and services to ensure the success of the Digital Transformation and bring about fully networked manufacturing solutions based on the Industry 4.0 principle. These include intelligent, self-controlling machines as well as full data availability for all processes, combined with innovative online support services. With these, it is now possible to efficiently take advantage of the potentials that lie dormant in practically every enterprise. At the same time, however, they ensure that all users are also perfectly equipped for the smart production of the future.

Digitalization based on the Industry 4.0 principle and the transformation to fully networked, highly automated manufacturing solutions is moving on apace. The focus is placed on the digital networking of products, machines, people and processes and consequently on cross-system data use – with a clear aim and enormous potential: "The aim of the Digital World, in combination with the Industry 4.0 concept, is to generate productivity. This is only possible if processes are equipped with intelligence, depicted digitally and transparently, and are combined with business and economic data. It then quickly becomes clear just by looking where wastage and inefficiencies occur and where it is possible to find potential for optimization that can be exploited using suitable measure," explains Mathias Bihler. "Overall, it is then possible to generate the greatest possible efficiency, which is a vital necessity when you consider the competitive global environment. I think that by integrating the digital world, all companies can increase their efficiency by an average of 20 percent."

Highly intelligent systems

Otto Bihler Maschinenfabrik is already in an outstanding position to open up potentials of this type and implement the corresponding



digital strategies. This starts with the system itself, which possesses a high-level of built-in intelligence. For example, a Bihler BIMERIC processing and assembly center makes independent decisions and can produce multiple components in alternation depending on the current situation. The integrated monitoring and inspection systems use control circuits to make the system into a self-regulating, self-controlling unit which therefore precisely corresponds to the principles of the Industry 4.0 concept. In addition, each new system is planned at a fully digital level and is therefore available as a digital model – in the form of a digital twin – from the very beginning.

Unrestricted availability of data

This maximum level of digitalization also makes it possible to network the system and integrate it in intelligent manufacturing environments. The basis for this is data. And this is fully available on all Bihler systems and, in principle, for each individual component of the system. The MES system, in combination with the VariControl control platform, provides a selection of important real-time parameters. In a visual display, it clearly shows where and in which processes there is a possibility of malfunction and therefore permits the targeted implementation of optimization measures. However, all users are also able to call up additional system data that is of particular value to them via the OPC/UA interface and, for example, link this data to their ERP system or simply use it in the scope they require for their own component-dependent IT and software architectures. In this way, they can perfectly map the networking of processes in accordance with the Industry 4.0 principle and obtain and use valuable information about the quality of the produced parts or the reproducibility of processes.

Digital services as a solution for practical applications

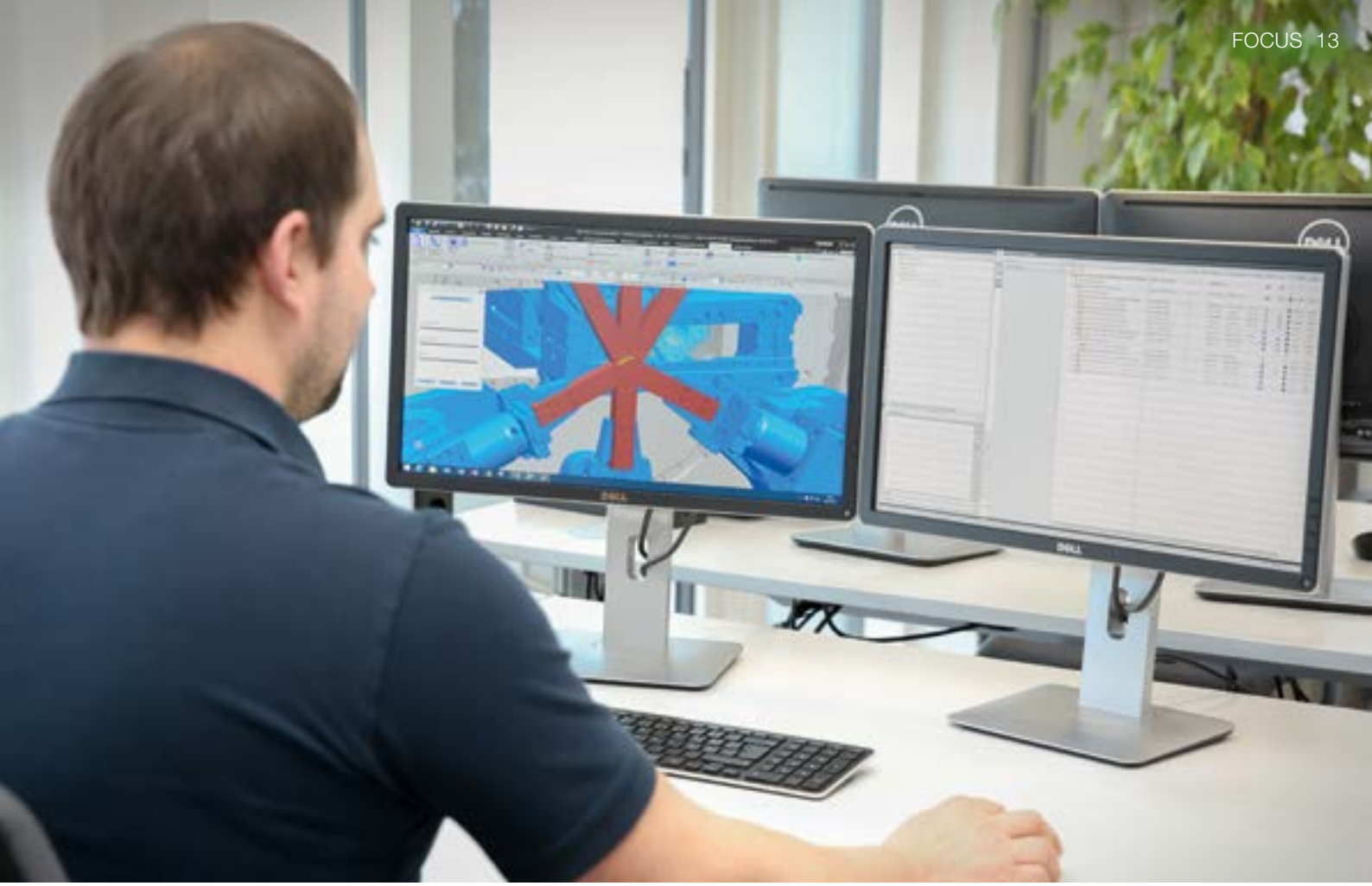
As a pioneer in the digital transformation, Bihler also already offers extremely practical, digital services and support to ensure optimum system performance at the customer's site. This includes, for example, the remote maintenance portal. This is a fully networked remote service solution which analyzes and, if necessary, optimizes all network modules reliably, transparently and flexibly. It uses a wide range of communication technologies operating at maximum bandwidth to permit in-depth remote diagnostics and ensure the rapid, reliable elimination of potential sources of malfunction and error. "Each system and each of its stations has its own specific constant characteristic values. Thanks to remote maintenance, we can quickly see whether these characteristics have changed and where we need to initiate preventive maintenance in order to prevent a machine stoppage," explains Mathias Bihler.

The new Live Monitor is another fully-networked, digital service. It accesses detailed machine status information in real-time and shows precisely what is happening at the machine or why it is at a standstill. The Live Monitor is part of the new Digital Service Platform, a high-performance, secure online solution that depicts the customer's real production situation in the form of a virtual manufacturing hall and improves machine utilization.

The "Bihlerplanning" web app is another modern, digital and highly productive tool. This free app provides valuable support during the tasks of parts planning and offer creation as well as during the design of tools for stamped and bended parts made from strip and wire material. The entire process from the Leantool-based standard parts through tool manufacture itself and on to the final production of the parts is fully digitalized and is therefore an outstanding example of the successful digital transformation at Otto Bihler Maschinenfabrik. Consequently, the "Bihlerplanning" web app, which is now already employed by more than 750 professional users, will therefore serve as the template and basis for other Bihler web apps in the future, for example for welding, thread cutting or assembly.

Digital transformation in our own activities

Otto Bihler Maschinenfabrik is not only driving digitalization forward in its products, solutions and services for its customers. It is also making the digital transformation a reality within the company's own walls and is consistently and logically exploiting existing potentials for optimization. One current example of this is the Bihler toolmaking shop whose planning systems have been made even more efficent by digitalization. "It is sometimes difficult to assign business and economic key figures to individual processes," explains Mathias Bihler. "Together with the Werkzeugbau Akademie (Toolmaking Academy) in Aachen, we are making all the



Bihler provides fully digitalized, intelligent manufacturing solutions. These include the "Bihlerplanning" web app (left) as well as every Bihler system itself, which is available as a digital twin right from the very beginning (top).

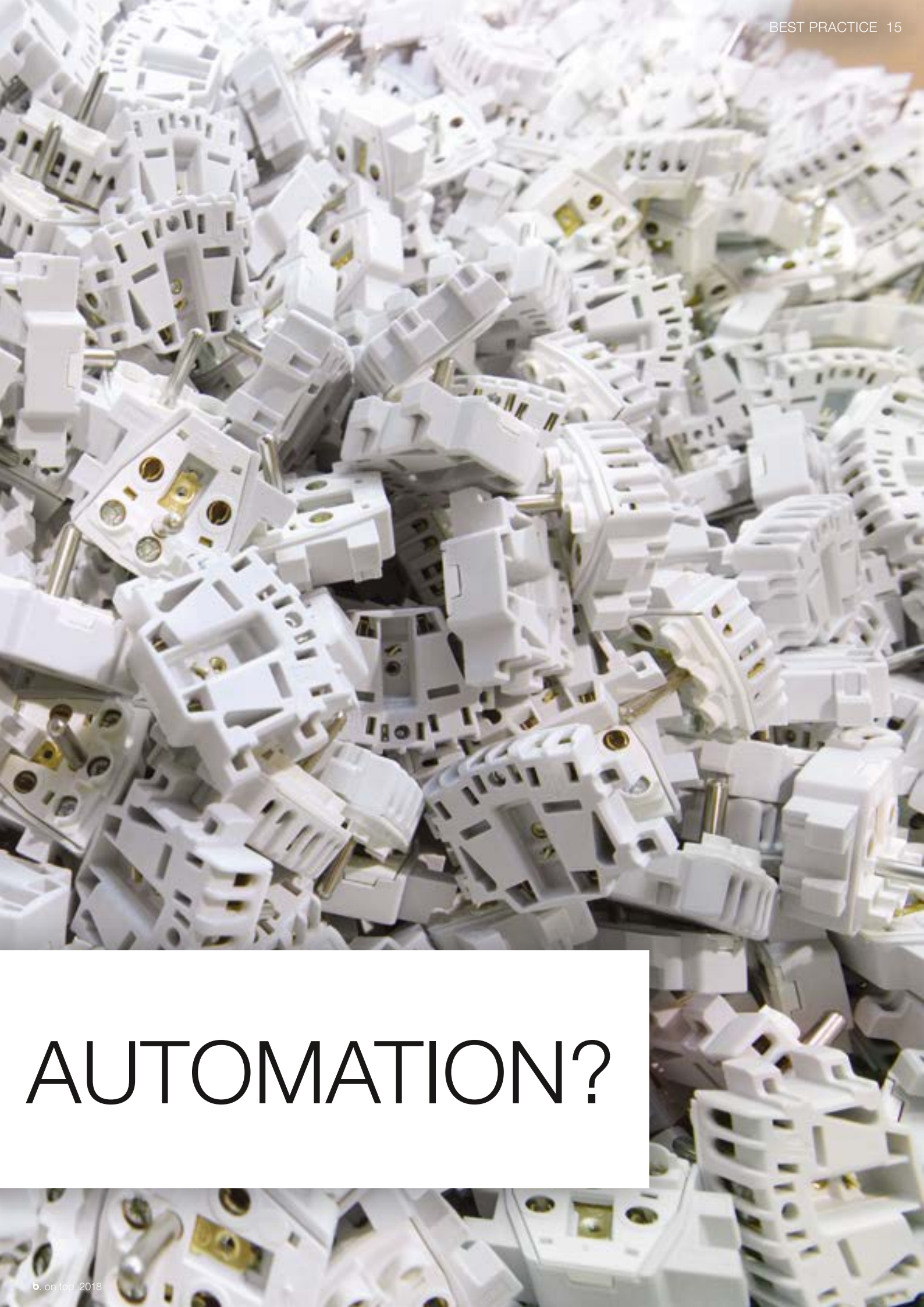
processes more transparent so that we can reveal wastage, inefficiencies and bottlenecks." The clear analysis of the existing situation and the transparent presentation of the future working environment are also greatly helping employees to understand the changes, accept them and apply them in their everyday work. It is then Bihler's customers who benefit from the resulting shorter throughput and delivery times and, in their turn, these customers guarantee the jobs of Bihler's employees.

Together toward an end-to-end process

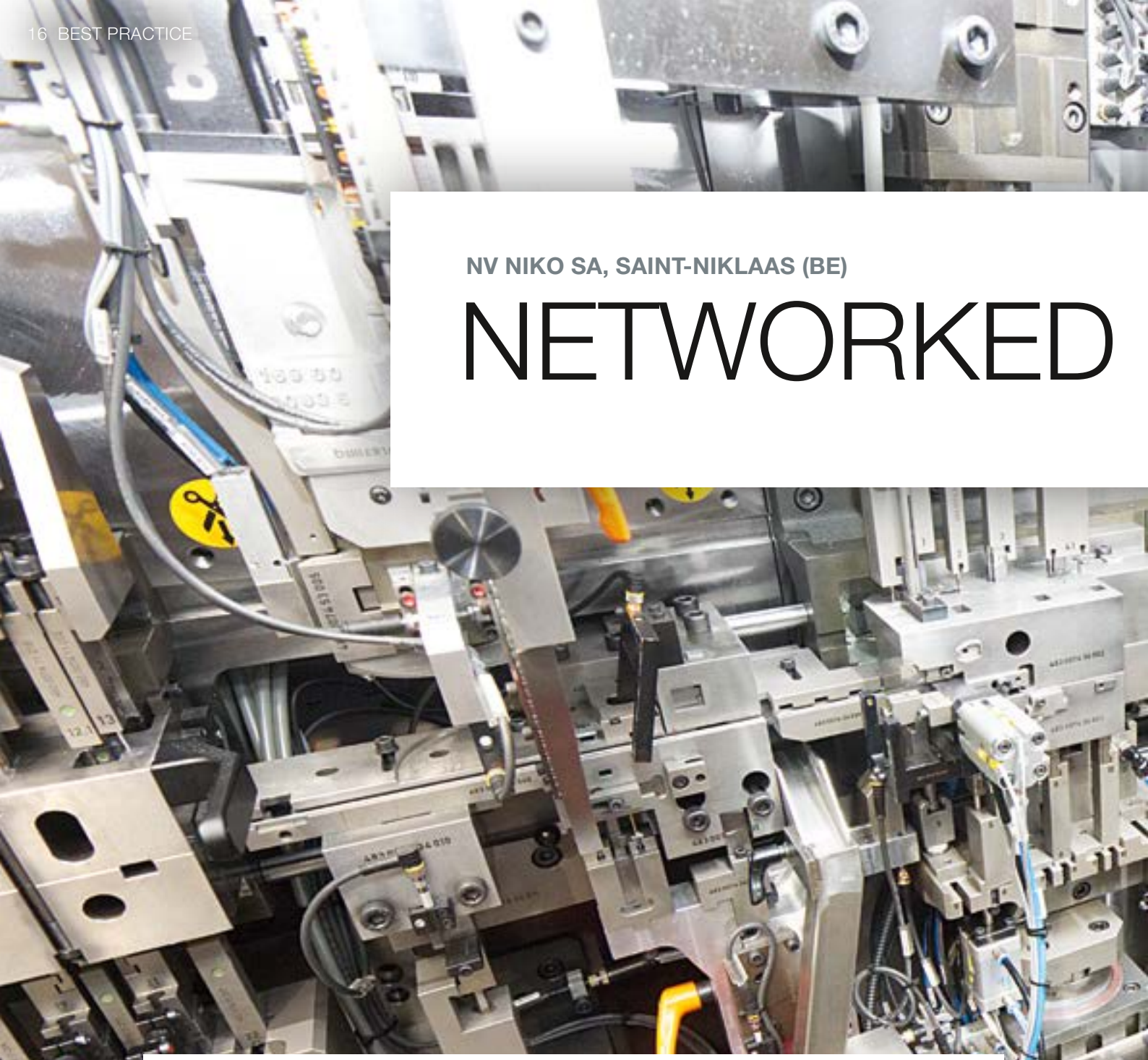
All users that are implementing the Digital Transformation in their own companies and want to open up the considerable potentials discussed above will find the perfect partner in Bihler. "We are able to provide help and advice all the way from the strip or wire semifinished product right through to the finished article. This also involves networking our systems with the upstream and downstream operating steps," emphasizes Mathias Bihler. "Ultimately, this results in an end-to-end, transparent overall process with a perfect materials flow that permits highly efficient, requirements-oriented manufacturing." The consulting services and assistance provided by Bihler can be called on just as much to optimize existing production units as they can to plan entirely new projects. In this context, the many examples of best practices that demonstrate the successful implementation of digital processes and strategies at Bihler in a concrete, easy-to-follow way are particularly valuable. However, an extremely trust-based approach is also vitally important because digitalization makes the involvement of each and every party transparent. "We must work together honestly and openly if we want to bring about high-performance, future-oriented solutions that guarantee our long-term market success," explains Matthias Bihler.

