b on top

THE MAGAZINE OF
OTTO BIHLER
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GMBH & CO. KG
2011

RAW MATERIALS: REDUCING DEPENDENCE

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

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Dear readers,

Rising materials prices due to the growing scarcity of raw materials represent a new challenge for many companies in the non-ferrous and metalworking industries. To respond, they must introduce innovative ideas to optimize their processes and products in order cut raw materials consumption. Only businesses that face up to these challenges will be able to ensure long-term success and protect jobs. This demands new production methods which offer users a high level of value-added. Outstanding process productivity coupled with intelligent, versatile manufacturing methods are allowing users to cope with their increasingly

complex tasks in economically efficient ways. At the same time, forward-looking production equipment is of no use without optimally trained, highly skilled employees who have to be integrated in the implementation of these solutions and made aware of their vital importance. The successful adoption of innovative manufacturing methods will only be possible if users and their machines interact in perfect harmony.

We are delighted to be able to introduce you to a very special new development in the form of this, our new magazine "b. on top". Based on the success of our customer magazine "Bihler Transfer", the current publication represents a new, informative medium that will be of great use to all readers. It looks beyond the obvious and everyday to present topical issues affecting the metalworking sector clearly and from a variety of different perspectives. I hope you will very much enjoy reading the current issue,

Mathias Bihler

b. on top 2011

BIHLER'S BNX SOFTWARE TECHNOLOGY

FAST PROCESSING OF PROPOSALS

"In today's fiercely competitive environment, it is more important than ever for users to be able to process enquiries faster and assess them more accurately," explains Peter Bertling, Head of Bihler Software. "The price of a tool is of crucial importance when you are trying to win orders. If you want to stay ahead of the pack, you must now calculate and draft your proposals on the basis of 3D data."

Assessing enquiries accurately

Based on its NX technology, Bihler can offer its customers some interesting tools to help them generate outline 3D plates. The many different nesting capabilities mean that the plates can be optimally arranged. "These provide the user with comprehensive parameters relating to material utilization and cutting forces," says Bertling. The die geometry is then generated using the so-called true strip layout. It is an easy task to adjust the geometries and modify their positioning as required in the menu-based application.

Simple processing of complex parts

"In this way, complex customer parts can be processed quickly and easily and assembled to form a true strip layout," explains Bertling. The output documents ensure reliable future process costing and mean that the task of tool design can get underway significantly faster once the order has been awarded. This new application is intended for specialist services which issue technical proposals but have little CAD expertise.

3D simulation

The more highly developed simulation function supports complex sequences of movements such as those performed by the PPE 2 NC Pick & Place unit. Multiple sequences of movements (simulations) can now be saved independently of one another. The 3D simulation function has also been extended to include an additional information window which displays the tool speed in jog or dynamic mode. ■

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BIFLEX FOR MUNICH'S TECHNICAL UNIVERSITY

HIGH-TECH GOES TO COLLEGE

Bihler has enjoyed several years of close cooperation with Munich's Technical University (TU). With the BIFLEX NC laser cutting and forming system, Bihler, in collaboration with Trumpf, is now providing the Institute for Metal Forming and Casting (UTG) with a high-tech machine to be used for research purposes. The NC system is equipped with four slide units, an RZV 2 radial gripper feed and a Trumpf Trudisk 1000 laser.

With the new Biflex, Munich's Technical University is further expanding its role as a driver of innovation.

A hands-on approach to studying

The TU uses the BIFLEX to determine forming and punching properties at differing speeds and geometries. The results and values derived from the bending simulations are subsequently incorporated in the bNX software's engineering tool. Thanks to the system, students learn about the strengths of Bihler technology in a hands-on way and are able to use the BIFLEX for their dissertations.

Boosting innovative strengths

For Bihler, cooperation with Munich's Technical University represents a strategic alliance with a win-win effect: "Close cooperation with the scientific world is vitally important to us," explains company head Mathias Bihler. "It helps us boost our innovative strength even further and create new benefits for our customers." At the same time, the Bihler system helps the faculty generate new knowledge and strengthen its role as a driver of innovation for industry. ■

HANS-JÜRGEN HÖRMANN MAKES WAY FOR MANFRED GRUNDNER

CHANGING OF THE GUARD AT BIHLER

When Otto Bihler decided to look for a financial and accounting expert to complement his already outstanding team in the late 1970s, Hans-Jürgen Hörmann was quick to seize the opportunity. The lawyer and tax consultant who had grown up in Schwangau and was working in Munich at the time joined the flourishing Bihler organization in 1979. Since then, Hans-Jürgen Hörmann has been responsible for financial, legal, tax, accounting, human resources and administrative activities. In 1982, he became a member of the company's Managing Board. In 1993, Otto Bihler appointed him as a Director together with Peter Peisl, Rainer Augenstein and Mathias Bihler. Following Otto Bihler's unexpected death in 1995, these individuals took over responsibility for the company. Toward the end of the year, Hans-Jürgen Hörmann will be retiring to enjoy his many other activities

Emphasis on employees

The fact that Bihler is now able to boast a position as global market leader is in great part due to its departing Managing Director. During the last 32 years, Hans-Jürgen Hörmann, together with his management colleagues, has safely steered Bihler through both calm and very troubled waters. During this time, he always placed the emphasis on his employees. He has many interesting projects planned for the period after leaving Bihler.

Great experience of Bihler

His place will be taken by Manfred Grundner. This qualified physicist and MBA has been part of the Bihler team for more than two decades. In 1988, he wrote his dissertation at Bihler on the topic of "laser-based material processing". He then played an important role in the development of the Bihler laser. In 1990, Manfred Grundner became head of the Laser Development & Production department. From 1995 until 2003, he managed the Bihler welding laboratory. In 2004, Manfred Grundner acted as Assistant to the Managing Board and as of 2006, he has been responsible for the sectors Purchasing & Controlling and Personnel Development & Training.

Manfred Grundner (right) will take over from Hans-Jürgen Hörmann as new Managing Director.

"Steering Bihler successfully"

Since 2010, Manfred Grundner, working as Managing Director in cooperation with Mathias Bihler and Hans-Jürgen Hörmann, has been guiding affairs at Bihler. Over the recent months, he has been working intensively with Hans-Jürgen Hörmann to prepare for his new tasks. At a future date, Manfred Grundner will then take over all operational activities from Hans-Jürgen Hörmann. His aim: To follow in his predecessors' footsteps in guiding Bihler toward a successful future. ■

MACHINE POOL

BIHLER INVESTS IN STATE-OF-THE-ART EQUIPMENT

With its new Heller 5-axis machining center, Bihler has added another high-performance machine to its already superbly equipped machine park. "With the Heller FP 4000, we can manufacture small parts for our process modules such as the RZV 2 feed much more efficiently and precisely," says Karl Kattler, Head of Mechanical Engineering Production. This new purchase replaces two older milling machines. Its strengths: extensive traverse paths and high spindle speeds of up to 10,000 rpm. The FP 4000 possesses a magazine pocket with capacity for 409 tools and, thanks to a Load Master Compact 900 from Schuler Automation, can be set up with 2 x 9 tools during primary operating time using a rotary feedthrough mechanism. The intelligent automation system can store up to 34 workpiece holder pallets which it loads into the tool machine when they are required. "Thanks to this new, fully-featured system, we can now react to our customers' requirements faster and more flexibly. At the same time, we are able to improve the quality of our manufactured parts thanks to the impressive repeat accuracy the machine offers. As a result, Bihler quality' continues to be synonymous with outstanding manufacturing precision," Kattler says proudly. ■

Precise and efficient: The new FP 4000 machining center.

SHRINKING RESOURCES AND RISING COSTS

As the basis for steel production, iron ores play an important role in many sectors of industry. Import costs are expected to double by 2015.

In the wake of the global economic crisis, the prices of semi-manufactured products have risen by up to 140 percent.

RAW MATERIALS

SAVING RESOURCES AND REDUCING COSTS

The rising prices of raw materials coupled with their increasing scarcity are making it necessary to optimize manufacturing processes in order to reduce raw materials and energy consumption. Forming technology is one of the fields in which considerable savings can be achieved through a comprehensive examination of all the individual processes involved. Both in the case of existing and new plant, there are many ways to improve productivity while simultaneously reducing materials consumption – from initial analysis through the individual system configuration and on to the commissioning of the optimized system technology.

Forming technology, in particular, harbors considerable potential for savings.

Although Germany is a country that focuses strongly on industrial production, it is relatively poor in raw materials. It is dependent on receiving a continuous supply of very varied input materials. Imports of metallic raw materials such as iron ore, aluminum, lead, copper and other metals are particularly vital. Within this framework, iron ore, which is a prerequisite for steel production, is of key significance for important economic sectors such as the construction, automotive and mechanical engineering industries. Since about 2004, the German economy has had to cope with a very different raw materials context. Whereas, before that date, the prices of copper and iron ore on the metal commodities market as a whole, as well as in the various individual markets, were largely stable, the post-2004 world witnessed significant increases and growing price volatility. Only with the onset of the global economic crisis of 2008–2009 was a significant fall in raw materials prices – of between 43 and 69 percent – observed. However, in the second half of 2009, demand for raw materials and the associated price tag climbed sharply again worldwide. By mid-2011, the prices of listed industrial metals had already climbed by 60 to 140 percent to reach new record levels – and the trend is for further increases. If current price trends continue in the coming years then the cost of industrial metals in 2015 are expected to lie some 70 to 100 percent above the average values observed during the period 2008 to 2010.