"And in this context, it is becoming ever more important to make our own service and product portfolio available globally and in real time." At the same time, the combination of automation and digital services will lead to even more intelligent production systems that operate fully autonomously in the future. With our current technology and methodology, we are already on the right path and will of course continue to pursue this direction of development purposefully and consistently." ■

WANT TO INCREASE



AUTOMATION?



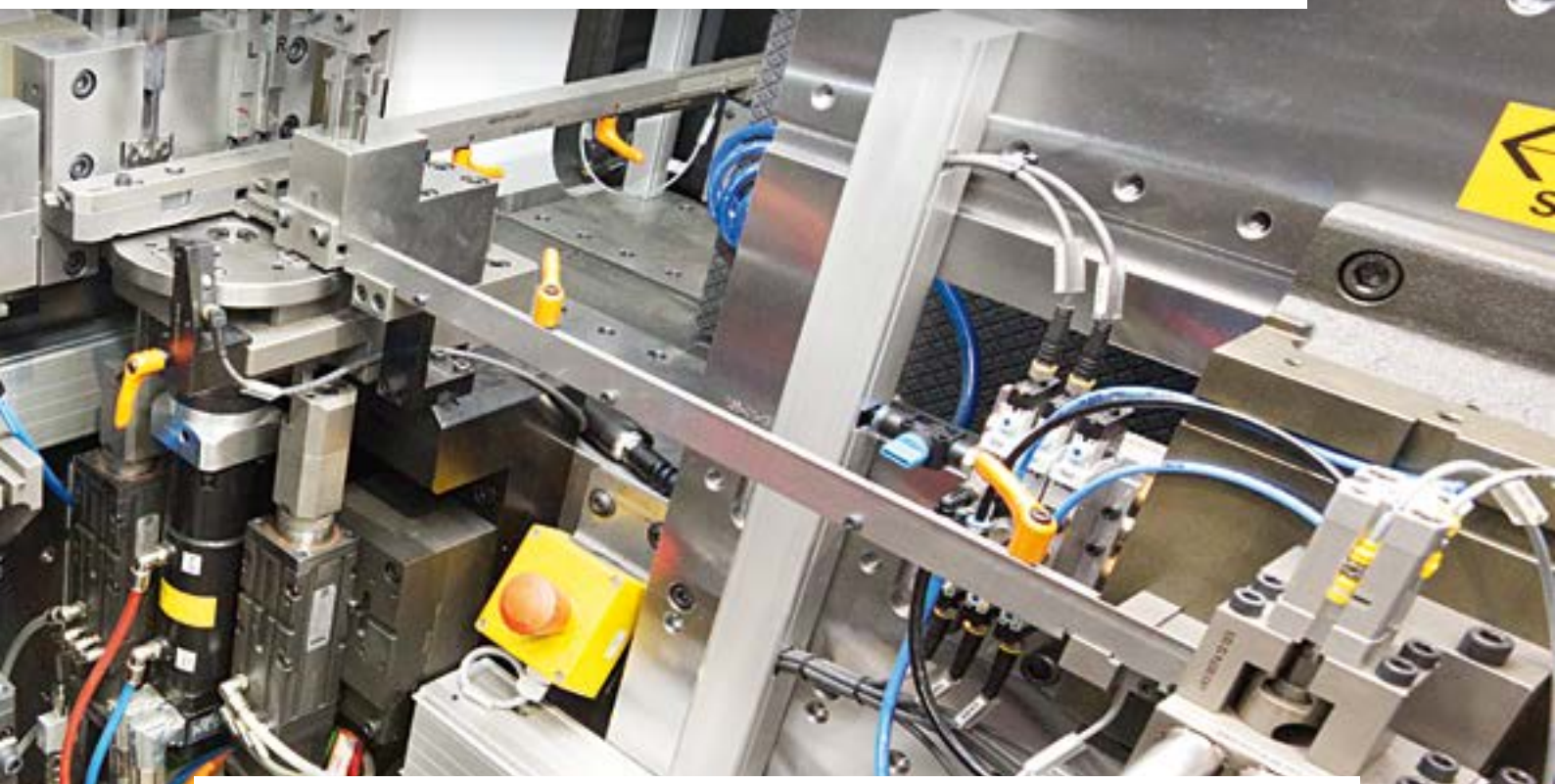
NV NIKO SA, SAINT-NIKLAAS (BE)

NETWORKED

Intelligent machines that control themselves are networked with the entire production line and supply all the data needed for comprehensive monitoring and custom analyses – this is what the future already looks like at nv Niko sa in Belgium. Since the beginning of 2018, a BM 6000 has been in use for manufacturing power sockets and a BM 4500 for the production of light switches. They allow flexible, efficient manufacturing in line with the principles of Industry 4.0 and provide the foundation for the company as it moves towards a smart factory.

It all started on the trip back from the Otto Bihler Maschinenfabrik to nv Niko sa in Belgium: Daniël Hofman was reading the best practices article about Feller AG in Horgen (CH) in the 2015 issue of b on top when he had the brilliant idea of using a Bihler BIMERIC BM 6000 servo production and assembly system for manufacturing his company's own electrical switches. The specific issue here was once again to find a way of combining the metal and plastic components for the various switch models in a particularly efficient, precise and reliable way. Up to that point, the company had been using a Bihler BZ processing center and a number of RM30, MC42 and MC82 machines. "For some time, we had been thinking about a replacement for these machines, which were beginning to show their age, and in particular about a new processing center. At the same time, we were extending our connector portfolio to include a push-fit model alongside the existing screwed version," explains Daniël Hofman, Projects & Engineering Manager at nv Niko sa. "We decided on a new BM 6000, because this system

MANUFACTURING

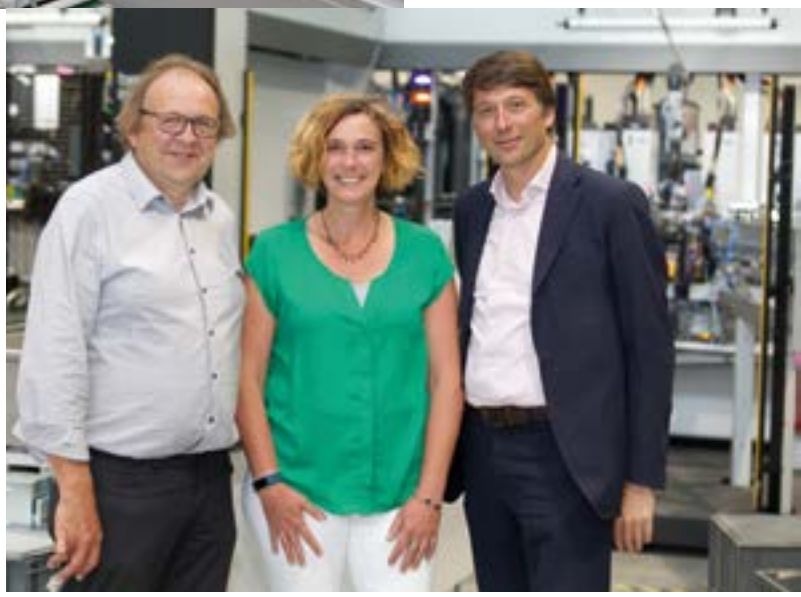


provides us with the flexibility we need to manufacture the variety of sockets at a consistently high quality, including ultra-precise manufacture and assembly of all the parts needed. It also ensures that we can rapidly switch between variants and integrates seamlessly into our existing manufacturing chain with its varying assembly, logistics and packaging units." The BM 6000 arrived at Niko at the beginning of 2018 and heralded a new era in the production of power sockets and light switches. These have always been a key element of Niko's portfolio – alongside more than 5000 other products for lighting control, access control and energy management that are marketed throughout Europe by the family-run company that dates back to 1919. Based in Saint-Niklaas, nv Niko sa is the market leader in Belgium and is part of the Niko Group, which has a workforce in excess of 700.

Extremely intelligent, fully networked systems

The BM 6000 manufactures the sockets using the mixed mode principle. This allows two different variants of a component to be manufactured without retooling. In this way, Niko produces standard design sockets and splash-proof Hydro sockets at a rate of 70 units per minute and 250,000 units per week. The trick is that the machine decides autonomously when to manufacture which product. If, for instance, a malfunction occurs on the feed side or during assembly, the machine independently switches over to manufacturing the other product. Alongside the intelligence of the BM 6000, a further strength of the system is the ease with which it can be integrated in the surrounding production environment. In this case, it is networked with the proprietary downstream

With fully networked manufacturing on the BM 6000, they have succeeded in achieving a further milestone in the company's history: Dr. Goedele Heylen, Operations Director (center), Dainël Hofman, Manager Projects & Engineering (left) and François Servaes, Bihler representative.



machine for final assembly of the sockets. In this scenario, the downstream machine acts as the master and informs the BM 6000 of the total number of assemblies to be manufactured for each variant. Daniël Hofman: "The combination of embedded intelligence and networking saves us valuable time and ensures that the machine effectively runs round the clock". As a result, it is possible to manufacture urgent, short-run orders just in time at a high level of quality. Dr. Goedele Heylen, Operations Director, adds: "Communication and the fact that the machines are linked to one another are important prerequisites for smart production in the Industry 4.0 environment. And so, the next step we are planning is to connect our machines to our Materials Requirements Planning system, which will allow us to further optimize utilization and order processing on our machines." And at Niko, smart production doesn't end when the parts have been manufactured. The system informs the fully automated packaging unit when an order is complete and the parts can be shipped to the customer.

Custom interface for monitoring and analysis

Monitoring is another key factor in digitalization and smart production. And the BM 6000 offers virtually unlimited options in this respect, since all the machine's data is in principle available to users. In close collaboration with Bihler, a new interface was created for Niko using the VC1 controller and the OPC-UA data exchange standard. This captures all the relevant data and thus the overall performance of the BM 6000. This data is presented visually in the production hall itself using large flat panel displays. In the event of a malfunction, operators can use the displays to see at a glance the location in the machine at which a problem has arisen and immediately go to the right place to resolve the issue quickly. Other warnings, information and messages are also shown clearly in real time, for instance indicating the condition of a motor, the current quality status and the efficiency of the machine. Hofman: "The availability of all machine data was a key selection criterion for us. It allows the system to run successfully, but also forms the foundation for our future analyses. These comprise extremely detailed investigations of relevant individual machine parameters that go beyond the functionality provided by the MES system and into the realms of predictive maintenance. This allows us to improve the performance and utilization of the machines even more in specific areas and further reduce downtimes."

On the way to the smart factory with Bihler

The BM 4500 which also arrived at Niko at the beginning of 2018 offers the same prerequisites for Industry 4.0. It is used as a standalone machine to manufacture a variety of light switches and is characterized by extremely short tooling times of less than 20 minutes. Another highlight is the integrated camera inspection unit, which checks the welded

silver contacts. Once again, this guarantees the very highest quality of the assembly comprising contact, cage and spring. François Servaes was the Bihler representative who took on the responsibility for coordination between Niko and Bihler and was involved throughout the almost 18-month process from planning, through ordering and right up to commissioning of the system. According to Servaes, "The greatest possible reliability in production is ensured by the maintenance contract between Niko and Bihler. If a problem arises on either of the two machines, it guarantees rapid, effective assistance in the shape of service and spare parts."

Dr. Goedele Heylen and Daniël Hofman sum up: "The new machines put us in an ideal position to cope with the constantly growing range of variants and the increasing demand for short runs for immediate delivery. But they also make it easy for us to build entirely new products with integrated functionality, for instance for the smart home concept – and always in the same top quality. At the same time, the machines also allow us to reduce our indirect costs, for instance by saving on materials, and ultimately offer a single product at the price of a mass-produced part. The new machines therefore represent an important development in our manufacturing of sockets and light switches, while at the same time paving the way to the smart factory and to an approach to production that embraces the Industry 4.0 concept." ■

niko

www.niko.be

DR. MED. MARKUS WEHLER

»VALUABLE SUPPORT FOR THE CRITICAL RESOURCE«

What possibilities are opened up by digitalization in the field of emergency medicine, and what role will people play? These are the questions addressed by Dr. med. Markus Wehler, senior consultant in the central accident and emergency department at the Klinikum Augsburg and chair of the Bavarian Society for Emergency Medicine (Gesellschaft für Akut- und Notfallmedizin Bayern e.V.).

b on top: It goes without saying that accident and emergency departments and emergency medicine is focused on helping patients. But what is the biggest challenge, and what does a regular admission look like?

Dr. Markus Wehler: The greatest challenge is undoubtedly the initial assessment of the urgency of the case. This determines who is treated first and who can wait and for how long. In a large A&E department such as the one at the Klinikum Augsburg, we have up to 20 arrivals per hour at peak times, with an average of 20 percent critical patients and 80 percent sick or non-critical patients. Then there are what are known as the self-admissions, of whom one in eight or one in ten can be critically ill. Internationally validated triage models that always ensure uniform assessment are used to determine the urgency of all these cases. Each case is then assigned to the correct specialist, who takes over the provision of specialist care. All this takes place within the first three minutes.

b on top: What is the current situation in emergency departments in respect of patient numbers?

Dr. Markus Wehler: The number of emergency patients has considerably more than doubled over the past ten years. And the emergency departments have to cope with these numbers with the staff and space available, even though neither have grown to the same extent.
The rapid rise in patient numbers could be the result of a lack of alternatives for emergency care or of higher expectations on the part of the patients. And consultations with 'Dr. Google' gives rise to a lot of anxious people who come to emergency departments. Either way, the increase is not due to the fact that there are more emergencies nowadays. Of course, demographic change leads to a rise in acute illness, but this rise does not account for more than two percent of all cases per year.

b on top: What role does digitalization play in everyday hospital activities?

Photo credits: Priv. Doz. Dr. Med. Markus Wehler, shutterstock.com/Chaikom

PRIV. DOZ. DR. MED. MARKUS WEHLER

Dr. med. Markus Wehler studied medicine in Bonn and Stanford (USA) from 1982 to1989 and, after completing his doctorate degree, served as academic assistant at the Institute of Physiology at the University of Bonn. Between 1989 and 2008, he completed his specialist training for internal medicine, gastroenterology, infectious disease and intensive care at Medizinische Klinik 1 of the University of Erlangen. In 2004, he qualified to teach at the Medical Faculty at the University of Erlangen-Nürnberg, and since 2009, Markus Wehler has been the senior consultant at the central accident and emergency department and the IV medical clinic for general internal medicine at the Klinikum Augsburg. Markus Wehler is also chair of the Bavarian Society for Emergency Medicine (Gesellschaft für Akut- und Notfallmedizin Bayern e.V.).

Electronic advance registration directly from the scene of the accident or the ambulance permits optimized planning in the clinic.

Dr. Markus Wehler: Connectivity and digitalization play a significant role and allow better planning in day-to-day activities. For instance, we were the first emergency service region to introduce electronic, structured advance registration for external cases. This means that paramedics and emergency doctors can send the patient parameters and estimated time of arrival directly to the clinic in advance from the scene of the accident or where the patient was taken ill. This makes it far easier for us to release the necessary capacity. Real-time GPS tracking of ambulances is of course also helpful for the control center, as it allows them to better manage their capacity and geographical availability.
Modern, comprehensive monitoring is also of considerable importance. The patient's condition is continuously displayed, a central alarm is triggered in an emergency and the whereabouts of the patient and any transfers are fully recorded.
Live connections to smaller hospitals that send us digital patient records, for instance via Skype, are also becoming increasingly important. On this basis, our specialists here can then initiate further diagnostic measures and treatment. This technology save on personnel and transport and is extremely fast, which is, of course, crucial in acute emergencies such as strokes or heart attacks. Digitalized processes of this kind provide valuable support in our daily routines today. Nevertheless, the decisive resource by far in emergency medicine remains people. Manual activities that cannot be digitalized still remain necessary.

b on top: What do you see as potential future scenarios for emergency medicine?

Dr. Markus Wehler: There have been some interesting pilot studies in this area, for example in Scandinavia, where drones were used to send defibrillators to patients. The drones are simply given the coordinates and then deliver the devices, which can be used even by untrained people, at an unmatched speed. Also, the introduction of the digital health card, which has been under discussion for a long time in Germany, would of course be of immense benefit to emergency medicine, since it contains all the information relevant to further treatment, such as medication, allergies or previous illnesses. Irrespective of this, tighter integration between the various outpatient and inpatient units would be desirable here. This would involve centralization of emergency care, bringing forces together, saving resources and making emergency medicine even more efficient. ■

PROFESSOR WOLFGANG BOOS

»STRUCTURING FIRST, THEN DIGITALIZATION«

Otto Bihler Maschinenfabrik are not being left behind. They are implementing digital transformation on an ongoing basis and are consistently exploiting existing optimization potential. One example of this is the current research project with the Aachen Toolmaking Academy, which aims to deliver an even more efficient planning system for toolmaking at Bihler. In this interview, Professor Wolfgang Boos sheds light on the current project.

b on top: Where are you starting from in respect of internal toolmaking at Bihler, and what are the primary objectives? What is the relevance of the project?

Professor Wolfgang Boos: The internal tool shop at Otto Bihler Maschinenfabrik produces high-precision tools and assemblies for the production of stamped and bended parts. In addition, it also repairs tools and manufactures spare parts. The wide range of jobs raises a number of challenges in the planning and management of orders as a result of the different deadlines. The objective of the project is to improve the planning and control system, in particular with regard to the targets of adherence to schedules, throughput time and transparency. Nowadays, these are the top priorities, not least in view of the increasing demand for ever smaller quantities that have to be produced ever faster. They are more important than the actual machine utilization, which can be reduced without economic loss. Digitalization of such processes also creates the transparency required by the Industry 4.0 philosophy. The analysis and the associated measures then build on this transparency.

b on top: What approaches will be adopted? Where, in general, are the challenges in projects such as this?

Professor Wolfgang Boos: The first step is to analyze the typical path of an order through the entire company. We document all the activities of the staff involved and the tools they use, and in the meetings that follow, the first discrepancies and inefficiencies become apparent. In a second phase, we develop a target concept based on the potential for optimization in these areas. This consists of rough planning, detailed planning and control including the necessary tools and documents as well as clear responsibilities. We involve

Photo credits: Prof. Dr.-Ing. Wolfgang Boos, shutterstock.com/Alla Images

PROFESSOR WOLFGANG BOOS

Professor Wolfgang Boos, born in Gummersbach in 1975, trained as a toolmaker and then studied mechanical engineering at RWTH Aachen University. In 2008 he received his doctorate for his thesis "Methodology for the design and evaluation of modular tools". Since 2010, he has been Chief Executive Engineer at the Department of Production Engineering and teaches the Master's degree course "Corporate Management & Change" at RWTH Aachen University. Wolfgang Boos has also been CEO of WBA Aachener Werkzeugbau Akademie GmbH since 2010. The activities of the WBA are centered around customer-oriented industrial consulting, appropriate further education as well as innovative research and development in their own demonstration tool shop.

Practical work using Post-its for the digital transformation. The analysis of a typical process flow is followed by target planning and the implementation of the necessary measures in practice.

all affected parties right from the start in order to be able to build on a high level of acceptance of the new planning logic at a later date. This is essential for the final implementation phase, which we accompany throughout. Our role here is akin to that of a controller, but we also help with specific questions regarding the implementation of measures.

b on top: Where are Bihler's strengths, where is there potential for optimization? What specific measures have been implemented so far?

Professor Wolfgang Boos: The high level of competence of the employees and the ability to find functioning solutions quickly are certainly among the great strengths of the company. The wide network of strong partner, which has been built up over many years and is essentially available at any time, is also a major advantage that makes a decisive contribution to Bihler's capabilities and responsiveness. On the other hand – and this is typical of manufacturing companies – it would be possible to optimize the timing of material procurement, for example. After all, tool material is often ordered even though design is not yet completed, for instance. The aim is to reduce throughput time, but this often creates additional work because, for example, the material is not suitable. Specifically, we have, for instance, introduced the standardization of incoming inquiries, especially very urgent ones. All the necessary information for this, including pricing, is now available in a uniform manner. This may seem trivial at first, but it is relevant in view of the fact that such inquiries recur several times a week. The sum of all such measures improves the planning logic and the way in which work content is structured in the company. Digitalization of these processes will then lend a further boost to efficiency and open up new possibilities in the age of Industry 4.0. ■

MODULAR TOOLING SYSTEM EXPANDED

THE BIHLER LEANTOOL PROGRESSIVE TOOL SYSTEM

With the introduction of the new Bihler LEANTOOL progressive tool system, Otto Bihler Maschinenfabrik has extended the LEANTOOL modular tooling system to encompass linear manufacturing solutions. This means that it is now possible to make new tools of this kind for GRM-NC stamping and forming machines extremely simply, quickly and economically – with the shortest possible implementation times, at less than half the cost and with an especially short time to market, even with small runs. The standardized system, more than 70 percent of which is made up of standard parts, covers all the necessary process steps, from planning right through to production.

When the Bihler LEANTOOL concept was first introduced for radial manufacturing, it was revolutionary. After all, this standardized solution represented a kind of modular tooling system that for the first time allowed new tools for the RM-NC and GRM-NC stamping and forming machines to be manufactured in a single, uniform process by one and the same manufacturer. The modular system made the process of producing new tools extremely simple, fast and inexpensive.

And Otto Bihler Maschinenfabrik has now launched the Bihler progressive tool system that extends this successful concept to include linear manufacturing solutions. This is a modular system that now also permits simple, fast and extremely economical manufacture of all linear tools, i.e. tools that are positioned parallel to the processing plane. "The Bihler LEANTOOL progressive tooling system is the logical further development of the modular system to encompass the linear manufacturing philosophy," says Marc Walter from Technical Sales at Bihler. "It opens up new possibilities for manufacturing stamped and bended parts on a GRM-NC machine, where the radial concept reaches its limits." The new Bihler LEANTOOL progressive tooling system will be presented for the first time at EuroBlech 2018.

Modular structure

The two systems – radial and progressive tooling – are not in competition with each other. Each ►


BIHLER
LEANTOOL F250

Tools built based on the new Bihler LEANTOOL progressive tool system can be changed particularly quickly at the GRM-NC thanks to the special quick-change interfaces.

► solution is of equal value and is used to suit the component being manufactured. And the logic behind each of the systems is the same as well. Which means that the new Bihler LEANTOOL progressive tooling system also includes precisely defined modules and units for manufacturing tools. Alongside the toolholder plate, the system includes the LEANTOOL module, comprising blanks, the plate assembly and the smaller functional components such as spring packs, securing elements, grippers and stock guides. Of course, the system also includes the standard parts for the various rams and drives. These modular components form the basis for the actual toolmaking process, which starts with planning and includes simple, rapid determination of feasibility. This is followed by the simple, clearly structured design phase using the bNX software, before the tool is finally manufactured.

Over 70 percent standard parts

For toolmaking in particular, the Bihler LEANTOOL progressive tooling system impresses with its small number of tool components and a particularly high level of standardization. Thus, more than 70 percent of the required components are made up of standard parts. The number of functional units needed will depend on the project. As a rule, the Bihler LEANTOOL progressive tooling system contains 100 tool parts plus around 50 cutting tool parts. When the tool has been made, it is fitted to the GRM-NC, the machine is set up and production of components can begin. And the Bihler LEANTOOL progressive tooling system also scores in subsequent routine manufacturing operation – in the shape of extremely fast tool changes. This is because the GRM-NC for the first time includes special quick-change interfaces to the tools in its standard configuration. These universal standard interfaces permit extremely fast, simple setup.

Cost-effective complex components

At the same time, the Bihler LEANTOOL progressive tooling system opens up entirely new possibilities for manufacturing complex stamped and bended parts. This is because the radial concept permitted a maximum of around eight bending operations, whereas this

With the new Bihler LEANTOOL progressive tool system, it is now possible to manufacture all linear tools extremely quickly, easily and economically.

restriction disappears in the Bihler LEANTOOL progressive tooling system. Indeed, an unlimited number of bending and stamping operations are in principle possible on a component. As a result, highly complex components with twenty or more processing steps can be manufactured without difficulty. This also yields a considerable increase in performance compared with the radial system, since all the necessary processing steps can be performed independently. Depending on the component, speeds of 150 strokes per minute are absolutely achievable in practice.

Clear competitive advantages

The new solution thus represents the perfect response to future market requirements with shorter lifecycles for the end products and an increasing number of variants. The new Bihler LEANTOOL progressive tooling system offers huge potential for saving costs with the resulting smaller quantities: Manufacturing costs can be reduced by more than 50 percent. Furthermore, the system also offers very short implementation times and extremely fast, 100 percent reproducible setup operations. Consequently, the Bihler LEANTOOL progressive tooling system allows all users to get new products to market faster and more cost effectively than the competition, even in very small runs and with a wide range of variants, thus gaining a clear competitive edge. ■

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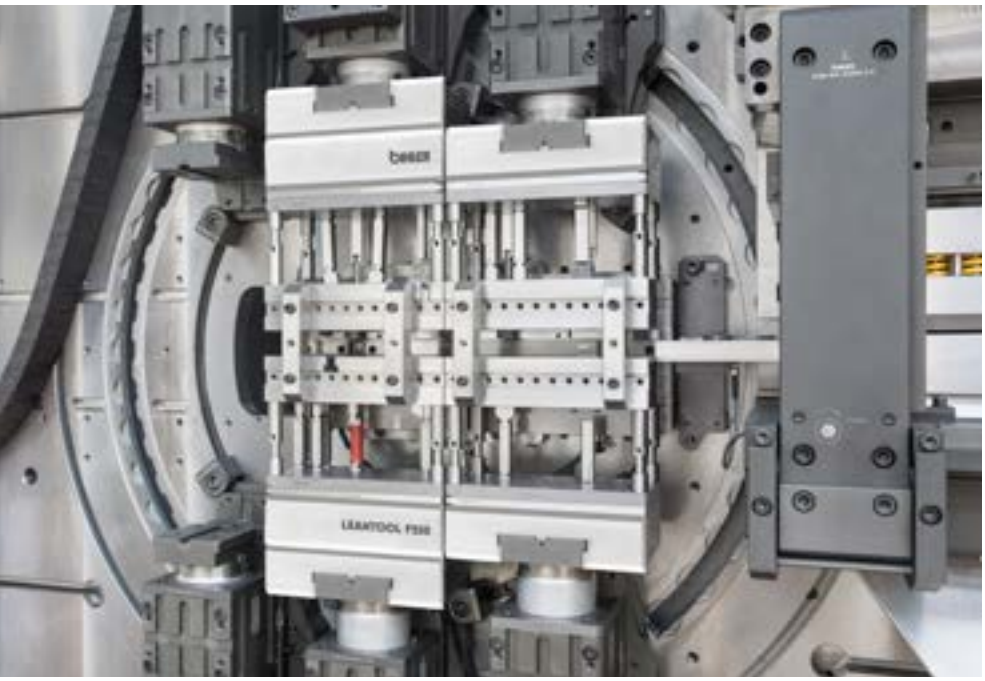
CHRISTOPH LIEBERS GMBH AND CO.KG, GAIMERSHEIM

SUCCESSFUL PILOT PROJECT

Christoph Liebers GmbH und Co.KG was the very first company to use the Bihler Leantool progressive tooling system. The system was used to implement a tool for manufacturing chain links on a new GRM-NC stamping and forming machine. With this combination, the toolmaker is able to open up new production capacity for its customers but is also consciously placing itself at the forefront of new tool development.

By manufacturing tools on the basis of the Bihler Leantool progressive tooling system and a new GRM-NC machine, Gaimersheim-based Christoph Liebers GmbH und Co.KG is pursuing two strategic goals. "This allows us to create manufacturing capacity for our customers and puts us as a toolmaker in the position to develop, manufacture and test tools for them in a highly efficient and extremely flexible way," explains Managing Director Michael Starke. "At the same time, we wish to quite deliberately place ourselves at the forefront of this development, as we see very considerable potential for the future in this area." And the company believes that what the future holds is primarily smaller runs and an increasing number of variants, which simply cannot be realized with the complicated, long-term design and development processes that have been used to date. Starke: "Standardization in toolmaking is

Proud of what they have achieved: Rudolf Hermann, Head of Design Engineering at Liebers, Marc Walter, Technical Sales at Bihler, Michael Starke, Managing Director at Liebers, Manfred Wolf, Head of Assembly at Liebers and Helmut Retzer, Head of Mechanical Production at Liebers (left to right).