Raw materials with significant price risks

The continuous increase and simultaneous major fluctuations in prices on the international raw materials markets are of special concern to enterprises active in the metalworking industry. According to a recent survey conducted by the Cologne German Economic Institute (IW Köln), three quarters of the questioned companies believe that the upward pressure on prices represents a significant risk to enterprises. Two thirds of companies identified the considerable fluctuations in raw materials prices to be the main source of risk. The reason for this lies primarily in the increasing demand for raw materials which a striking 61 percent of interviewed businesses considered to be a problem. The importance accorded to this price risk is due to the fact that these raw materials have a direct impact on company profits that varies depending on the total value of the consumed quantities. This direct impact on companies' bottom lines makes price movements a key concern during day-to-day business management. As a result, enterprises are taking special measures to reduce costs during both the purchasing and processing of raw materials. These include the minimization of market-dependent procurement costs and the reduction of internal raw materials consumption through optimized manufacturing processes.

The increasing scarcity of resources is further increasing market-dependent procurement costs. Minimizing resource consumption during production makes a significant contribution to reducing costs.

Great potential for savings through rapid ROI

In order to buy the raw materials they need at the most attractive price, many companies have recourse to hedging transactions. At the same time, they can try to pass on ongoing price increases to the customer by means of price escalator clauses. Although these measures do not eliminate the general trend of price increases, they nevertheless help minimize the cost risk. Ultimately, price increases impact the value added chain and have to be borne by the customer.

A far more effective way of reducing costs is to minimize the actual level of raw materials consumption directly during the manufacturing process itself: "By optimizing

existing processes and making use of new, efficient equipment, considerable reductions in resource utilization and costs are possible," explains Mathias Bihler. "In the metalworking industry in particular, these measures can lead to significant potential savings and the corresponding investments can pay for themselves very quickly, especially when large production runs are involved." Bihler is therefore fully committed to developing manufacturing processes offering maximized materials efficiency on the basis of intelligent production equipment.

Individual process analysis

The greatest opportunities for process optimization arise whenever there is a change of model involving only marginal changes to the component geometry.

Thanks to its close communications with its customers, Bihler is able to consider the overall process from a number of different viewpoints and offer a range of individually tailored tool optimization options. To do this, Bihler's experts analyze the potential for optimizing the relevant procedures and workflows directly at the customer's premises, while always taking account of the close relationship between the raw material, engineering design and manufacturing process.

Next, the new requirements are defined in consultation with the customer: By how much should production throughput be increased? What level of system uptime must be guaranteed? How high may the proportion of wear parts for each component be? These specifications are then implemented in practice, for example by means of new production technologies or by replacing individual tool segments with more powerful modules. "The aim here is always to improve productivity or minimize materials consumption," explains Mathias Bihler. "This both ensures that the customer remains competitive and reinforces customer loyalty." Our detailed discussions with our customers ensure that their requirements are met and can be integrated in the development of new Bihler systems."

The perfect balance of power and efficiency

New Bihler systems are always designed in close consultation with customers and in the light of their subsequent production requirements. As a result, the system can be optimally configured and the most efficient production method defined prior to shipment. The key criteria are high manufacturing quality and maximized uptimes during subsequent operation. The most suitable system configuration is determined in cooperation with the customer as early as the product development and sample parts production phase.

Following this validation, the actual manufacturing process is then developed either by Bihler itself or by the customer with support from Bihler. "Our systems are ideally configured to ensure that the twin requirements of minimized tool wear and minimized raw materials consumption are achieved in the most harmonious way possible and to guarantee an energy-efficient workflow," explains Mathias Bihler. This includes, for example, factors such as low power consumption, low lubricant and oil requirements, a long service life coupled with low maintenance requirements, as well as measures such as energy recovery.

Prepared for global competition

Given that each system has a service life of approximately 25 to 30 years and in the light of the increasing cost of energy and raw materials, these are crucial factors that very quickly repay the associated investments. Bihler's specialists are able to offer expert advice in the field of energy savings as well as in all questions relating to system planning and optimization. Together with Bihler's technology, extensive service and support capabilities, the company's global network, and the advantages resulting from the many strategic alliances between Bihler and its specialist partners, this ensures that all of Bihler's customers will continue to thrive in the face of international competition and help further extend the successful growth they share with Bihler. ■

In particular when large runs are involved, the process optimization measures designed to reduce costs pay for themselves very quickly.

NO MORE WASTE?

To manufacture sealing rings with almost zero waste, while simultaneously reducing material consumption by up to 85 percent – that was the challenge facing Freudenberg Stanz- und Umformtechnik.

The key: The sealing rings are no longer punched but are instead welded from a narrow strip.

The basic material consists of a narrow steel strip that is bended to form a ring and then welded. The sealing rings are then formed and profiled.

FREUDENBERG
STANZ- UND UMFORMTECHNIK, WEINHEIM

NO MORE WASTE!

The potential for raw materials savings dormant in the conventional production methods used in the forming field and the way this potential can be tapped into using innovative Bihler technology is made clear by Freudenberg Stanz- und Umformtechnik, a company based in the German town of Weinheim. The company has developed the new SUL (narrow strip laser forming system) procedure for the production of components for sealing rings which considerably reduces raw materials consumption compared to the conventional punching process, produces almost no waste and completely does away with the need for drawing oils. ►

70 Bihler NC-controlled processing stations make ring diameters of between 90 and 400 millimeters possible.

Stamping is good, welding is better – so runs the new motto of the Weinberg-based Freudenberg Stanz- und Umformtechnik which manufactures blanks for sealing rings. Up until 2010, the company, which produces end-to-end sealing and vibration control solutions for the automotive, mechanical engineering and many other industries, used to manufacture these rings exclusively from wide steel bands on transfer presses. This method resulted in large quantities of waste in the form of the stamped metal grid and the circular holes punched out in the center of the metal sheet.

Now, after approximately four years of intensive development, no large pieces of steel end up in the scrap container any more. All you can hear is a gentle clinking as the finished rings fall into the collecting box. The reason for this is the new narrow strip laser forming (SUL) technology which saves a considerable quantity of steel compared to the conventional procedure and therefore greatly increases the efficiency of material utilization. "A system of this type allows us to save approximately 1,800 tons of steel and 2,700 tons of carbon dioxide every year," explains Hermann Stahl, one of the pioneers behind the new system. To this, it is necessary to add the complete elimination of drawing oils and the secondary CO_2 reduction, for example due to the need for fewer transport operations. "Further benefits lie in the increased design versatility, reduced tool costs and shorter delivery times," adds Klaus Kärcher, Head of the SUL project at Freudenberg.

BihlerNC offers a new freedom

Since 2010, the SUL system has been manufacturing rings with diameters of between 90 and 400 millimeters. To do this, the system takes up the metal input strip from a coil. A laser cuts the strip to the required length before roller-bending units form it into a ring. The same laser then welds the two ends together. The required laser energy is specified in a way that minimizes the influence of the welding operation on the crystalline structure of the material. Immediately after this, a robot transfers the rings to the finishing line which starts by smoothing the weld seam. Next, the rings are formed and profiled at various NC processing stations which also perform their internal calibration. This means that it is even possible to compensate for fluctuations in the thickness of the metal input strips. No time-consuming retouching work such as deburring or degreasing is necessary and every ring leaves the system ready for use. "The special processing sequence involved in the forming and postprocessing of the parts gives us more freedom at the design and process levels which, in turn, makes new metal parts geometries possible," explains Stahl. "Together with the small number of item-specific parts changeovers that are required, this results in an exceptionally versatile system that is perfectly suited for the economical production of both small and large runs."

Production Manager Andreas Schifferdecker is responsible for the technology and operation of the new system.

A milestone in process development

The entire system was specially developed using innovative BIMERIC

The delighted winners: The Freudenberg team with Herman Stahl, Dr. Martin Stark, Klaus Kärcher and Dr. Arman Barimani joined by Peter Kaupp from Trumpf Laser- und Systemtechnik and Mathias Bihler (left to right).

Placing their confidence in Bihler for the development of the SUL method from the very start: Management Director Dr. Jürgen Ruhnau (left) and Board Member Dr. Arman Barimani.

technology in close cooperation between Otto Bihler Maschinenfabrik and Trumpf Laser- und Systemtechnik. One special feature of this parallel system lies in its total of 72 NC-controlled axes. These ensure outstanding precision during production and guarantee short retooling times coupled with absolute repeat accuracy and the need for only a small number of tools. The development of the system required many completely new process engineering solutions. "These complex challenges could only be overcome in the company of the world-leading machine manufacturer Bihler," stresses Dr. Jürgen Ruhnau, Managing Director of Freudenberg Stanz- und Umformtechnik. "Thanks to Bihler's great commitment and outstanding technical expertise, we were able to work as partners in the successful design, development and implementation of this innovative process technology."

All this makes the new SUL manufacturing method an innovative world first that saves raw materials and operates practically without waste.

At the same time, SUL technology also offers crucial economic advantages by shortening the process chain while simultaneously increasing system flexibility and consequently also helps secure the site's future success. It therefore comes as no surprise that Freudenberg Sealing Technologies was rewarded for this innovation – a shining example of resource efficiency – with the German Innovation Award 2011. "The new SUL method is a milestone for our production processes which will allow us to maintain our position as a leading supplier of sealing solutions for technologies in a wide range of market segments," summarizes company director Dr. Arman Barimani. ■

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Freudenberg

THE FUTURE OF OUR RAW MATERIALS BASE

“OIL IS BECOMING TOO VALUABLE TOO BURN”

As both a scientist and industrial expert, Professor Michael Röper investigates the question of the direction in which the raw materials basis of our economy should develop. In an interview with b. on top, he explains why biomass is already important today and carbon dioxide might one day become so.