The new Bihler LEANTOOL progressive tool system excels by having only a small number of tool components and a proportion of standard elements in excess of 70 percent.

the key to a rapid, agile response to market requirements. The Bihler Leantool progressive tooling system makes it possible to meet these requirements perfectly, without immediately running up against any system limits in terms of complexity. And the Bihler technology on the GRM-NC offers many degrees of freedom for implementing pretty well any manufacturing concept. The knowledge and experience that we gather in the process are things that we will then be able to make available to our tool customers."

Precise component variance

In concrete terms, the components made with the tool that has been manufactured using the Bihler Leantool progressive tooling system are special chain links for steel and stainless steel conveyor chains. These links have attachments such as lugs and grippers and are positioned between ordinary links. The customer is the Munich-based precision chain manufacturer iwis, and the GRM-NC machine now allows them to cover their wide range of variants perfectly. What was so impressive was the universal suitability of the machine and its high level of flexibility, which makes it perfect for the highly efficient and ultra-precise manufacture of the 50 or so different component types. And precision is of the utmost importance here. After all, even the smallest discrepancy in a link soon adds up to a chain that is too long or too short. Another benefit is the extremely short time it takes to set up a new tool, which can be less than half an hour. And last but not least, it is an intelligent tool that does not have to be changed every time the component variant changes.

Ideal project implementation

The whole project kicked off in early 2018, starting with a precise analysis of the range of component variants – and the realization that it would be easier to implement this variety optimally using the linear manufacturing concept rather than with the radial concept originally envisaged. At this time, development of the Bihler Leantool progressive tooling system was so advanced that it was available for this first joint pilot project. Once Liebers' customer had decided to go with this solution, the project was officially started. After four months developing and building the tool, it was tested for a week before the first finished, precisely dimensioned parts could be produced. In November, Christoph Liebers GmbH und Co. KG will take delivery of the new GRM-NC and production is scheduled to start immediately. After all, the tool that has up to now been thoroughly tested on an identical machine can be used directly with no adaptations. This will mean that the entire project will have been completed to the full satisfaction of all those involved. Michael Starke sums up: "Together, we have succeeded in breaking new ground. It was an exciting experience and an absolute success, thanks to the very close and reliable collaboration with Otto Bihler Maschinenfabrik." ■

Christoph Liebers
GmbH & Co. KG Werkzeuge und Platinen

www.liebers.de

KEMPTEN UNIVERSITY OF APPLIED SCIENCE

IDEAL BASIS FOR RESEARCH

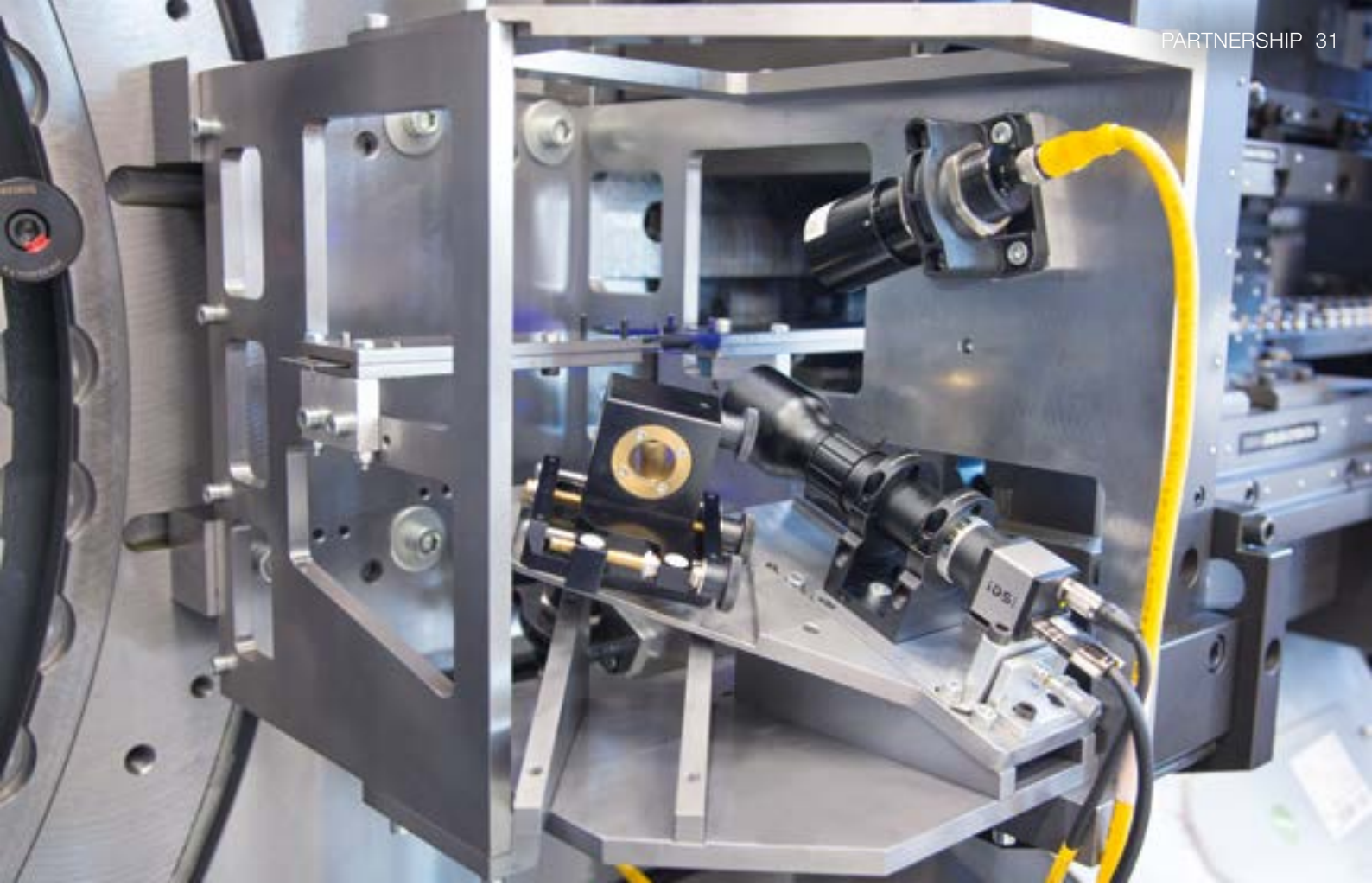
By providing a new GRM-NC, the bNX designsoftware and a BIMERIC, Otto Bihler Maschinenfabrik is deepening its collaboration with the Kempten University of Applied Science. The focus of the joint research and development activities is placed on future-oriented practical solutions for digital sheet metal processing.

For Otto Bihler Maschinenfabrik, intensive, partnership-based collaboration with universities, academies and research institutes has long played a crucial role. It means that the company is always fully informed about current research topics and issues for the future and is able to provide targeted support for ongoing work and process-related projects and then implement these successfully. In this way, both parties benefit from valuable synergisms and increased innovative capabilities. One long-term partner in this area is the Kempten University of Applied Science. "With the Kempten University of Applied Science, we have been able to count on an experienced technology partner at our side for the last 15 years. The scientific staff in the Faculty of Mechanical Engineering, which is headed by Professor Christian Donhauser, undertake outstanding applied research work whose results are directly integrated in our developments. Our experts in Halblech provide committed support to the scientists and we are constantly exchanging knowledge," stresses Mathias Bihler, Managing Director of Otto Bihler Maschinenfabrik.

Research for Industry 4.0

With the new GRM-NC servo stamping and bending machine, the Kempten University of Applied Science now possesses another modern Bihler system allowing it to expand its research and teaching activities in the field of stamping and bending. "On the one hand, this high-quality equipment and our close contact with Bihler helps us focus our research on the future. On the other, it makes a great contribution by helping enthuse our students for stamping and bending technology and preparing them for their future professional careers," explains Professor Donhauser. And a very real forward-looking project is already running on the new GRM-NC, namely the implementation of a cutting module and a locating mechanism for cutting and accurately catching the stamped strip. This is achieved by means of the real-time transfer of process-related information from the VC1 controller via an OPC/UA interface to mobile terminal devices such as iPads and iPhones, for example. The module developed to do this permits the

Research for the future University President Professor Robert Schmidt, Mathias Bihler and Professor Christian Donhauser (left to right).



Measuring equipment for inline quality monitoring: Images of every stamped surface are generated by means of a separately configured camera system and the associated illumination.

precise assignment of the optical measurement to the associated stroke. "The inline measurement of the cut edges makes it possible to detect wear at the punches and dies and identify defective parts as early as the production stage," explains Mathias Bihler. "The knowledge that is gained increases the intelligence of our machines and controllers in the field of predictive maintenance and prepares them perfectly for the digital demands of Industry 4.0."

Bihler software as knowledge base

Alongside the GRM-NC, the Kempten University of Applied Science also received licenses for Bihler's bNX engineering design software. "We installed a total of 24 bNX student licenses for training purposes. These are used in lectures on the basics of NX and, in particular, when teaching standardized LEANTOOL tool design," explains Professor Donhauser. The scientific staff receive individual NX training from Bihler, which includes tuition in the LEANTOOL design approach. At the same time, tool design using the bNX software is included in the lecture on stamping and bending technology. During their bNX software projects, all the students receive in-depth support from Bihler's Project Planning/ Technical Sales team. There is also a plan for Bihler's experts to give guest lectures on tool design using the LEANTOOL approach and to speak about successfully implemented process solutions. And for its part, the University will examine the design methodology for new LEANTOOL tools in accordance with the radial and progressive tooling principles as part of a bachelor thesis.

Investing in the future

Alongside these ongoing research and teaching projects, other future-oriented cooperative projects between the Kempten University of Applied Science and Otto Bihler Maschinenfabrik are in the pipeline. For example, Bihler, together with Siemens Industry Software GmbH, has addressed the question of FEM analysis for evaluating parts behavior during the bending process. Joint projects regarding the topics of simulation and virtual commissioning are also scheduled, in particular since a new course on this theme will be offered in the very near future. And in fall 2018, the Kempten University of Applied Science received another Bihler machine in the form of a BIMERIC, which will be used for research in the welding field. "Thanks to your commitment, we will soon be able to make today's visions into a reality and contribute to securing the future of Germany as an industrial location," was the way University President Robert Schmidt, summarized things when thanking Mathias Bihler at the official handover of the machine on 9th July 2018. ■

THE B 20K WELDING CONTROL SYSTEM

ONE OF A KIND

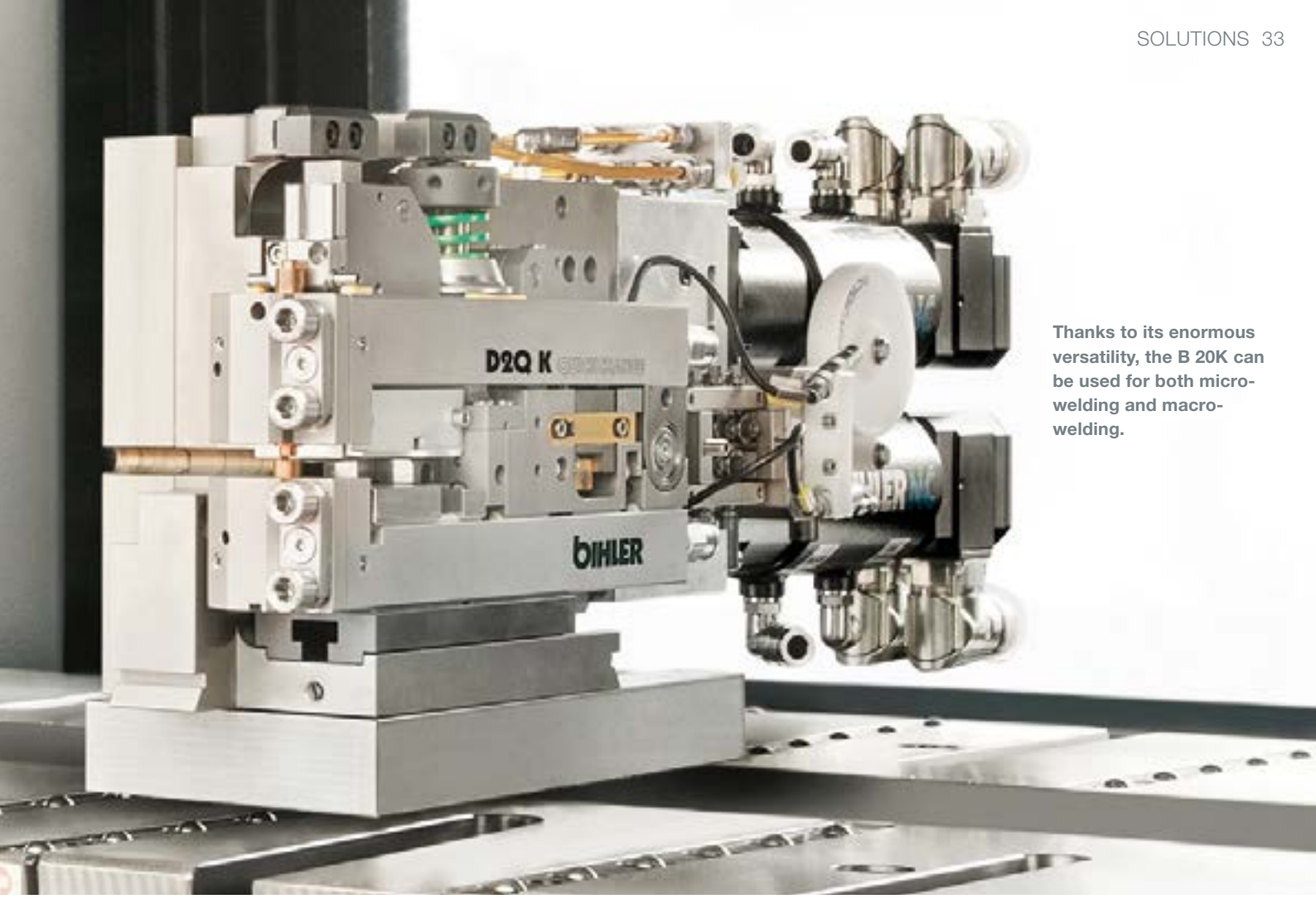
With its protected power supply, five standard measuring channels, a single inverter and servo axis controller, the B 20K welding control system boasts features and functions that are to be found nowhere else. Especially in the field of resistance welding, the system is setting new standards, offering the very best in terms of safety, quality and efficiency.