PROFESSOR MICHAEL RÖPER, VICE PRESIDENT SCIENCE RELATIONS, BASF SE

As Vice President Science Relations and Innovation Management, Professor Michael Röper is responsible for BASF’s collaborations in publically sponsored projects. His activities within the SusChem European Technology Platform include participation in the design of EU research programs. Professor Röper also lectures at Heidelberg University. The BASF Group numbers approximately 109,000 employees worldwide. Oil and gas, chemicals and plastics form the basis of its portfolio. One of the Group’s 380-plus production sites is in Ludwigshafen, headquarters of BASF SE and the world’s largest integrated chemical complex.

b. on top: Professor Röper, in January 2010, you co-authored a position paper entitled "Changes to the raw materials base". This paper stated that global oil reserves would suffice for another 41 years. Is that still true today?

Professor Michael Röper: Such statements depend on a number of variables. They simply mean that given today's circumstances – currently identified deposits, current technology, and prices – then, if current consumption levels persist, raw materials reserves will last for such and such a time. As long as 35 years ago, people were already saying that crude oil would only last for another 30 years. Since then, however, oil production has been the object of increasingly intensive technological efforts – for example, in the form of deep-sea wells. The raw material exists, it is just becoming more and more difficult to get to. This extends the period for which reserves will last but also pushes up the oil price. And this will definitely not drop back to the level of ten years ago.

b. on top: If it's going to become more and more expensive, won't we sometime have to say enough and admit it would have been better not to put all our eggs in one basket, namely oil?

Professor Michael Röper: In the specific case of manufacturing industries, crude oil is not, in itself, the decisive factor. Instead this is the availability of a range of basic products that are at present primarily derived from crude oil. One example is olefins which are used as a raw material in the plastics industry, or hydrocarbons that can be processed to produce fuels. There are quite clearly alternative ways to produce these basic products, for example using renewable raw materials. Research into the use of biomass certainly has the potential to open up a wide range of possibilities. However, in the medium term, renewable raw materials will only be used as a complement to oil. In addition, less than 15 percent of oil production is used for manufacturing. Most of it is burnt for heating or driving. And oil is slowly becoming too valuable for that.

b. on top: If that is the case, what raw materials can we use to meet our energy needs in the future?

Professor Michael Röper: The easiest thing to increase would be our natural gas consumption. In part, this is because there is enough to last for a long time, it can be liquefied and is relatively easy to transport. The availability of liquefied natural gas has greatly improved in recent years. And natural gas has also become much more competitive compared to oil due to its energy content-to-price ratio.

b. on top: Apart from oil and gas, it is well known that metals are another type of raw material that keep our economy moving. Do we have enough of them for the foreseeable future?

Professor Michael Röper: Ultimately, inorganic raw materials – which include metals – are also finite. However, in general, they are expected to last for more than 100 years which is significantly longer than oil and gas.

While in the past, industrial demand focused on steel, we are currently seeing a growth in requirements for metals for high-tech and electronic products – indium for flat screens, lithium for high-performance batteries.

In the case of metals, many industrial countries are finding that almost all their requirements have to be met by imports. There are only a few supplier countries. As a result, metallic raw materials represent a completely new type of opportunity to reduce dependence on the global market: recovery and recycling. In the case of steel, these techniques are already well advanced. And improved recycling procedures are also being developed for other metals, for example in the high-tech sector I mentioned earlier.

b. on top: Would you like to tell us how you see the way we look at raw materials developing in the future?

Professor Michael Röper: Carbon dioxide – and as we know there is so much of it that future availability is not an issue – is a material with potential. This gas can also be used as the basis for hydrocarbon production. However, this requires a very large amount of energy which will have to be provided from renewable sources if the use of this gas is to make sense at the environmental and economic levels. This approach could possibly be integrated in existing value-added chains – including in the fuel and chemicals industries. However, there is admittedly a very long way to go before we can say that carbon dioxide provides us with a raw material suitable for industrial and economic exploitation. ■

TALENT AS A RAW MATERIAL TO BE REFINED

“A TRAINER MUST BE A GAME DEVELOPER”

If, as a player, Dirk Nowitzki embodied Germany’s basketball success like no-one else then Dirk Bauermann can boast the same status as a trainer. In this interview with b. on top, the coach tells us how he guides his “raw materials”, the players, on the path to success. And there is one surprising insight: Winning is not always the most important thing.

PROFESSIONAL BASKETBALL TRAINER, DIRK BAUERMANN

Born in 1957, Dirk Bauermann’s basketball career was overshadowed by the misfortune of early injury. However, this caused him to focus all his efforts on making a name for himself as a trainer even when he was still a young man. In 1986, Dirk Bauermann became Assistant Coach at the Fresno State University in California. This was followed by a period at Bayer Leverkusen where in 1989/90, Dirk Bauermann’s very first season as head coach, his team achieved the double by winning both the German championship and cup. Now Bauermann, who was born in Oberhausen, can look back on nine championship triumphs and four cups. From 2003 to 2011, Dirk Bauermann worked as trainer for the national team in addition to his club duties. At the European Championships of 2005, he took the German national team to second place. During the 2010/11 season, Dirk Bauermann guided the basketball team of the Bayern München sports club from the second “ProA” division to Germany’s highest league, the “Beko BBL”. Since the European Championship of 2011, Dirk Bauermann has been working exclusively as head trainer for the Bavarian team.

b. on top: Mr Bauermann, if, metaphorically, we think of the potential of a basketball player as a raw material, what does the trainer have to do to unearth this treasure and then refine it?

Dirk Bauermann: That very crucially depends on whether you are working with the players of tomorrow, i.e. children and young people, or whether you are training a professional team.

b. on top: Let's take things in chronological order and start with the youth segment. You started your career as trainer by coaching young people in Krefeld…

Dirk Bauermann: Correct. And in my opinion, there are three factors that make someone a good coach for young people:

First of all, he must see himself as a "game developer", as I like to call it, and not as a game winner. This means: you have to encourage technique and the players' understanding of the game. These are more important than winning games and tournaments. Or to put it in a nutshell: in the youth segment, technique is more important than tactics. I believe that the approach is often wrong. Youth trainers often act as professional coaches in miniature and want to push their teams to success. However, that does not necessarily help the individual players who still need to develop.

Secondly, the trainer must be able to communicate fun and enthusiasm for the sport. This also includes factors that have a lot to do with facets of an individual's social skills and go beyond the sport itself: How do I cope with defeat? How should I behave as part of my team? A trainer must, so to speak, be able to live out the answers to questions such as these in advance.

And thirdly, he should take the time to work with the players individually. Let me compare that with the situation of a young musician: It is not enough simply to put a highly talented young violinist in the school orchestra; there must also be a special type of assistance that is tailor-made to meet his or her needs. The same is true of basketball.

b. on top: And then we come the professional level. A year ago, you took over as trainer of the FC Bayern München sports club's basketball team and lifted them straight into the top German league, the "Beko BBL". Is this the result of focused work with young players?

Dirk Bauermann: Of course. Finding talented individuals in your own city and guiding them toward the professional stage through well-conceived youth work is a good way to start. With Munich's large catchment area and FC Bayern's wide-ranging basketball activities, all the prerequisites are in place. At the same time, it would clearly be utopian to think you can recruit a full professional squad just from your own youth resources. A sensible transfer policy is also required and is perfectly legitimate. Furthermore: When I said earlier that a youth trainer must be a game developer, I also think that this applies to a certain extent to my role now as professional coach: Of course, I don't need to teach national league players any tricks. However, for me, part of my task is to make sure that they, with all their different attitudes, believe that we have a team that can point FC Bayern toward the top of the German basketball league right from the very start.

b. on top: What is more, you also acted as head trainer to the German national team right up until the end of the 2011 European Championship. How can you keep finding new talents that can be developed up to international level and play in the major tournaments?

Dirk Bauermann: Through its national youth team and the regional state associations, the German Basketball Association (DBB) forms part of the same smoothly functioning recruiting system as the clubs that underpin this system. I would even dare say: Nowadays, almost no talent goes unnoticed. Instead, we know the players who will be in the national team from a fairly early age and have time to work with them and develop them. Late starters and players coming to the sport from other disciplines can sometimes lead to a pleasant surprise. But these are the exception and not the rule. ■

BIHLER NC

NO MORE LIMITS

Expand horizons and overcome limitations – that is now possible thanks to Bihler's innovative, new NC technology. This technology opens up new production capabilities that are free of the limitations of the past and offer exceptional flexibility and vertical production integration.

A quantum leap in production technology: the new BIMERIC BM 1500 production and assembly system.

THE BIMERIC BM 1500 NC PRODUCTION AND ASSEMBLY SYSTEM

PRODUCTION WITHOUT LIMITS

With the new BM 1500 NC production and assembly system, this dream becomes a reality. The BIMERIC offers users considerably more versatile and efficient production.

A modular system for all tasks

In the same way as a set of building blocks, high-performance NC machining units and process modules can be combined flexibly on the standardized machine bodies. There is the right configuration for every task: from conventional assembly operations to complex production solutions with upstream punching and forming operations and additional process steps.