The new B 20K welding control system from Otto Bihler Maschinenfabrik represents a radical development and improvement of the existing B5000 welding system. The improvements to the machine include greater ease of use: a uniform interface, simple navigation and compact, more concise screen information. In conjunction with the touchscreen, this makes the B 20K extremely easy and efficient to operate. Another important innovation can be found in the inverter, that regulates the welding parameters and makes the necessary power available. The key is that this is done by a single inverter in the B 20K. "Bihler is the only vendor in the world that covers all power classes from 70 to 220 kilovolt-amperes with a single inverter," explains Christoph Schäfer; Head of Product Management at Bihler. "This means that the inverter forms the universal basic hardware, making time-consuming conversion or replacement a thing of the past." This huge flexibility allows the B 20K to be used for a vast range of welding tasks, from micro-welding up to macro-welding. And at the same time, the system is ideally equipped to handle the welding jobs of the future. A further feature is that the B 20K is also compatible with an inductor for contactless heating of steel and non-ferrous metals.

Seamless monitoring

And the B 20K welding control system is also setting new standards in respect of process reliability. For instance, unlike the models offered by competitors around the globe, it is equipped with five integrated measuring channels as standard. This allows all relevant parameters such as current, voltage, travel and force to be captured, analyzed and monitored in their entirety. Both single measurements and complete measurement curves including trend lines can be used for this purpose. As well as monitoring trends, it is also possible to monitor envelopes within a given tolerance range. These can also be adjusted for partial segments if necessary. All this provides maximum reliability and transparency for the welding process. Christoph Schäfer: "The broad base of acquired data allows efficient optimizations, and the relevant functions guarantee perfect process monitoring. As a result, it is possible to boost the quality of any welding process long term."
A further highlight of the B 20K is its superb performance. The 70 kVA transformer, for instance, allows process frequencies of up to 20,000 Hz. These high frequencies provide plenty of room for intervention and thus extremely precise, targeted dosing of the applied energy. This increases process reliability and

The new B 20K welding controller is the world's only system to be able to cover all power classes with a single inverter.



Thanks to its enormous versatility, the B 20K can be used for both micro-welding and macro-welding.

quality, particularly when manufacturing micro-contacts and carrying out ultra-small welding operations.

Safety and independence

A further world first is the active power supply module that is fitted in the B 20K as standard and provides protection against power fluctuations. Acting like an energy storage device, it compensates for fluctuations in the power supply network and ensures that the welding process is always provided with a constant voltage. This reduces downtimes and malfunctions and makes the welding process extremely safe, while also increasing availability.

The option of integrating servo axes is also unique and sets new standards in pressing and progressive machining. This is because all movement sequences of the welding tool are carried out autonomously and independently of the press stroke, for instance. They are controlled by the welding control system and can be integrated in any existing manufacturing system. This option is provided by the B 20K-NC variant, which features additional axis cabinets. The B 20K is also available as a standalone variant with two welding positions and as the B 20K-VC1. This is an all-in-one variant that provides an integratable, fully automatic manufacturing solution that combines the welding control system and the machine and process controllers to deliver the full range of functions from the B 20K and the VariControl VC 1. ■

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B 20K – HIGHLIGHTS:

- Independence from the supply voltage thanks to active power supply module
- Single inverter as the universal basic hardware for all transformer sizes
- Five integrated measuring channels as standard, providing maximum process reliability
- Control of servo axes for autonomous welding tools

BIHLER – A PART OF EVERYDAY LIFE

From simple bended parts through to complex assemblies: Parts manufactured on Bihler machines are found in practically every area of our everyday lives. And everyone who uses them benefits from their perfect functioning and absolute reliability, in particular in safety-related areas. The Bihler systems themselves make this possible: They guarantee the best possible quality, one hundred percent reproducibility and economic efficiency for every single part.

SAFETY IN A COLLISION

In the event of a collision, head restraints ensure that the heads of the vehicle's occupants are not flung backward and in this way prevent severe injury to the cervical vertebrae. The correct adjustment of the head restraint is particularly important. It must be adjusted so that its top edge is level with the crown of the head. The height is adjusted using the tubes of the head restraint. These tubes are manufactured to perfection with different lengths, notches and angles on a Bihler BM 4500 servo production and assembly system – at a speed of 40 parts per minute and monitored by numerous integrated inspection stations. The manufacturing process includes the feeding of the tube parts, the inspection of the tube lengths, weld seam recognition and the alignment of the different parts. This is followed by cutting and stamping at the various stations, laser marking, the radial riveting of the pipe end, and the bending process. During these operations, the system's 44 NC axes guarantee that it is possible to switch between variants in a period of 15 to 60 minutes. Consequently, the BM 4500 represents an NC-controlled, fully-featured production system for all the process and operating steps that simultaneously guarantees outstanding ease of handling. ■

STORM PROTECTION ON STEEP ROOFS

The issue of storm protection is becoming ever more important. Storms capable of lifting the roofs off buildings and leaving them exposed to heavy rain that soaks them and makes them uninhabitable are becoming increasingly common. However, even lower wind speeds can loosen inadequately or incorrectly secured tiles. The entire roof structure may then be damaged as a result. Falling roof tiles also represent a source of danger. That is why the use of tested storm clips is required for new roof coverings. The metal clips fix the tiles to the roof battens in order to securely protect the tiles against coming loose in strong winds.

The storm clips are manufactured on a Bihler GRM 80P stamping and bending machine. The input material comes in strip (18-20 x 0.8-1 mm) and wire (0.9-2.5 mm) form. This is stamped, bended, assembled and loaded into magazines as required for the clip type in question. At a speed of 150 to 200 strokes per minute, it is possible to manufacture between 200 and 300 parts per minute, in some cases with two parts leaving the machine on each stroke. The system covers the entire range of variants and permits variable clip lengths. As a result, the Bihler GRM 80P not only offers outstanding performance but also provides maximum versatility during production. ■

RACING AHEAD!

Electromobility is playing an ever more important role in the world of transport. The advantages of the electric drive are exploited in particular in cars, but are also used by motorcycles, scooters and bicycles. The heart of any electric motor is the internal conductor coil. When current passes through it, it generates magnetic fields whose force is converted into kinetic energy. Depending on its construction, the coil consists of a multiply wound electrical conductor in the form of a wire or strand. At the heart of each primary winding there is a u-shaped winding element. The winding element shown here is used in the electric motors of eBikes. It is manufactured on a Bihler RM 40K stamping and bending machine at a rate of 100 parts per minute. The process starts with the removal of the isolation from the copper wire and the pulling-in of the material. The wire is then notched, bended, cut and ejected. The mechanism for removing the isolation consists of an NC process module which is integrated in the system and the VC 1 control unit The bending of the wire is also performed by an NC unit so that corrections are easy to implement. In practice, the RM 40K operates in a cluster and is integrated in a higher-level production line. ■

FOR THE PERFECT FIT

Whether we are talking about the sliding roof, windshield wipers, mirror or seat: In modern vehicles, vast quantities of electronics ensure the precise positioning of a wide range of different components. The motor housings are of particular importance. They must fit precisely around the internal components and must have exactly the right diameter. In this context, the construction of double-walled motor housings is particularly demanding. This form of construction increases the performance of the electric motor. At the same time, less force is required for forming and calibration. In practice, these double-walled electric motor housings are manufactured on a Bihler GRM-NC servo stamping and bending machine. The high-performance system is ideally suited for the high-throughput manufacturing of stamped and bended parts and bended wire parts in small and medium batch sizes. In such tasks, the GRM-NC excels through its very high production speeds – and even in the field of housing manufacture, the output level is between 45 and 55 parts per minute. At the same time, the GRM-NC can manufacture the different housing variants without difficulty and ensures extremely short setup times combined with one hundred percent reproducibility. ■

BJB GMBH & CO. KG, ARNSBERG (WESTPHALIA, GERMANY)

»TAKING CONTROL OF STRUCTURAL CHANGES IN PRODUCTION«

The rise of LED technology is creating significant new challenges for manufacturers of conventional lighting technology. BJB GmbH & Co. KG has responded by commissioning two new BIMERIC BM 3000 machines. These servo production and assembly systems offer the high performance and flexibility needed to manufacture innovative solutions that specifically target the needs of the LED market.

With a workforce of approximately 500 employees in Arnsberg in Germany and some 700 employees worldwide, BJB GmbH & Co. KG is a leading supplier of lighting and connecting technology in the lighting industry as well as of lighting solutions for domestic appliance manufacturers. BJB was founded in 1867 and right from the start, all its activities had to do with light. But both light production and lighting control have undergone constant change in 150 years that have passed since then. Following the early days of the oil lamps, light production switched over to petroleum. This was followed, after many intermediate steps, by electrical lighting that was eventually to lead to light production using semiconductors, referred to as LED lighting. During this long history, BJB has helped shape many technological revolutions. Electrification led to specialization in light fixings, which acted as the electrical and mechanical interface to any available lighting source. Over the decades, the technology of the products and processes was systematically adapted to the constantly changing market requirements. In this way, BJB developed into a globally active market leader for this segment, offering a broad portfolio of varied product solutions. In approximately 50 years of partnership and intensive cooperation with Bihler, the company developed a highly competitive mass production capability with some 50 Bihler machines Over recent years, the rise of LED technology has brought about a new era in lighting technology, which is, in turn, associated with a change in the production technology.

On course for the future: Dr. Volker Essmann, Technical Manager and Member of the Managing Board at BJB (center), Anton Kelz, Managing Director of K&S Anlagenbau GmbH (right) and Mathias Bihler.

The BIMERIC BM 3000 is one of the modern, versatile production systems introduced by BJB to modernize its existing machine pool.

The technology of the machine pool

"The rise of LED technology represents a major challenge for us," Dr. Volker Essmann, Technical Manager and Member of the Managing Board. "The light fixings, which over the years became the company's largest line of business, are no longer used in the world of LED lighting. In this disruptive technology change, we have to completely reorient ourselves in just a few years and find and develop new products." This will also naturally signify major changes in production. The machine pool is gradually being updated in order to create a basis for the company's future success through the use of versatile production equipment. Today, BJB is manufacturing increasing numbers of forward-looking products for LED applications. These include, among other things,

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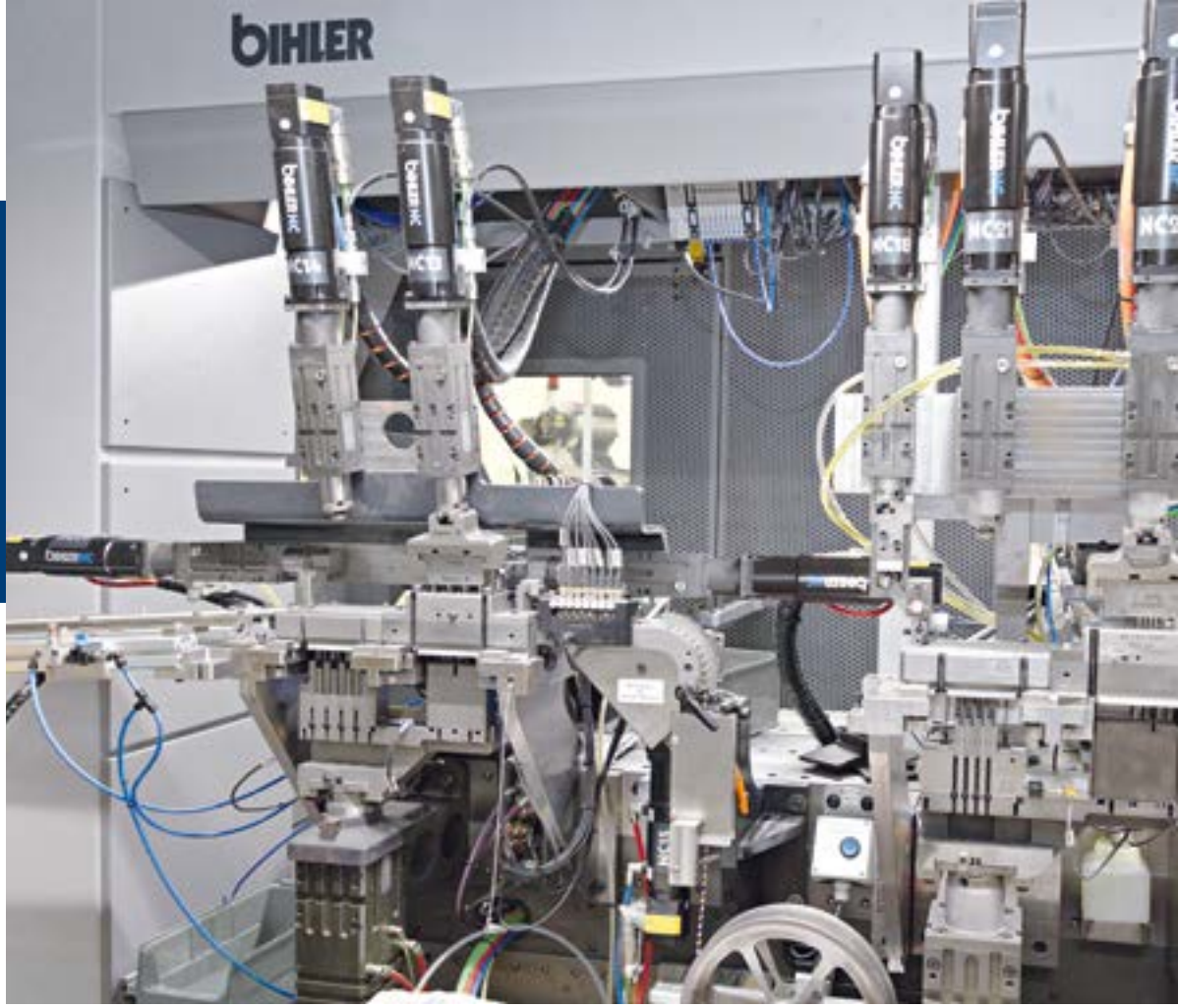


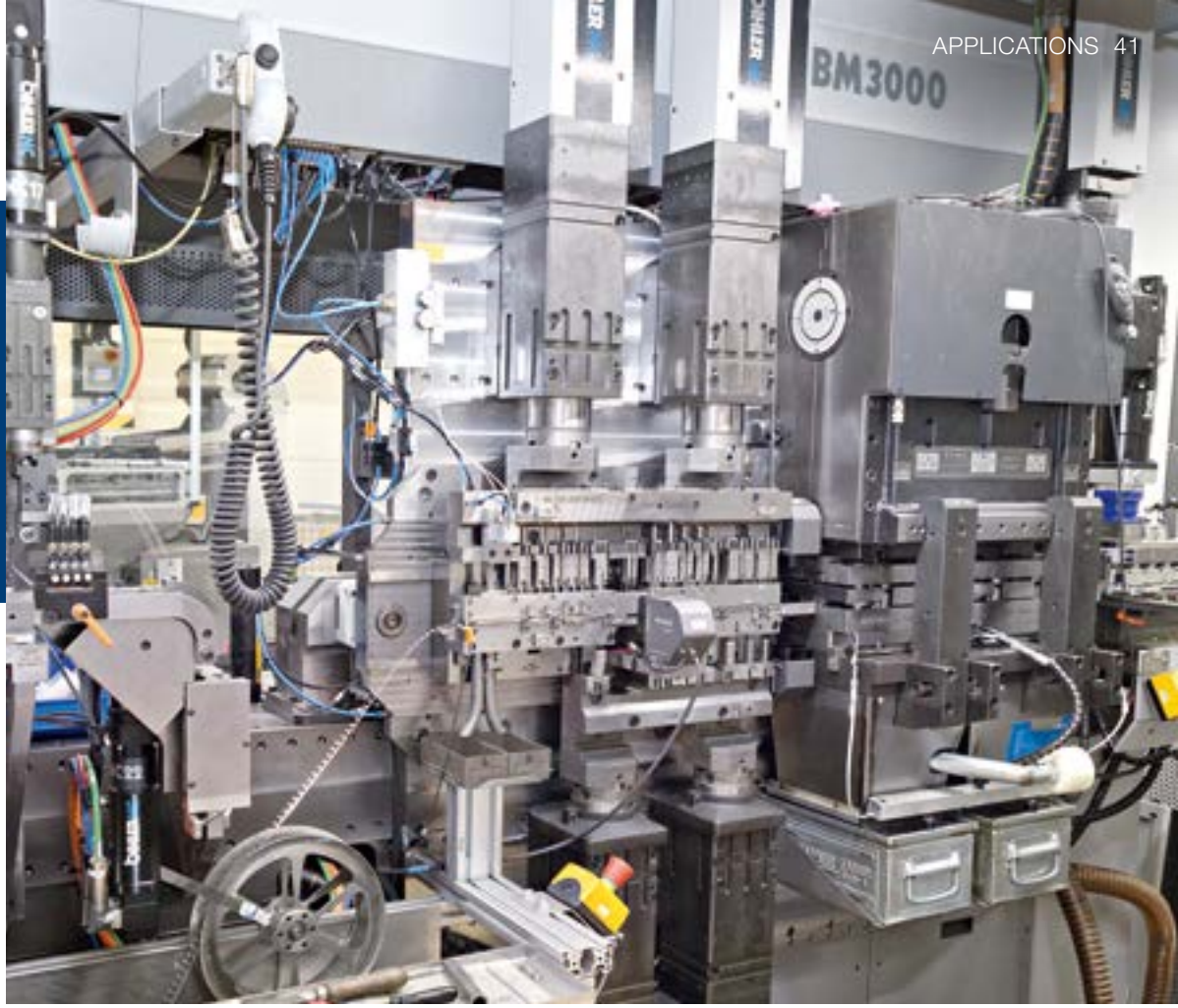
fixing components for PCBs (push-to-fix elements) as well as optical components and a wide range of connectors. Another new line consists of SMD terminal blocks for PCB contacts. With one- and two-pole variants and a range of different sizes, an entire product family has been developed and successfully launched on the market.

Long-term profitability

Until recently, the 2-, 3- and 5-pole terminal blocks were manufactured on a Bihler BZ processing center. The processing center had reached the limit of its capacity and, what is more, the now nearly 20-year-old system was due for a general overhaul. In 2015, after extensive technical examinations and analyses, BJB decided to acquire a new Bihler BIMERIC BM 3000 servo production and assembly system. Essmann: "The BIMERIC was actually more expensive than the BZ when compared on a performance basis. However, we primarily chose the BIMERIC due to the machine's great versatility. The processing center would have been a single-purpose solution, which would have been a disadvantage when handling future product variants. With the BIMERIC, we opted for a particularly flexible manufacturing solution. Thanks to this flexibility, the system will pay for itself at the latest when we start manufacturing other products on it."

Dual assembly unit

The task of converting the production process from the BZ to the BIMERIC was accomplished without difficulty. The concept was developed in an in-depth collaboration between BJB and Bihler. In 2017, the BIMERIC was converted for the manufacture of SMD PCB terminal blocks, a completely new product. Here again, the project was the result of intensive cooperation between BJB and Bihler. Existing components were taken into account to the greatest possible extent and new ones were selected and integrated. The stamping and bending tools were once again designed and manufactured at BJB. Additional requirements took the form of automatic packaging in blister tapes and the supply feed. To this end, the company K & S Anlagenbau GmbH in Lengenwang in the German Allgäu developed and manufactured a packaging machine and feed system. These systems were integrated with the BIMERIC at BJB's premises to create an extremely complex and highly productive manufacturing system. The harmonization of the interfaces, the integration work and system commissioning were all completed without problems. This clearly demonstrated the main advantages of the BIMERIC concept, such as modularity, standardization and flexibility. Due to the great success of the project, the company shortly afterwards invested in two more BIMERIC BM 3000 machines. The considerable experience and expertise gathered during the first acquisition meant that the new machines could be up and running with minimum delay. BJB built the tools itself and integrated and commissioned the peripheral components in close cooperation with Bihler. In the future, this BIMERIC will permit the economic production of a wide range of products. "Retooling at the BIMERIC functions almost at the touch of a button. Only the peripheral components have to be



BJB uses the BIMERIC BM 3000 as a highly productive system for two different products. Its NC technology permits the targeted processing and optimization of individual process steps.

changed, for example to accommodate a different housing variant," explains Martin Nagel, design engineer and project manager at BJB. "With the BIMERIC, we were able to significantly increase the performance of the system as a whole for our new SMD PCB terminal block range, while also improving overall availability. The result is that approximately 500 finished, inspected, roll-packed components leave the system every minute," adds Winfried Messelke, Head of Equipment Design and Toolmaking at BJB.

Versatile performance

"We were able to implement our original idea of using one and the same manufacturing system for two different products perfectly by using the high-performance, versatile BIMERIC solution," is how Essmann sums up the experience. "What is more, the NC technology means that the individual stations can be decoupled from one another, something that is not possible in a cam-controlled system. This permits the targeted processing and optimization of individual process steps with considerably shorter project realization times and gives balance to the system in terms of complexity."

Equipped for the market of the future

BJB GmbH & Co. KG is now well equipped for the new requirements and the increasing market volumes in the field of LED technology. "The BIMERIC represents a technological further development in production and is making an important contribution by allowing us to successfully take control of the structural change away from the conventional, somewhat sluggish lighting business towards the fast-moving LED technology," summarizes Essmann. ■

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EMZ-HANAUER GMBH & CO. KGAA, NABBURG

»PRODUCTIVITY INCREASED BY UP TO 80 PERCENT«

With a new B 20K welding controller, emz-Hanauer GmbH & Co. KGaA has been able to boost its productivity in the manufacturing of locking mechanisms for domestic appliances by up to eighty percent. This is possible, in particular, thanks to the servo-controlled movement of the electrode holder, which is therefore no longer linked to the press cycle time.

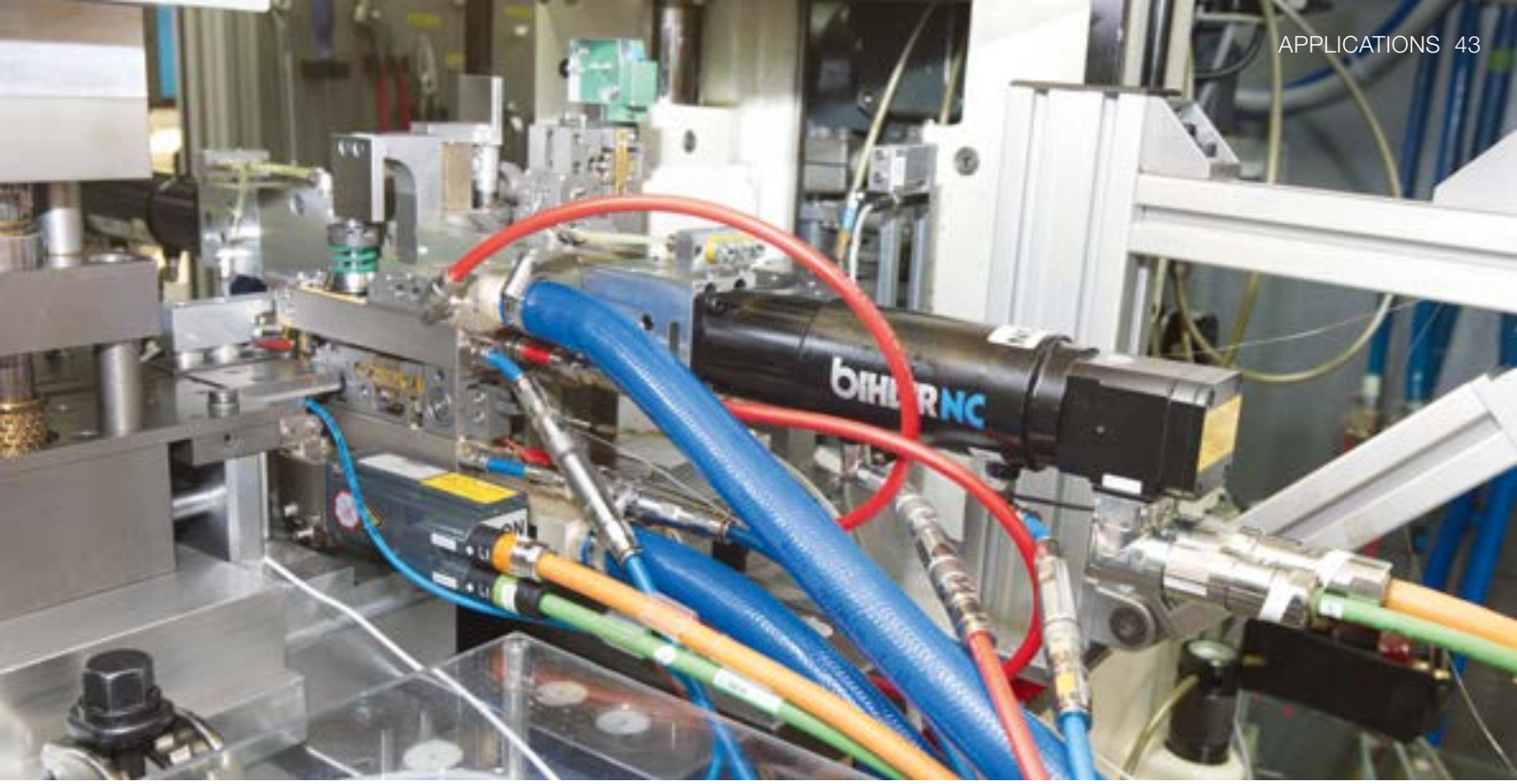
Helmut Schönberger, Head of the Training Workshop and Stamping Shop (left) and Thorsten Lindhof, press fitter.

emz-Hanauer GmbH & Co. KGaA, a company located in Nabburg in the Upper Palatinate in the south of Germany, develops and produces components, assemblies and complete systems that combine elements from the worlds of sensor technology, electronics and mechanics. The components are used in home technology to control heating, water and solar installations, in the field of environmental technology, for example to record waste volumes, as well as in locking mechanisms for domestic appliances. For this segment, emz-Hanauer is the global market leader and provides locking mechanisms and sensors, for example for dishwashers, fridges, washing machines or ovens. The secret behind the success of this family-run company, which celebrated its 70th anniversary in 2018, lies in its very high level of vertical integration. For many years, this has also included its welding operations. "Resistance welding is a very important area for us and one in which we have developed considerable expertise and which we want to keep in-house in the future," explains the head of the welding shop, Helmut Schönberger. "We are primarily concerned with solid-wire welding on springs or contacts that we then install in the corresponding locking mechanisms that we also manufacture ourselves, for example for washing machines." emz-hanauer manufactures 25 million components of this type every year.

Independent movement

"In our case, the major challenges in resistance welding lie, on the one hand, in the large number of different materials used for welding or which we weld onto," explains press fitter Thorsten Lindhof. "At the same time, we have to deal with components made from particularly thin materials onto which we have to weld contacts with diameters of a few tenths of a millimeter with pinpoint accuracy.

Since April 2018, this and many other tasks have been successfully accomplished by the Bihler B 20K welding controller. One of the highlights: The electrode holder can be controlled via the servo motors and is no longer coupled to the movement of the press ram. This means that the holder can be closed even before the ram has traveled fully downwards, for example. "This permits a significant increase in the available welding time per stroke and consequently also leads to



The new B 20K features NC control of the electrode holders that is independent of the press cycle time. This extends the welding time and thus also permits stroke rates.

higher throughput rates," emphasizes Schönberger. "In this way, we have been able to increase production speeds by up to 80 percent." With the new B20K, it is also possible to define the set values more accurately and the welding process is more precise. The quality of welding has also improved.

Convenient and reliable

Other features of the B 20K have proved to be of great value in practical application. These include, for example, path measurement on the closing of the electrode holder, which adds further security to the process. The stored welding parameters can also be set considerably faster than in the past and the touchscreen makes all aspects of operation extremely convenient. Last but not least, the final system check can be performed with extreme precision using the handwheel. The system is then ready to start production, for example of lock contacts. The B 20K uses silver-nickel solid wire to weld the components, which are made from silver-plated brass and copper-beryllium. They are then sealed.

Investing in the future

After just a few days of training at Bihler in Halblech, the B 20K controller was successfully commissioned at emz-hanauer – and even now offers enormous potential for the future: "The new B 20K welding controller is an acquisition that will strengthen our welding shop in the future," says Schönberger to sum up. "With it, we can optimize the manufacture of our current products and we are also in a position to manufacture completely new products successfully – without having to make any further large-scale investments." ■

emz smart solutions

www.emz-hanauer.de

OETIKER GROUP, HORGEN (SWITZERLAND)

»STABLE SYSTEMS ARE OUR BACKBONE«

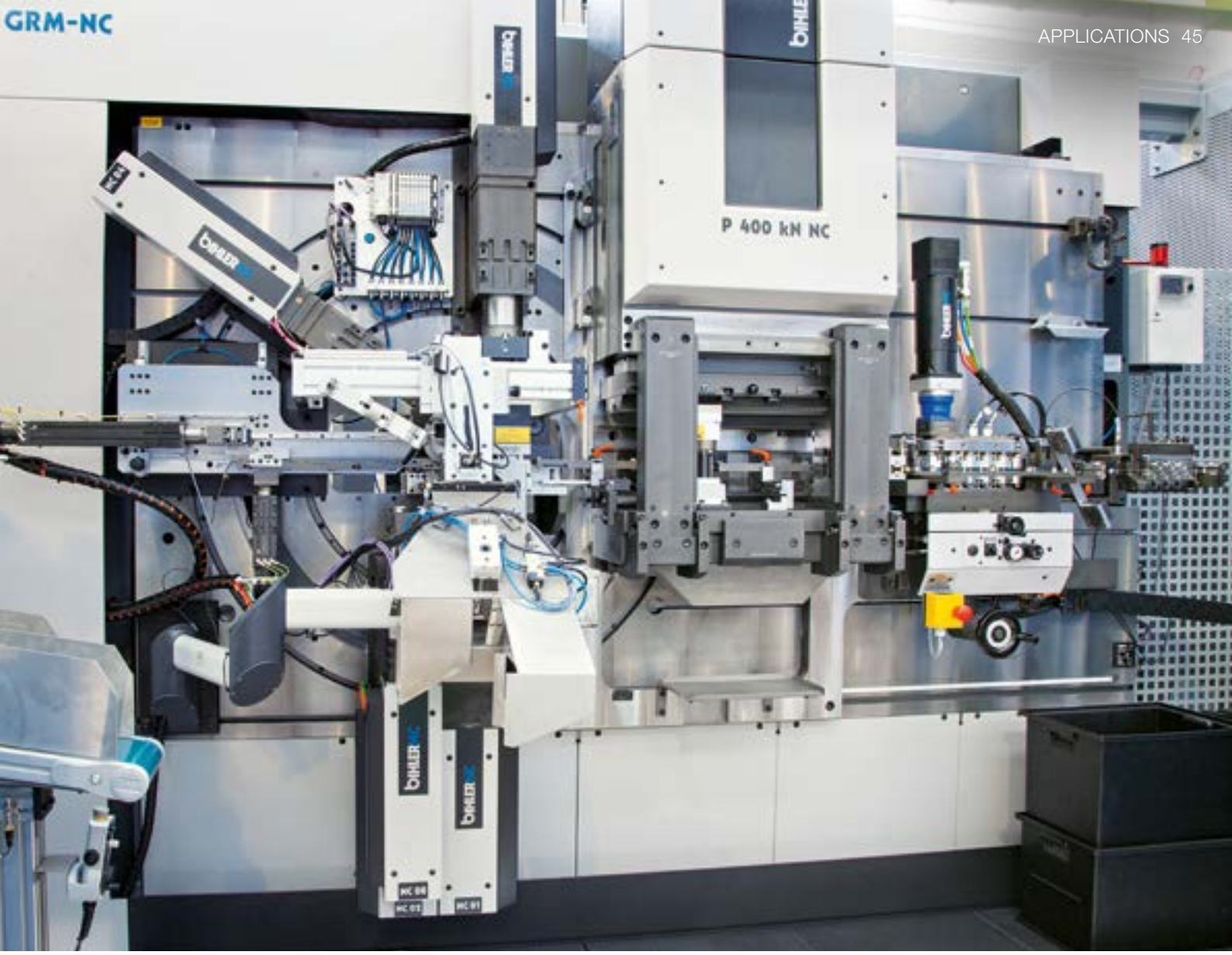
The Oetiker Group is now running several NC-controlled Bihler stamping and bending machines, including a GRM-NC.