Individually extensible

Depending on the production requirements and investment volumes, the BIMERIC can be extended to meet individual needs and combined with manual or semi-automatic stations or can even form a fully-automatic end-to-end solution. Further process technologies such as plastic molding, laser cutting and other process operations can be integrated in the system quickly and easily.

The highlights at a glance

- Extremely versatile, high-performance NC production and assembly system
- Production speeds of up to 250 cycles per minute
- Modular, compact construction with a high level of standardization
- Permits individual adaptations and progressive extensions
- Simple positioning of the NC units and process modules
- Conveyor belt with multifaceted assembly possibilities
- Short setup times thanks to quick-change system at the workpiece holders and tools
- Integration of individual processes (plastic molding, laser cutting, etc.)

INTEGRATION WITHOUT LIMITS

Whether in the field of feed technology, thread forming, screw insertion or assembly: Bihler's strength has always lain in the perfect interaction of the greatest possible number of processes in a single machine – thus giving users a decisive advantage: They benefit from high productivity while simultaneously enjoying maximized manufacturing precision and outstanding vertical production integration and value added.

Bihler's standardized NC units and process modules can be intelligently integrated in the corresponding production concepts. These NC processing modules can also be used efficiently on third-party equipment such as presses, automated assembly and indexing machines, or assembly and transfer lines. These processing modules include the RZV 2 radial gripper feed, the MSE 2 multiple screw insertion unit, the GSE KS tapping units and the PPE-2 Pick & Place unit.

MSE 2 multiple screw insertion unit

The MSE 2 multiple screw insertion unit can be integrated in all production, assembly and transfer lines. It possesses a patented torque coupling offering from 0.1 to 2 Nm and permits speeds of up to 120 strokes per minute. Its compact design makes it possible to mount several units side-by-side and the swiveling-lifting device ensures rapid tool changes while also eliminating defects. The required bits can be changed quickly and efficiently using the integrated rapid bit-exchange system. In addition, bit wear during operation is minimized thanks to the spring-mounted bolting tool coupled with the software-controlled adjustment of the screw travel profile.

RZV 2 radial gripper feed

The RZV 2 radial gripper feed is a compact feed system for highly dynamic and reliable positioning. Variable feed distances from zero to infinity and different travel profiles (forward and backward) can be combined in a single work cycle. The multiple clamping system also ensures gentle materials handling and prevents any slippage on acceleration.

The RZV2 radial gripper feed guarantees precise transport even in the presence of gauge tolerances in the strip material and offers an outstanding positioning accuracy of +/- 0.02 millimeters. The lightweight construction of the system also permits high speeds of up to, for example, 1,200 strokes per minute at a feed length of 25 millimeters.

GSE KS tapping unit

The completely maintenance-free GSE KS tapping units can be operated vertically, horizontally or in any other orientation and are consequently perfectly designed for integration in all production solutions. They permit the reliable, high-precision forming and cutting of a wide range of threads and can be used for any metric or corresponding inch threads from M2 through to M20. A high-performance AC motor and speeds of between 300 and 9,000 rpm ensure fast cycle times that make it possible to produce up to 260 individually manufactured threads per minute. The thread formers can be swapped over using the integrated quick-change device.

PPE 2 Pick & Place unit

The PPE 2 Pick & Place unit offers users very short cycle times combined with large vertical and horizontal traverse paths. Thanks to its integrated linear drives, it ensures precise, synchronous movement sequences to the controlling system, with all positions and speeds being freely programmable. The completely maintenance-free module is designed for speeds of up to 120 cycles per minute and offers excellent repeat accuracy with tolerances of less than 0.01 millimeters. The unit's plug & play capability ensures very short start-up times.

Assembly blocks in the modular system

Standardized assembly blocks can be combined in linear, T-shaped, L-shaped or any other required configuration depending on the specific project demands. Pattern drilling on all three working sides of the assembly block permits the simple precise positioning of the NC units and process modules. The individual components can be reused whenever required.

The BIMERIC can be extended as required by adding further modules such as semiautomatic stations or conveyor belts.

NO MORE LIMITS – A NEW FREEDOM FOR CONTROLLERS

Bihler's intelligent VariControl VC 1 process controller allows all users to derive the maximum possible benefit from Bihler NC technology. The VariControl offers many striking advantages: Machines can be set up quickly and simply without any external programming device. All retooling operations can be performed in only a few minutes. What is more, all the production menus and user interfaces are freely configurable. NC process modules such as feed units, presses, slide units, tapping and screw insertion units can be programmed directly at an intuitive input screen.

Even more support for users

The multimedia diagnostic and online help system supports machine operators with information texts, graphics and videos. It is also possible to implement individual help functions depending on the customer's requirements.

The integrated recording of measured values and production data ensures efficient process monitoring and a high level of transparency during production. Remote maintenance via a secure Internet connection (VPN) and the assistance provided by Bihler's experienced support team guarantee very short reaction times and professional support.

New features

To make the unit even more user-friendly, Bihler is continuously implementing new features in its VC 1 controller. These include the comprehensive online support for mechanical parts in the form of PDFs, videos, setup plans presented as image or video sequences, and a simplified spare parts request form. The task of programming Bihler standard functions for sensor monitoring and valve functions has also been simplified. The new features also include intuitive control menus for the GSE tapping unit and PPE 2 Pick & Place unit. The VC1 controller also includes a data interface to ViewSystems.

The ideal control system for the BIMERIC

The VC 1 controller and up to fourteen servo inverters for NC axes are integrated in the four uprights and two crosspieces of the BIMERIC BM 1500.

Any other servo inverters that are required are housed in separate control cabinets and connected to the controller via a cable duct. Operation is performed as standard via the mobile BT 1 operating console.

EXPANDING HORIZONS

At WIRE 2012, Bihler presented a new generation of NC machines. The BM machine systems ensure compatibility for the tools in the RM 35/40 and GRM 50/80 series. The NC systems are of particular interest for Bihler customers who have to cope with many different types of short-run parts and therefore have to perform large numbers of setup/retooling operations.

Key advantages

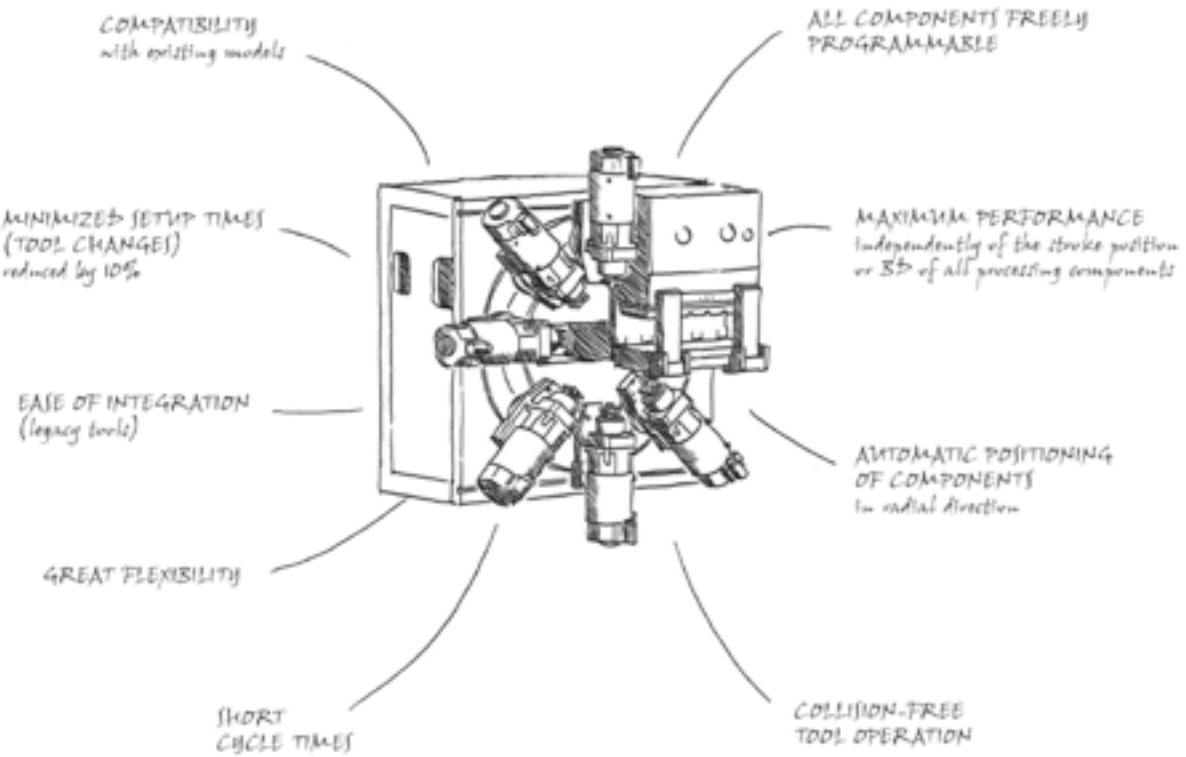
By switching to state-of-the-art Bihler NC technology, users benefit from decisive advantages such as greatly reduced retooling times, low-cost process and cycle time optimization, simplified tool mounting, cost savings thanks to the elimination of mechanical components and great versatility thanks to the ease with which they can adapt and extend their value-added chains.

This is possible thanks to the modular structure of the basic machine with its integrated, fully-automatic NC radial slide positioning capability and the freely definable linear positioning of the components (for example, an NC press) across the working area.

The work stroke, bottom dead center (BD) and stroke position adjustment of all NC units are freely programmable. The maximum force is user-definable and independent of the stroke position.

It is also possible to define a very wide range of machine variants depending on requirements. When used in combination with assembly processes, the new generation of Bihler NC systems offers unlimited possibilities in terms of production technology. ■

Bihler NC technology offers outstanding versatility and efficiency during production.



BIHLER
BM 306
BIHLER
BIHLER

BIHLER INSIDE

Components manufactured on Bihler systems can now be found in practically every area of everyday life. From the car through to the washing machine, they guarantee quality, safety and reliability.

ACTIVE DRIVING ASSISTANCE

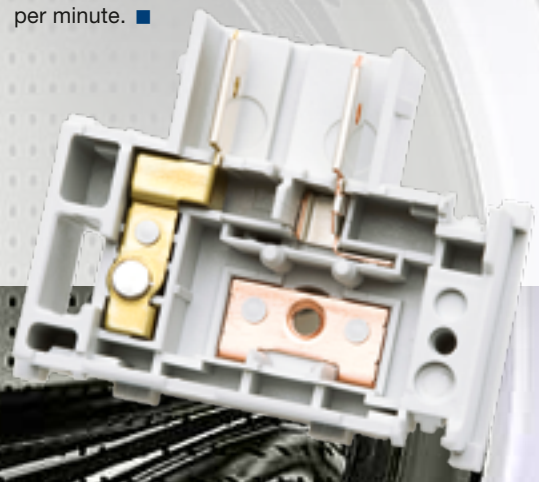
The market launch of the **anti-lock braking system (ABS)** in 1978 represented a milestone in the field of active driving safety. In 1995, it was joined by the Electronic Stability Program (ESP). It detects the risk of vehicle instability and intervenes almost instantaneously to make it easier for the driver to remain in control of the car and prevent skidding. Both systems make use of valves that have to be controlled precisely and reliably. This role is played by the coil assembly which Bihler manufactures on its MC 42 Multicenter and FMS 2500 assembly system. The two systems constitute a high-performance, reliable manufacturing solution for the entire production process – from the infeed of all the required components through to the finished product on the pallet. The setup times are very short and the cycle times amount to 1.5 seconds per component. ■

PROTECTION AGAINST VOLTAGE SURGES

Circuit breakers are used for the automatic deactivation of electrical circuits or individual consumer units when the permitted current or voltage values are exceeded. In the event of a short-circuit, they guarantee reliable deactivation and protect individual devices and the overall system against overloads. They can also be used to switch individual devices on and off when this is required only infrequently during operation and to disconnect the system from the electrical power supply in a safe and reliable way. Bihler produces circuit breakers on a GRM 80E punching-bending machine and an FMS 2500 assembly system. Combining all the production processes on two interconnected systems ensures high value-added and excellent machine output of up to 40 completed components per minute. ■

SAFELY LOCKED

Many domestic accidents are due to the use of electrical appliances. In particular, large, powerful appliances must therefore be equipped with effective **safety mechanisms**. In the case of washing machines, this is the electric door locking switch which prevents the door from being opened while the machine is running. These small but important switches are complex components that are manufactured on three interconnected Bihler systems: the MC 82 Multicenter, the RM 40E punching-bending machine and the BZ 2/6 machining center. The combination of these three systems ensures the fully automatic punching, bending, welding and embossing of the contact parts and components as well as their assembly in the corresponding plastic housings. The system is able to produce an impressive 60 complete assemblies per minute. ■



THE WAY IN

Windows and doors provide access for people, fresh air and sunlight while simultaneously providing protection. As the interface between the inside and outside, the door fittings and hinges are particularly important. They ensure that windows and doors open and close properly even when in constant use. Corner elements, which Bihler produces on the MC 120 Multicenter, ensure that doors and windows swing open and shut smoothly. Not only does the system combine various technologies and manufacturing processes such as punching, stamping, lathing, bending, welding, cutting and joining in a single machine – it also offers extremely short retooling times. The machine's excellent performance ensures production speeds of approximately 90 elements per minute. ■

Bogner uses the new Bihler BIMERIC BM 1500 for the versatile, dynamic production of plastic connectors.

BOGNER GMBH, KELTERN

ALWAYS MOVING FORWARD

For more than 25 years, Bogner GmbH, a company based in the German town of Keltern, has been successful in the field of precision toolmaking, punching and punching/bending/assembly technology. The secret of the company's success lies in its continuous further development of its in-house production capabilities based on the use of state-of-the-art technologies. These technologies include the new Bihler BIMERIC BM 1500 which gives the company the dynamism and versatility it needs to complete its increasingly complex production and assembly tasks.

Bogner GmbH's product portfolio includes terminal strips, high-frequency connectors and complex hybrid parts for the automobile industry.

Continuous further development as the basis for the identification and supply of new solutions – that is the secret behind the success of Bogner GmbH in Keltern near the German city of Pforzheim. The company, which was founded as a one-man business in the mid 1980s, can now boast 25 successful years in the fields of precision toolmaking and punching technology. It focuses on the manufacture of precision parts, modules and assembled parts which range from terminal strips or high-frequency connectors through to complex hybrid components for vehicles. Alongside its punching and bending activities, the company's operations also include thread tapping, welding, riveting and contact welding. Gerald Bogner relies on Bihler's automatic punching/bending machines for every aspect of the company's bending and assembly work: "Bihler systems form the ideal basis for our complex production processes," he explains. "By integrating a variety of operations in a single machine, they offer a much greater range of performance than is possible using follow-on composite technology."

Greater dynamism, more flexibility

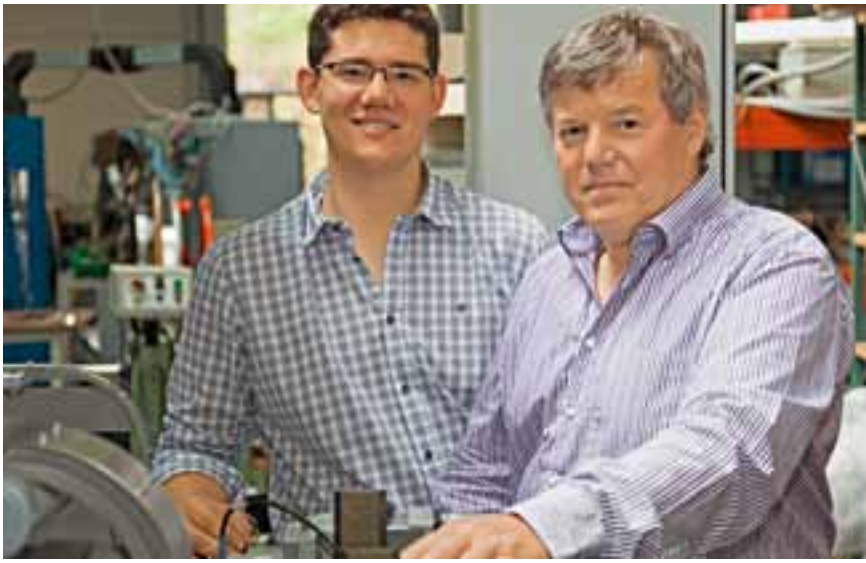
Alongside its four presses, Bogner GmbH's current machine pool also features 19 Bihler punching/bending systems – and the number is set to rise. The most recent new recruit is Bihler's innovative NC production and assembly system, the BIMERIC BM 1500. With its modular structure and individually configurable components, it is the perfect system for conventional assembly operations as well as for complex production methods involving upstream punching/bending operations and other integrated processing sequences. At Bogner GmbH, the Bihler BIMERIC BM 1500 will be used for the production of complex plastic connectors. To assemble the various components such as the housing, seal or retaining rings, it is necessary to connect and combine a variety of process units on a single machine – a capability at which the Bihler BIMERIC BM 1500 excels. "BIMERIC NC technology gives us exactly the flexibility and dynamism that we need for our increasingly complex production tasks," explains Bogner. "It allows us to significantly expand our assembly capabilities and consequently manufacture small and medium runs that meet product requirements extremely quickly and economically."

Configuration at the touch of a button

The new system consists of a combination of five NC motors and conventional air cylinders that are all individually adjusted in the light of the production process. For Alexander Bogner, the company's Technical Manager, the advantages of BIMERIC technology are clear: "In particular when production involves long traverses, the Bihler BIMERIC BM 1500 offers us the necessary variability. At the same time, production accuracy using NC technology is much greater than is possible on conventional equipment and this, in turn, simplifies the engineering of the corresponding tools." Modifications to production sequences can also be made extremely cost-effectively. These changes can be implemented quickly and simply at the touch of a button at the machine's central control unit – unlike in the case of air cylinders whose fixed limit stops always require potentially time-consuming mechanical adjustments to the components.

Working together to find new solutions

In the long term, Bogner GmbH wants to equip all its BIMERIC NC machines with NC motors. According to Gerald Bogner, "the consistent further development and enhancement of our production capabilities is an unshakeable part of our company philosophy. As a result, BIMERIC NC technology as the logical extension to Bihler's existing technology dovetails perfectly with our credo." Innovative, high-performance systems technology is one of the company's great strengths. Just as important, however, is its long-standing process expertise that continues to grow with every new project. And whenever it is confronted by new challenges, Bogner GmbH knows that it can count on its partnership with Bihler: "From the very start, Bihler has been our most important partner and has given us the best support possible based on its own wide-ranging experience," says Bogner. "In particular when developing creative new solutions, we benefit from the security and reliability that Bihler offers." ■



Proud of what they have achieved: Alexander and Gerald Bogner (right). They rely fully on Bihler's NC technology for the continuing further development of the company.

www.bogner-gmbh.de

The NC-GMR 80R runs round-the-clock with approximately 20 tools that are changed within a period of 120 minutes almost every day.