Uniform high product quality is the Oetiker Group's greatest priority. Which is why the world's leading supplier of high-performance connecting solutions for automotive and industrial applications puts its trust in Bihler's NC stamping and bending machines. These form the basis for the use of the company's own inhouse tools and permit outstandingly efficient, flexible, requirements-oriented production at a continuously high level of process stability. In future, the Oetiker Group will continue to employ Bihler NC technology at its production sites worldwide.

Many great success stories start with a clever idea. This is also true of Hans Oetiker, who developed the world's first ear clamp in the Swiss town of Horgen in 1942. This part created the basis for the founding of the Oetiker Group which is now the global market leader for connecting solutions in the form of clamps and rings. The family-run company now has 13 production sites and is present in 28 countries. Each year, it manufactures some 2 billion high-quality clamps, rings, straps and quick connectors which are used in practically every vehicle model developed by the leading carmakers, as well as in the home and garden sector, medical engineering and the aftermarket. "We give our customers the certainty of knowing that their critical components are reliably connected thanks to our products," explains Stefan Miessmer, CTO of the Oetiker Group. "That is why we are so keenly aware of the importance of supplying reliable, high-quality products."

Machine pool as the backbone of the enterprise

The company's machine pool makes an important contribution to achieving these quality goals. "Stable systems are the basis for quality. They are the backbone of our quality culture," continues Miessmer. "However, it is equally important to have a reliable partner that provides expert, reliable, confidence-based support." The Oetiker Group has



found both of these prerequisites in Otto Bihler Maschinenfabrik. In concrete terms, their collaboration started in 2010 when one of the first servo-controlled Bihler systems was acquired for an entirely new project. The Oetiker Group now operates a number of different types of Bihler stamping and bending machines. Miessmer: "These machines are also consistent with our global production strategy that concentrates on achieving uniform quality for our customers worldwide." This means: Whether they are manufactured in Europe, North America or Asia, all the parts must have exactly the same quality characteristics. "To achieve this, we need stable systems and stable processes which are consequently also an investment at a global level for us."

Efficiency for requirements-oriented manufacturing

However, Bihler's NC machines do not only ensure the required uniform, high quality of the parts. "Thanks to the servo technology, we are considerably more flexible than in the past. As a result, we can also optimize new and existing process flows and reduce tooling times," explains Patrick Russi, Strategic Sourcing Director. This allows us to save valuable warehousing capacity and further contributes to the economic efficiency of the new systems. "However, this enhanced efficiency now also permits more requirements-oriented production and allows us to react faster to customers' wishes, meaning that we can manufacture even very short runs competitively."

Harmonizing the entire process chain

The Oetiker Group manufactures its tried-and-trusted clamps and rings on the new servo systems. However, it also uses them to develop completely new manufacturing processes. At the same time, the systems are also used for new product lines that enter the Oetiker portfolio, for example following the acquisition of other companies. One issue of vital importance is tool compatibility, enabling ►

Stefan Miessmer, CTO Oetiker Group (right) and Patrick Russi, Strategic Sourcing Director.

the company's existing inhouse stamping and bending tools to continue to be used with the new machines. "In principle, with the NC technology, we have simply changed the drive unit for our tools," explains Miessmer. "However, we are still using the same Oetiker technology, which we continuously further develop for new processes. Bihler systems provide the basis on which we can implement these processes." Ultimately, Bihler does not just supply systems but works together with the Oetiker Group to adapt the tools and validate their specific manufacturing performance. "The harmonization of the entire process chain starts with material feed and ends with packaging," explains Patrick Russi. "This ensures that the interaction between the human, the machine and the process functions as well as it possibly can." The length of this process depends to a very great extent on the project and generally lasts from a few weeks to a few months.

On the way toward the smart factory

With the introduction of Bihler NC technology at its global sites and with production operations in close proximity to its customers, the Oetiker Group is optimally equipped for the efficient manufacturing of clamps and rings, together with many other, new product lines – always in the required, reliably high, constant, uniform quality. Considerable potential has also been identified in terms of the digitalization of the production systems that is undertaken in the company on its journey toward the "smart factory". Miessmer and Russi both agree: "We know that we can continue to grow together and are very positive about our continued collaboration with Bihler in this area as well." ■

DR. THOMAS MEIER-BICKEL, CEO OF THE OETIKER GROUP

»OUR PARTNERSHIP STANDS FOR THE FUTURE«

They spoke about the close co-operation between the two companies since the initial contact between Ulrich Meier, the father of Dr. Thomas Meier-Bickel, and Mathias Bihler, as well as about the joint developments that have already been brought to fruition and collaboration in the future.

Dr. Thomas Meier-Bickel: For many decades, we have designed our tools ourselves and have worked with them on machines constructed to meet our needs. That has always worked well, even without a development partnership, but is no longer sufficient today given the increased expectations on the part of customers or certification bodies. To ensure reliable, future-oriented development, we therefore need reliable partners such as Bihler. With such partners, we can continue to develop in terms of both quality and process stability. Seen in this light, the partnership with Bihler is also representative of our future. We will not be able to succeed and continue to develop in the future if we do not have partners like Bihler at our side.

Mathias Bihler: That also reflects our philosophy. We very much appreciate the opportunity to work together to develop solutions to meet the specified requirements. At the same time, we always try to develop our machine technology in a way that ensures an optimum symbiosis between the process and the machine Naturally, the partner's process know-how that is embodied in such solutions remains with the partner. This ultimately gives them the opportunity to differentiate themselves in the market.

Dr. Thomas Meier-Bickel: The partnership is also characterized by the fact that we are both family-run businesses. This gives rise to a particular type of trust in one another that bears the hallmarks of longevity and durability. Bihler is without doubt the right partner to help us carry on in our chosen direction in the coming decades. And in particular in the field of NC technology, it takes us an enormous step further, and not only in terms of increased quality and efficiency or the reduction of multi-stage processes to one-step operations. More importantly, when it comes to recruiting staff, it allows us to offer young people a modern, future-oriented working environment. Above all, however, NC technology is an important precondition for digitalization which, in my opinion, will have an even greater impact than industrialization. I am certain that in this area, our partnership will bring us even further and I feel very positive about all the coming further developments.

Mathias Bihler: We, too, are looking forward to our continued collaboration in this field and the new exciting tasks that will emerge. Digitalization will open up many more revolutionary possibilities in the coming years, for example in terms of the structuring of the entire materials flow or the handling of coil material parameters. It is our ambition to fully exploit all the possibilities here. Only in this way can both companies continue to thrive successfully in the market. ■

RPK, VITORIA-GASTEIZ (ES)

»BIHLER TECHNOLOGY AS THE COMPANY STANDARD«

Based in the Basque region of Spain, RPK S. Coop. has for years put its faith in Bihler – in the shape of the bNX tool design software and GRM 80P and RM 40P stamping and bending machines. As a result, Bihler technology has become established as RPK's company standard, in particular allowing them to develop and manufacture new components efficiently.

The globally active RPK Group has been headquartered in Vitoria-Gasteiz, the capital of the Basque Autonomous Community in Spain, since 1974. The company is Spain's market leader for springs used in carmaking and in the electrical and medical engineering industries. Another mainstay of the company is the manufacture of complex stamped and bended parts such as spring elements and securing elements used in the automotive industry. In this context, the development of new parts and the optimization of existing components plays an important role at RPK alongside the manufacture of established products. All this is realized at the RPK technology center, where the specialist development knowledge from the various plants is brought together and used to implement new product innovation for the company's tier-1 and tier-2 customers.

Uniform tool standard

Toolmaking is, of course, a key aspect in the manufacture of current and future parts. "We need special tools that allow us to ensure an extremely high level of precision and a long service life, especially for medium and large production runs, and particularly for components with large dimensions," explains Iker Ibisate, Head of Stamping and Bending Technology, Strip Material. In 2012, in order to implement a new, uniform tool standard for the various different machines used in the company, RPK opted for Bihler – specifically for the bNX software module "Kinematics Express". This is a solution that is independent of the CAD system and is used for the virtual design of motion sequences for cam-driven and servo-controlled machines. Josep Ferre, Factory Manager at the Tarragona plant: "This allowed us to significantly boost efficiency in our toolmaking operations and benefit from far shorter development times."

Collaboration from the very start

Since that time, more than 30 tools have been made at RPK using the bNX software module. These also run on the Bihler GRM 80P stamping and forming machine that arrived at RPK in

Iker Ibisate, Head of Stamping and Bending Technology, Strip Material (outside left) and Josep Ferre, Factory Manager at the Tarragona Plant, use the new GRM 80P to manufacture small and medium-sized parts and are introducing Bihler technology as a global company standard.

July 2016. This machine makes it possible to manufacture entirely new, small and medium-sized parts that would not have been possible on the existing machines. The extremely fast, ultra-precise manufacturing offered by the GRM 80P delivers the efficiency needed to be able to manufacture the new parts competitively. But the new machine also fits in perfectly with the paradigm shift that is currently underway in the company. Iker Ibisate: "Our aim is to be able to start close collaboration with our customers far earlier – as early as the component development phase. Bihler is often the standard used by our customers, and with the GRM 80P, we have also introduced the Bihler standard for ourselves."

Quicker to market

This also includes installation of the complete bNX software package, which was done in 2017. The libraries and kinematics values included in the software solution permit comprehensive simulation of the tools and also allow optimization of the design process towards a uniform standard for all the tools used on a machine. It is possible to integrate all of RPK's own skills and developments in the bNX solution, so toolmaking has become a far easier and more efficient operation than it was before: "The complete bNX software package allowed us to reduce our time-to-market by some 35 percent. At the same time, it was possible to reduce the design time in our tool design department by around 50 percent," explains Iker Ibisate. The RPK Group remains dedicated to introducing Bihler technology as the global standard within the Group. Josep Ferre: "In future, we shall also be starting to use Bihler NC technology." This will start with a new RM 40P "hybrid", which will be delivered to RPK at the end of 2018 and is already fitted with two servo units. ■

rpk

www.rpk.es

BIHLER CUSTOMER SUPPORT

BIHLERNET – THE NEW DIGITAL SERVICE PLATFORM

Digital transformation is currently the dominant issue in the market. Everyone wants to withstand the pressure towards increased productivity by maximizing machine availability. Bihler's response to this is the new digital service platform BihlerNET. This powerful, secure online solution gets every user directly to the beating heart of their Bihler machine.

Last year Otto Bihler Maschinenfabrik expanded Customer Support to form an division. The job of this division is to implement responses to the demand for increasing productivity and maximum machine availability for every user. The best way to achieve this goal is to fully exploit the potential of the digital transformation. And Customer Support now offers an answer: the digital service platform BihlerNET. It offers valuable services for optimum machine utilization, but also provides important data and documents relating to the system.

Virtual manufacturing environment

"BihlerNET is an online platform that presents the customer's real manufacturing scenario as a virtual production hall. It is, so to speak, the customers very own Bihler 'living room'; one in which they will find all their Bihler installations," explains Dr. Joachim Schuster, member of the Bihler Managing Board. "BihlerNET is accessed over a secure connection using a user name and password. The connection can be established from any modern, Internet-capable end device and in future this will include firect connections from your own Bihler system." Once connected to the digital service platform, customers have a wide range of valuable features and functions at their disposal. This includes static information such as the current operating manual with how-to videos, 3D models of the current machine and tool construction and, in future, a machine-specific spare parts catalog with ordering function. In addition, the new platform also offers digital services aimed at increasing machine availability and enabling a clearer overview and better evaluation of machine utilization. One of these new services is the Live Monitor. It accesses detailed machine status information in real-time and shows, among other things, exactly what is happening or why the machine is at a standstill.

Dr. Joachim Schuster, member of the Managing Board with responsibility for Customer Support

Certified security

BihlerNET is built as an online platform that only processes and evaluates machine data within the customer-specific digital services. Any data transfers are carried out in the way one can expect from Bihler: extremely securely and strictly confidentially. The security of the technical basis for the platform has been certified according to current ISO specifications. The new provisions of the General Data Protection Regulation (GDPR) in respect of data storage and processing within the EU are, of course, also fully observed.

Focus on health diagnoses

In future, Otto Bihler Maschinenfabrik will be systematically expanding the solution and service portfolio of the digital service plat-

BihlerNET depicts the real production situation at the customer's site in the form of a virtual manufacturing hall. The Live Monitor (left) supplies up-to-date information on the machine status in real time.

form. We are currently working intensively on availability reporting including vulnerability analyses. The machine data is evaluated and presented in detail over a period of time defined by the customer. Once this has been done, we will be working on health diagnosis services, including predictive maintenance. "Today we can already determine whether a machine is running properly or whether there is a malfunction due to wear and tear, i.e. whether it is 'healthy' or 'sick'," explains Dr. Joachim Schuster. "In future, we also want to indicate when progressive wear will lead to a standstill. This makes it possible to react in advance and thus achieve greater system availability. "

BihlerNET will be presented for the first time at EuroBlech 2018 and will be implemented in the first half of 2019. But the service platform is already a successful example of how Otto Bihler Maschinenfabrik is using the potential of digitalization for modern and future-oriented solutions and thus securing the future competitiveness and profitability of its customers. ■

ULI HIEMER, ICE HOCKEY LEGEND AND FOUNDING MEMBER OF EV FÜSSEN

»SUCCESS IS TEAM-WORK«

Uli Hiemer and Mathias Bihler have known each other since they were apprentices together at Otto Bihler Maschinenfabrik. Even though the trained machine fitter never actually pursued this profession, and instead enjoyed a successful international career as a professional ice hockey player and today operates several fast food restaurants as a franchisee, the two have always kept in touch. Matthias Bihler met the founding member of the ice sport club Eissportvereins Füssen (EVF) in the stadium and talked to him about his career as a player, the importance of sport and club sponsorship by Otto Bihler Maschinenfabrik.

b on top: You were both born and raised in the Allgäu. Where and when did you first meet?