A RAYMOND GMBH & CO. KG, LÖRRACH

SETTING THE STANDARD

A Raymond GmbH & Co. KG in Lörrach manufactures fastening components for the automotive industry. Increasingly, the company has to produce small runs of a growing range of different products. The company recently decided to opt for Bihler's NC technology. The NC-GRM 80R was the result of a pilot project designed to minimize the previously time and labor-intensive setup operations and recurrent tool changes and set a standard as the ideal production solution to be rolled out to the company's other sites in the future.

The company is remarkable for the large number of products it produces, with a portfolio of more than 1,000 items including clamps, speed nuts and high-speed connectors.

The success of what is now the A Raymond Group, and which currently numbers 21 sites worldwide, began in 1865 with the invention of the press stud. At its Lörrach site in Germany, A Raymond GmbH & Co. KG manufactures metal and plastic fastening components for the automotive industry. These components include speed nuts, clamps, cable ties and high-speed connectors. The company is remarkable for the large number of products it manufactures – in Germany alone, the portfolio numbers over 10,000 items.

Most of these items are produced in ever smaller runs, a fact that is a direct consequence of the increasing diversification and growth in variants that characterize the automotive sector. The centrally driven automatic punching/bending machines that have been used to date ensured outstanding production speeds, precision and repeat accuracy.

Minimized setup times

However, in particular when small series runs of large numbers of different products had to be produced, the frequent tool changes resulted in long retooling times and time-consuming assembly operations involving the approximately 120 machines and 4,000 tools used in the plant. "These frequent retooling operations, which could last for several hours, not only led to correspondingly long machine downtimes but also tied up key employee capacities for long periods," explains Dr. Stefan Otto, Manufacturing Director and authorized representative at A Raymond. "That is why, following on from our many years of collaboration with Bihler, we developed the NC-GRM 80R, a punching/bending system equipped with NC-controlled servo motors which enables us to minimize setup times."

Thanks to this NC technology, retooling operations now only take one to two hours.

Ideal for short-run manufacturing

Previously time-consuming tasks such as setting the feed distance or adjusting the punching/bending movement are now performed in just a few seconds via the controller. The unit stores the basic settings for each individual production cycle and these can be called whenever required at the touch of a button. If any further modifications are required, for example following a change of material then all the associated parameters can be adapted quickly and easily. Thanks to the NC technology used in the NC-GRM 80R, specialist staff can be assigned tasks much more efficiently than in the past. These factors, combined with the resulting increase in productivity, ensure the profitability of the system which more than justifies the investment within the targeted two-year payback period given an average machine running time of approximately ten years. This means that Bihler NC technology is the ideal production solution when short runs of many different types of item have to be manufactured.

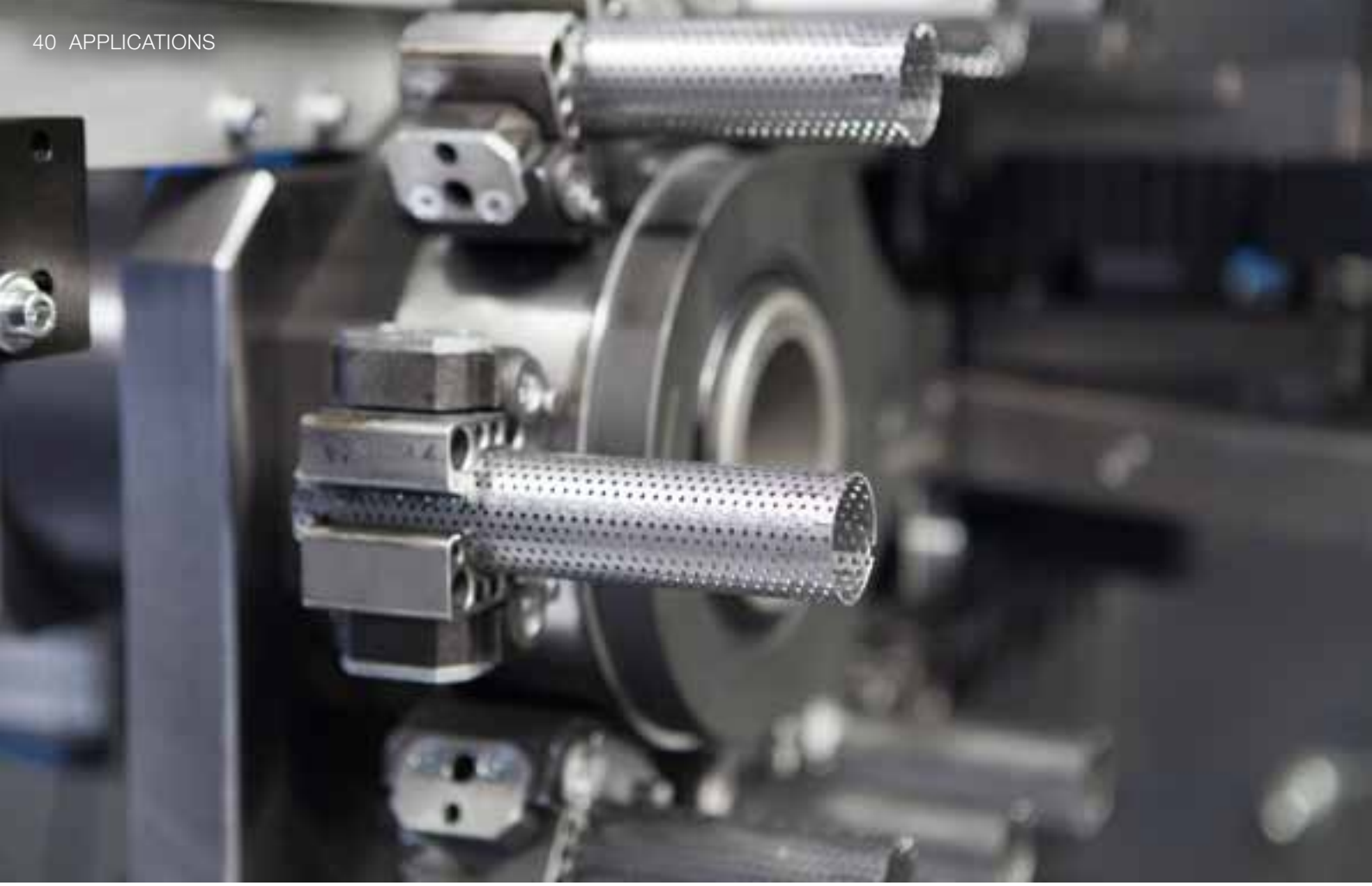
NC technology as a worldwide standard

The NC-GRM 80R represents a further development of an existing Bihler GRM 80 punching/bending system. "Right from the outset, we worked together very positively with Bihler in implementing this innovative forward-looking technology," says Dr. Otto. "Thanks to its great commitment, Bihler has developed a technically demanding solution which responds precisely to our requirements and is of considerable strategic significance for us."

The system now runs round-the-clock with a total of 20 tools that are changed within a period of 120 minutes almost every day. This makes the introduction of Bihler NC technology at A Raymond a genuine success story: "With the NC-GRM 80R, we now possess the flexibility we require to meet our customers' increasingly short-term demands while simultaneously coping in the best possible way with the ever growing number of orders we receive," explains Dr. Otto. "In the future, we intend to introduce NC technology as the standard for the plant at our international subsidiaries – and Bihler will be our partner." ■

For Manufacturing Director Dr. Stefan Otto (right) and Departmental Manager Matthias Sandhas, Bihler's NC technology is of great strategic importance.

www.araymond.com



CEFEG FEDERN- UND VERBINDUNGSTECHNIK GMBH, CHEMNITZ

DEVELOPING NEW POTENTIAL

CEFEG Federn- und Verbindungstechnik GmbH, based in the German town of Chemnitz, is a good illustration of how to develop new areas of business even during difficult economic periods. For the very first time, the company is producing airbag combustion chambers for the automotive industry on its many new Bihler machines. The unique partnership with Bihler ensured that the company benefitted from the necessary production expertise which has already won it a number of repeat orders.

In the event of a collision, the airbag tubes and spring assemblies ensure that the airbag is inflated reliably.

"Even in difficult economic times, it is vital not to shy away from risk and to invest in modern technology – that is our business motto," explains Hans-Georg Reichel, Technical Managing Director of the Chemnitz-based CEFEG Federn- und Verbindungstechnik GmbH. Which is why it comes as no surprise that right in the year of the economic crisis, the company started to buy large numbers of new systems. These include a Bihler/Minster HB 80 press, a Bihler GRM 80 P punching/bending machine and a Bihler/Minster HB 60 E press. According to Reichel, "together with our seven existing Bihler punching/bending machines, they represent the best possible way to open up new areas of business. Our specific aim with these new acquisitions was to create new capacity for the automotive supply sector."

Rapid production cycles

The risk has paid off and today CEFEG is successfully using the new systems to manufacture airbag combustion chambers for TRW Airbag Systems GmbH, a major supplier to the automotive industry. On the one hand, the company uses its HB80/HB60 series of Bihler/Minster presses to perforate the strip material for the combustion chamber tube at a rate of 800 strokes per minute and, on the other, to manufacture two more individual parts for the spring assembly.

The parts that make up the spring assembly are fitted together at a semiautomatic assembly system specially constructed for the purpose.

The punched strip is then cut into several sections at the Bihler GRM 80 P and formed into a closed tube, the combustion chamber tube. The system then transports the tube to the spring assembly where it is mounted. The seal collar is then checked and, finally, the assembly is marked with a series ID. In this way, the company can, in a matter of seconds, produce combustion chambers that can subsequently be fitted in any type of car.

Bihler's expertise – the basis for success

"The greatest challenge lay in the short timeframe available to us to manufacture the many complex tools," explains Mirko Kraft, the manager responsible for the project at CEFEG. "In particular, the insertion and positioning of the spring assembly and the sealing of the combustion tube demanded an extremely precise production flow which, however, we were able to implement to our entire satisfaction using Bihler technology." Equally important, however, was the presence of the required knowledge and expertise during the development of the overall production concept. "It was only thanks to the outstanding cooperation with Bihler's experts whose know-how provided us with precisely the support we needed that we were able to complete the project successfully," says Reichel. "With these systems, we have acquired not only the technology but also a vast amount of valuable experience. This type of partnership with Bihler represents a unique and extremely beneficial approach that has made a crucial contribution to our success story – and without which we would not have acquired the production expertise we possess today."

A pilot project with a considerable impact

The production of these airbag combustion chambers shows how new projects can be brought to a successful conclusion even in a difficult economic environment. At the same time, this special, high-profile turnkey project will enable the company to win many more orders, in particular in the automotive industry. And to handle these, the company is looking forward to further close cooperation with Bihler in the future: "Bihler can always come up with a solution, however complex the requirements might be," says Reichel. "That gives you confidence for the future and the courage to make the investments which, with a strong partner such as Bihler by your side, guarantee shared, long-term success." ■

www.cefeg.de

CEFEG

With Bihler's support, Mirko Kraft, Project Manager, and Hans-Georg Reichel, Managing Director (right), have successfully opened up new sales possibilities in the automotive sector.

Alongside the new airbag combustion chambers, the company also produces springs, punched and wire-formed parts.

NEW REMOTE MAINTENANCE PORTAL

DIRECT SUPPORT

“The presentation of our new remote maintenance portal at Remote Service Forum 2011 was a complete success,” sums up Tobias Gschwend who is responsible for developing and administering the Bihler remote maintenance solution. “The specialist industry visitors to the event were very enthusiastic about how this innovative solution can further improve the productivity and uptimes of our machines.”

The new remote maintenance portal permits maintenance and configuration operations from off-site – at the touch of a button.

During the development of the portal, Bihler paid great attention to the security of its customers.

With its new portal, Bihler has created a lightweight, reliable and extremely versatile remote maintenance solution which more than fulfills the exacting support requirements of our customers worldwide. The portal provides full access to the machines' controllers and all networked components. Even suppliers of third-party products, such as robots or laser systems, can use the solution for the remote maintenance and configuration of their products. However, the customer is always in control. Only when the customer presses a button on the control console is a connection to Bihler established.

The portal also meets the most demanding security criteria: A hardware firewall, secure VPN connection and the logging of all accesses come as standard at Bihler. As an option, it is also possible to connect a camera for live images. The Web-based service portal was created in close collaboration with the partner companies Innominate and Lucom GmbH which specialize in network security and system integration.

Already in successful operation

"More than ninety percent of our new machines are now equipped with the remote maintenance facility," explains Gschwend. "The optimization of the uptimes and productivity of Bihler machines which our remote service brings greatly increases the satisfaction of our customers – always our highest priority." And the record to date is impressive: More than 60 customers are already using the new remote service solution. ■

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PROF. DONHAUSER, KEMPTEN UNIVERSITY OF APPLIED SCIENCES

INNOVATIVE STRENGTH

The rising prices and increasing scarcity of raw materials is confronting not just industry but also the scientific world with a whole new range of challenges. Professor Christian Donhauser from the Faculty of Mechanical Engineering at Kempten University of Applied Sciences and Mathias Bihler, Managing Director of Otto Bihler Maschinenfabrik, agree: Only through good education and training is it possible to generate the innovative strength necessary for long-term success in the competitive global economy.

Mathias Bihler and Professor Christian Donhauser know the value of an open, constructive collaboration which holds great benefits for both parties.

b. on top: How can Germany, a country that it is relatively poor in raw materials but highly dependent on industrial production, be successful in today's competitive environment.

Professor Christian Donhauser: Germany can be successful if, as a driver of technology, it maintains its leading position in the fields of innovation, training and knowledge. To compensate for our lack of raw materials, we must develop industrial processes and production equipment that will ensure that we maintain our advantage over other countries in the future. For this, we need well trained individuals whose innovative strength can drive these developments forward. What is important is that everyone involved, in a company for example, makes their own personal contribution - from management through to the technical staff. Only in this way will the new developments and solutions that we need in today's competitive environment emerge.

Mathias Bihler: With our knowledge culture and the commitment of our employees, combined with the innovative strengths of our enterprises, our companies are able to manufacture products which other nations do not have the technology or industrial structures to produce. Through the economic exploitation of these products, we can ensure the supply of the raw materials we need for our social development.

However, if you consider the way the global market is changing, it is very clear that Germany needs to further extend its market leadership in these areas. This is only possible through knowledge and by investing in people. These form the basis for the great innovative capabilities found in our companies whose strength has once again been demonstrated during the recent global economic crisis.

Of course, various government measures have done a lot to help preserve jobs. However, when you consider how quickly, compared to our neighbors, German industry has been able to get moving again, then our dynamism and great innovative strengths become clear.

These are the basis for our strong position as well as the motor that will ensure our continuing success in the future.

b. on top: What impact are the increasing price and growing scarcity of raw materials having on businesses as well as on research and teaching?

Mathias Bihler: These factors require us to raise awareness among businesses and employees. However, this awareness must also be firmly instilled during initial and further training. Here it is important to demonstrate what can be achieved through innovation and the industrial and economic benefits that this can generate. Thus the optimization of a process results not only, at an initial level, in a minimization of material consumption but also, for example, in a subsequent reduction in the energy consumption of the system itself – as well as a reduction in the energy previously needed to recover and recycle the waste. All this represents a great potential and also an important task for business.

However, the foundations should be laid at the training level. Because by performing these tasks, we have the opportunity to ensure the success of our businesses and protect jobs in the long term.

Professor Christian Donhauser: »SUCCESSFUL PROCESS OPTIMIZATION REQUIRES US TO CONSIDER AND ANALYZE EXISTING PROCEDURES AS A WHOLE.«

Mathias Bihler: »WELL TRAINED INDIVIDUALS FORM THE BASIS FOR THE INNOVATIVE STRENGTH THAT WE NEED IN THE COMPETITIVE GLOBAL ENVIRONMENT.«

Professor Christian Donhauser: Existing procedures and processes have to be considered as a whole. Through innovation – such as improved technical processes or the development of new materials – it is possible to achieve optimizations in specific areas. Alongside simply improving processes it is, of course, necessary to consider other factors such as logistics or quality management, and possibly also directly integrate these in the processes. It is therefore no longer enough to improve one aspect of a procedure. Instead, you have to consider the entire process: What capabilities does a system offer and how is it integrated in the overall logistical flow? This holistic way of viewing procedures is new and must of course also be taught during training. To do this, we must go beyond the limitations to our own knowledge and skills and, for example, involve other faculties. Only in this way can we create the reliable, multifaceted basis for the training that today's students need.

b. on top: Bihler is supporting your faculty by providing a new GRM 80 E. How important is this system for the faculty and its students?

Professor Christian Donhauser: The BIHLER punching/bending system plays two different roles for us. On the one hand, it permits truly practice-oriented Research and Development. It helps us identify and develop new, product-related solutions. On the other, it improves the quality of the training we offer by allowing us to demonstrate not only punching/bending technology in isolation but also many other areas such as control technology, logistical flows or the data recording systems implemented in this type of machine. As the most modern system of its type, it is already playing a key role for students following various training courses and enrolled in different faculties of the University of Applied Sciences.

However, the new system also reflects our close and important relations with industry. This is because you can only train people for industry if you have direct contact with it – as, for example, we have with Otto Bihler Maschinenfabrik, a company with which we have been sharing knowledge and experience during many years of intense cooperation.

b. on top: In what direction are the trends in punching/bending technology pointing?

Professor Christian Donhauser: In the medium term, we will continue to manufacture and further develop high-quality products. One key issue will be to integrate new materials in the corresponding production operations and reduce experimental work, for example by using new simulation programs.

In the long term, punching/bending technology will see a clear trend toward the identification of the key characteristics of completely new materials for use as both process materials and for tool manufacture. In this field, there is great potential for development. In the field of punching/bending technology *per se*, however, parameters such as the forming speeds and flow velocities of the materials are becoming increasingly important. This is a research area that we intend to devote considerable effort to in the coming years.

Mathias Bihler: In the future, we will have to design even more intelligent processes in the field of punching/bending technology. We will have to extend our knowledge base if, for example, we are to form completely new materials in a way that permits different flow properties. This will also require innovative new ways of controlling the tools and further developments, for example in the field of servo technology which permits the use of different speeds during forming and machining.

At the same time, it is also important to take account of the increasing trend toward reduced materials consumption. The task here is to produce smaller cross-sections of equivalent or even greater rigidity, while simultaneously reducing cycle times, for example. Our systems are helping our customers succeed in putting these requirements into practice. ■

A milestone for Research and Development: The new GRM 80 E punching/bending system that Bihler has made available to the University of Applied Science.