Uli Hiemer: We met in 1976 during our apprenticeship at Otto Bihler Maschinenfabrik, which we both started on the same day. Mathias Bihler trained as a toolmaker, and I was training as a machine fitter. But it soon became clear to me that I wasn't really cut out for it (laughs). But even then, it was ice hockey that I was really interested in. Nevertheless, I completed the apprenticeship in order to learn a concrete trade and broaden my career prospects. I went to Bihler because the company already had an excellent reputation for their training and as an employer back then. And indeed, as well as a trade, there was a lot that I learned there, namely discipline, team spirit and the will to achieve something in life and to be successful. That's something I profited from time and again in later life.

Mathias Bihler: Of course, the extent to which anyone will actually be successful will always depend on the individual: How do they use what they have learned and the talent they have to develop in their job or as a professional athlete? In this respect, you take a lot of values and attitudes from your training, which, after all, is also very much about consciously pursuing a goal. These accompany you throughout your life and are an essential part of your success. The fundamental principles for this continue to be taught today as part of the training program at Bihler. The fact that other companies or partners are always happy to employ our trainees is a constant reminder of the value of our training. We actively support this process and introduce the successful trainees into professional life.

b on top: However, after this formative period of training, your ways parted for a while.

Uli Hiemer: Exactly. I got the offer to go to Cologne and play for the Kölner Haie, which was an offer I couldn't refuse. But I still completed the last year of my training in Cologne. And people there were surprised and impressed by the trade skills I had learned at Bihler (Mathias Bihler laughs). But ultimately, I was moving more and more in the direction of ice hockey, especially since I had already played my first games for the national team when I was in Füssen. In Cologne I finally decided to become a professional player. I then played with the New Jersey Devils for three years, followed by nine years at the Düsseldorfer Eislaufgemeinschaft. And I won the championship five times while I was there. Between 1992 and 1995, I was captain of the German national team and took part in three Olympic Games. I retired from the sport in 1996. At that time I was already in contact with a well-known fast food chain for

Mathias Biher and Uli Hiemer are both firmly committed to helping the young people in the Eissportverein Füssen and supporting them in their sport.

which I am now a franchisee. Even though our lives took us in different directions, I am very happy that we never lost contact and that we are still close today.

Mathias Bihler: By chance, the first of Uli Hiemer's franchises was in Lüdenscheid, right next to our former location. Whenever we held our in-house exhibition there, we of course took the chance to meet up and catch up on things.

b on top: To what extent has sport made you the person you are, Mr. Hiemer?

Uli Hiemer: To start with, of course, it's all about the joy of playing. What fascinated me about ice hockey in particular, and still does, is the special dynamism in this sport, as well as the team spirit among the players. It's often about knowing when to play second fiddle, and at the same time asserting yourself. Or you may have to get along with a new teammate you don't even know yet. If you want to be successful, you have to overcome these challenges and work as a team, as a unit.
Either way, I have always had a lot of fun playing ice hockey. And if I am able to give something back today, I am always very happy to do so. That's why we at Eissportverein Füssen have a clear focus on training young talent, with around 200 children on our books at the moment. As a member of the business advisory board and a founding member of the club , I have been dedicated to this for three years.

b on top: And for the past three years, the club has been able to count on active support in the form of sponsorship from Otto Bihler Maschinenfabrik. How did this come about?

Mathias Bihler: When the club became insolvent three years ago, it effectively also meant the end for the young up-and-coming players. And it goes without saying that we were willing to help – not only from a sense of local duty and responsibility, but above all for the sake of the young people. Our experience has shown that young people who have been involved in sports in a club and have also taken part in competitions are outstanding people. They know how to deal with defeats, which can also happen in professional life, and are always able to motivate themselves again. They have ambition and discipline, other traits they need to get on in professional life. Alongside this, they are also familiar with team spirit and team thinking, which are also crucial for success in the work environment. So it was a clear decision for us to get involved in this field, and in the Eissportverein Füssen in particular. We see this sponsorship and other support that we offer young people as part of our job as a company. For example, we employ a large number of active players from EV Füssen and offer them suitable opportunities for combining their career with sports training. And we are also connected to EV Füssen in another way, since Otto Bihler Maschinenfabrik also has its own ice hockey team. It is made up of around 25 employees from various departments who – supported by the company – are able to play for two hours a week. Beyond the sport itself, this is a good way of bringing the employees even closer together and strengthening the bonds between them.

b on top: To what extent do you see parallels between sport, business and industry? To what extent can people benefit from sporting experiences?

Uli Hiemer: I now run six restaurants and have over two hundred employees. I'm interested in each and every one of them, and here again I benefit from the ability to open up and to work as a team that I know from ice hockey. And my experiences as captain of the national team also help me when it comes to keeping a team together, leading it and motivating it.

Mathias Bihler: It's always about striking a balance between authority

Photo credits: Uli Hiemer, Deutscher Eishockeyverband/EishockeyNews

One has to set oneself aims in order to be successful. This applies to leisure activities or mechanical engineering just as much it does to professional sport. Uli Hiemer and Mathias Bihler, hot, tired but happy after sharing the experience of a mountain bike tour (top). Uli Hiemer played as captain of the German national ice hockey team and was the first German player to join a North American team (right).

and familiarity. The former is necessary for defining and achieving goals. On the other hand, you need familiarity in order to know how various team members think – in order to motivate them explicitly, for example, or to understand their ideas and suggestions as the basis for future company innovations. In this respect, every employee is hugely important for the future of a company. I am convinced that the greatest potential lies in people, and it is our job to stimulate and tap this potential. The process of adjusting to each other and opening up applies not only in respect of our employees, but also of our customers. This takes time, patience and sensitivity and can only be achieved through teamwork, as in sport. And even if course corrections and adjustments sometimes have to be made, these decisions are taken, as in sport, not from a personal perspective, but rather as an incentive for defining new goals and promising strategies. This gives you a good chance of overcoming the increasingly dynamic challenges of today and the future. ■

ULRICH »ULI« HIEMER

was born in Füssen in 1962. In his active ice hockey career from 1979 to 1996, he played as a defender, initially for EV Füssen. In 1981 he moved to the Kölner EC before becoming the first German player to switch to North America, where he joined the New Jersey Devils in 1984. For the 1987/88 season, he moved back to the German National League with Düsseldorfer EG, where he won the championship title in consecutive seasons from 1990 to 1993. Uli Hiemer took part in nine World Championships and three Winter Olympics with the national team. A member of the Hockey Hall of Fame in Germany, Hiemer ended his playing career in the summer of 1996 after once again winning the German title with the Düsseldorfer EG. He is a member of the business advisory board and a founding member of the Eissportvereins Füssen (EVF). Ulrich Hiemer operates several franchises of a fast food chain.

SPECIALIST TERMS EXPLAINED

THE BIHLER GLOSSARY

As a world-leading system supplier of forming, welding and assembly technology, Otto Bihler Maschinenfabrik provides its customers with a full range of innovative, high-performance solutions. The Bihler Glossary explains the most important parts and procedures involved in Bihler's machine technology.

BNX TEMPLATES

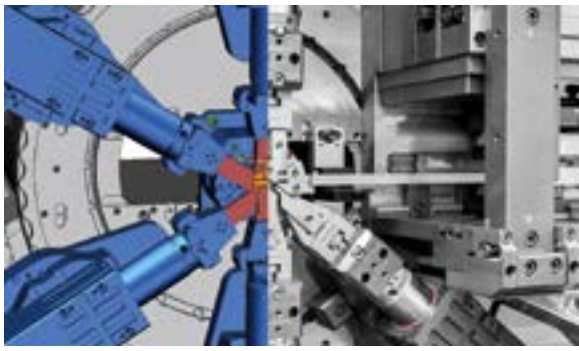
The Bihler technology software bNX is the tried and tested design software for stamping and forming tools that provides a fast and easy path to a manufacturing concept and the construction of the tool. The fact that progressive tooling, wire and Bihler technology can all be mapped cohesively to a single model structure in a seamless, transparent process is something entirely unique. This process includes all the necessary steps and starts as early as the customer inquiry and preparation of the offer. This is followed by the methodology plan for the 3D stages, strip design, tool design, kinematics and simulation of the processes. The final step is to output the travel profile, which is then entered in the VC 1 controller. The bNX solution is also a fundamental component of the LEANTOOL concept for an even simpler, faster and cheaper way to produce new tools.

Thanks to the high level of process consistency, all users of the bNX solution benefit from extremely short development times, significantly lower development costs, optimized products with higher quality and reliable tools with higher production rates. The bNX templates form an essential part of the bNX solution.

They are samples or templates in the sense that they provide a roadmap for the optimum design of Bihler projects. As early as the product engineering phase, bNX templates can ensure that a project is designed according to the Bihler standard. Even alternatives can be identified quickly, reliably and cost-effectively. The greater the effort involved in product engineering and the higher the complexity of the product, the more successful the results can be when using bNX templates. In an entirely practical way, they have been proven to ensure optimum process development, increase standardization in the company process and allow reserve capacity to be identified, and all with built-in safety margins. Furthermore, reliable cost information also ensures commercial transparency and leads to systematic engineering within a company. The bNX templates can be used both for NC-control technology and for mechanical production. Depending on the application and use in the overall process, the templates can be divided into geometric, kinematic and scientific bNX templates.

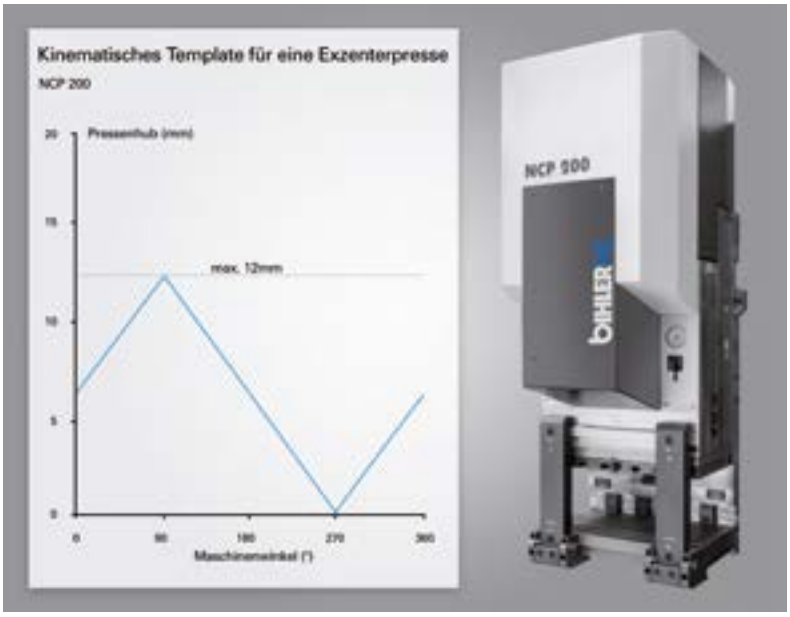
Geometric bNX templates

RAround 1,000 geometric bNX templates offer a huge amount of Bihler expertise for the actual machine layout. This can be generated at the touch of a button using the standardized 3D templates, thus considerably accelerating the design process. Initial information is revealed in graphical interfaces and can thus be uniquely assigned to a project. Additional control elements such as text boxes or sliders can be used to tailor the information to each of the tasks. This means that users always remain within the required minimum and maximum values, which provides additional safety in the design process. Extensive additional documentation further supplements the engineering expertise. This includes in particular PDF documents with precise values for exact dimensioning.



Kinematic bNX templates

The kinematic bNX templates are used after the design phase and focus on movements. In concrete terms, this makes the job of dimensioning and designing the Bihler process modules simple and more precise when engineering stamping and bending tools. All kinematic data, for instance for a slide or even pick and place machines, is recorded in the templates and stored in the software. This means that here also, users are guided reliably within the maximum and minimum permitted values. Virtual product engineering means that the potential performance that is available is optimally utilized and up-front simulation of various scenarios significantly reduces the development risk. And the bNX templates also reduce design times to a minimum. Time savings of at least 30 to 40 percent are absolutely realistic.



Scientific bNX templates

The scientific bNX templates integrate such things as tools for finite element analysis (FEM). These are based on material characteristics supplied either directly by the material manufacturer or by universities and further education institutes with whom we cooperate. This makes it possible, as early as the planning phase, to realistically represent the behavior of a component during the bending process. Initial templates are expected to be available next year.

Beyond this, work is underway on bNX templates for the virtual dimensioning and commissioning of Bihler machines. This roadmap provides a perfect, homogeneous representation of the digital process.

These scientific bNX templates are currently still being built and tested. ■

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A TANDEM FLIGHT OVER NEUSCHWANSTEIN CASTLE

The Tegelberg massif rises steeply from the foothills of the Alps. Excellent thermals and breathtaking views of the Ammergebirge to the southeast and the wide plain with its glittering lakes to the northwest make the Tegelberg the perfect spot for paragliders and hang-gliders. A tandem paraglider flight brings together the forces of nature and human skill to make the sky that little bit closer.

Photo credits: Flugschule Aktiv

Unlimited freedom for everyone. However, there are a few preconditions for those who would escape from everyday life by paragliding for about half an hour: a little courage, of course, and also some stamina. "For the take-off run, you should be able to keep up a decent long-distance running pace for a short time," says Harti Waitl, head of the Schwangauer Flugschule Aktiv flying school, which offers tandem flights like this. "And also for the landing – after all, we don't want to land on our backsides." And this is exactly why sturdy ankle-length boots are indispensable, although this may not be the most obvious prerequisite for a flight.

Once everything has been clarified, the flight can begin. Together with the experienced, state-certified paraglider pilot, the passenger climbs aboard the Tegelberg cable car and is carried to the summit station at 1720 meters above sea level, which is where the launch platform is. There the pilot gives thorough instructions, explaining how the paraglider is handled, going through the necessary commands and giving tips for the correct way to behave. But then you really take to the skies: start, take off and enjoy! The pilot uses the thermals so that the paraglider initially spirals upwards. "Most of our passengers really want to fly over the royal castle at Neuschwanstein, which is after all the most spectacular sight here," says Harti Waitl. "But if the passenger desires, we can also fly over their caravan parked on the campsite, for example. All that is discussed before take-off.

And what do the passengers make of the flight? Harti Waitl reflects for a moment: "It's hard to describe that in a few words. People are literally floating above the ground, forgetting time, forgetting their worries – these are indescribable moments in the skies." On one side there is the unending view over the plains of the foothills of the Alps, on the other the towering Alps themselves and, when visibility is good, a view of the glaciers in the direction of Sölden. Depending on the thermals, the flight ends after 20 minutes or a good half an hour 900 meters below at the base station. We are back on the ground again – with a little luck on our feet and not on our backsides.

Further information:
www.flugschule-aktiv.de/tandemfliegen.html ■

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