THE KEMPTEN UNIVERSITY OF APPLIED SCIENCES

As the only state university in the Allgäu, the Kempten University of Applied Sciences offers academic training in the fields of technology, economics, healthcare and social sciences. 86 professors and some 200 lecturers teach the approximately 4,000 students, who are currently attending 19 different courses, on a campus covering 42,000 square meters and equipped with modern teaching buildings, laboratories, library and refectory. Numerous collaborations with industry and partnerships with approximately 80 other universities worldwide ensure a practical, international approach to teaching.

SPECIALIST TERMS EXPLAINED

THE BIHLER GLOSSARY

As a world-leading system supplier of forming, welding and assembly technology, OttoBihler 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.

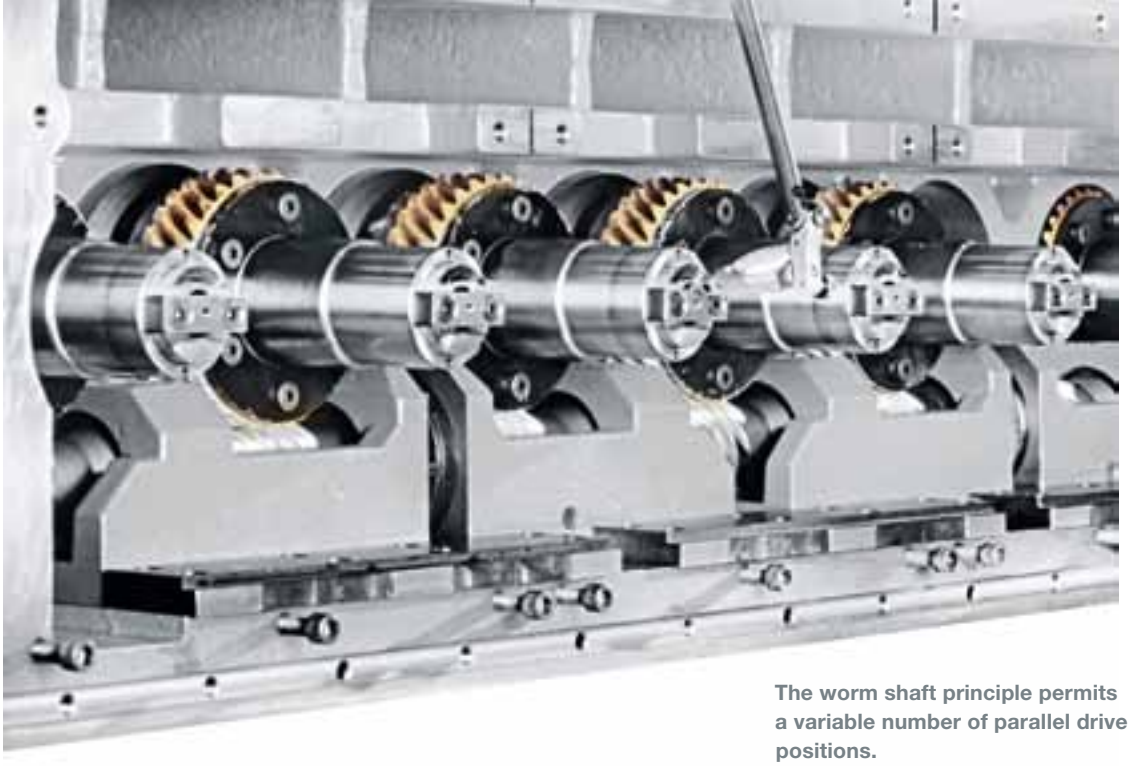
RM-, GRM-, MC-, COMBITEC SERIES

MAIN GEAR WHEEL

The main gear wheel is the central component of the drive unit in a punching/bending machine. It is used to transfer the working energy from the motor to the forming units and is located inside the perforated workplate at the primary machining level. In the punching/bending machine, the frequency-controlled asynchronous motor transfers the working energy to the clutch-brake combination via a V-belt. From here, the work energy is fed to the main gear wheel via a worm gear and intermediate gear.

Via the take-up holes in the perforated workplate, which also represent the drive positions, the toothed wheels in the forming units engage directly with the main gear wheel which is running behind the workplate. The press and mechanical feed are both driven via an intermediate gear. The advantage: The entire 360 degrees of a full machine revolution can be used continuously for forming processes and there are no idle times. ■

The toothed wheels in the forming units engage directly with the main gear wheel that is running behind them.



The worm shaft principle permits a variable number of parallel drive positions.

BZ SERIES

WORM SHAFT

The worm shaft is the central drive unit in the BZ series of punching/bending machines. The working energy is first transferred from the motor to the multiple-thread worm shafts via the clutch-brake combination and is then distributed in the machine body. The torque is taken up by the worm gears at the drive positions and transmitted to the forming units on either side.

Depending on the particular production task, this drive concept permits a variable number of adjacent drive positions. Between five and a maximum twelve positions can be set up in both the upper and lower shaft casings on the two identical processing faces. These vertical planes can be extended by a third horizontal plane to permit additional movements. ■

BIHLER TRAINING COURSES

FIRST-HAND KNOWLEDGE FROM THE EXPERTS

Bihler's training courses provide further information on the drive technology used in Bihler's punching/bending machines as well as additional fascinating expert knowledge concerning Bihler technology. In the Halblech Training Center with its state-of-the-art equipment as well as on-site at the customer's premises, Bihler's experts pass on their valuable practical knowledge – from introductory courses in Bihler technology through regularly held advanced courses focusing on practical application, design, welding technology, controllers, process modules or software, and on to individually customized training courses. The scope and contents of each course are tailored to meet the customer's precise needs. The current Bihler seminar schedule and additional information on enrolment and participation can be found at www.bihler.de/customer_support/schulungen. ■

Bihler's training courses provide in-depth expertise.

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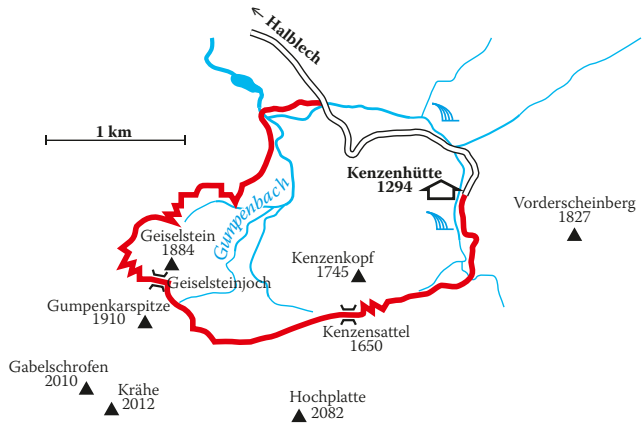
THE B. ON TOP HIKING TIP

FOLLOWING IN THE KING'S FOOTSTEPS

Halblech is not just the headquarters of the Bihler group of companies but also an ideal base for hiking trips in the surrounding mountains. One of these follows parts of the Prinzregentensteig route around the Geiselstein whose impressive limestone summit has caused it to be known as the Matterhorn of the Ammergauer Alps.



The Ammergauer Alps are situated in Bavaria's largest nature reserve which even today continues to be an isolated (and all the more beautiful for that) mountaineering region. Most of the peaks can be reached as one-day excursions from the towns and villages in the valley. One of these is the 1,884 meter high Geiselstein located approximately 12 kilometers south-east of Halblech. The excursion starts at the Wankerfleck in the Kenzen valley which can be reached using the local bus service, by bicycle or by foot along the picturesque Halblech valley. At the Wankerfleck, visitors will find an idyllic chapel situated in a forest glade with a view of the Geiselstein. The waymarking indicates a path leading across the Alpine meadows around the Wankerfleck to the hiking path that climbs to the mountain pass at the Geiselsteinjoch. The mountain path known as the Prinzregentensteig passes below the northern face of the Geiselstein before heading upwards toward the Geiselsteinsattel. This is the starting point for the many climbing routes to the summit which, with their different levels of difficulty, de-

on top in the Ammergauer Alps: The Prinzregentensteig route offers breathtaking views over the Allgäu.

mand not only the correct equipment but also considerable climbing experience.

Through the Alpine meadows to the waterfalls

A less strenuous, but no less spectacular, alternative is the well-maintained hiking path that leads on for an hour or so from the Geiselsteinjoch to the 1,650 meter high Kenzensattel located between the Hochplatte and the Kenzenkopf. From here, it leads downhill through verdant meadows to the source of a bubbling mountain stream which, a little further on, gives rise to two spectacular waterfalls. Depending on the volume of water upstream, one of these two impressive falls reaches a height of 60 to 70 meters and is one of the most beautiful and majestic falls in the Allgäu. The water surges through the narrow cleft in the rocks and crashes down to the valley below in a roar of exploding spray. In the days of King Ludwig II, who often visited the region and possessed a hunting lodge nearby, the waterfalls were even painstakingly and impressively illuminated by the court theater's professional designers – much to the delight of the regent who was able to savor his evening meal against this grandiose backdrop.

After a total of about 45 minutes, you reach the Kenzenhütte mountain hut which serves food and drink to walkers all year around and also offers overnight accommodation. From here, it is just a short walk to the local bus which will take you back to the Wankerfleck or directly to Halblech. ■

The Wankerfleck chapel is the starting point for the day's excursion.

The Kenzen waterfalls are among the most beautiful falls in the Allgäu.

At the Kenzenhütte hut, walkers can refresh themselves with food and drink all year round.

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