

# STAMPER

MAGAZINE FOR HIGH PERFORMANCE STAMPING TECHNIQUE

## ■ NEW AND INTERESTING TRENDS FROM THE WORLD OF STAMPING

News about the latest newcomers, successful jubilees, new application fields and the top-events in the second part of this year

## ■ INNOVATIONS AROUND THE MANUFACTURING PROCESS

Reports from innovative partner companies – from standard parts over surface technologies to system suppliers

## ■ STEPPER AND BRUDERER – COMPOUNDED PERFECTION

When BRUDERER sold a high performance stamping press in Korea and STEPPER developed the matching die, people in Asia were surprised

## ■ NEWS FROM THE WORLD OF B-CONTROL

Three reports about new software functions of the BRUDERER B-Control, which can have a deep impact on the process with little efforts

## EDITORIAL



Markus E. Bruderer, CEO Bruderer AG Stanzautomaten

### Dear customers and business partners,

I would like to start by thanking you for the overwhelmingly positive feedback that we have received from many countries following the publication of the first edition of our new customer magazine "STAMPER". This great response encourages us to continue to develop this new channel of communication.

In this context I would particularly like to draw your attention to an article based on research that we carried out with our customer STEPPER. This report examines a variety of representative aspects of this company, including a successful application in South Korea. This application, which combines Swiss engineering and German toolmaking know-how, enormous increases in productivity have been realised, leaving a Japanese competitor standing.

Furthermore, the reports from partner companies on pages 6 and 7 or the report about new software modules for our B-Control on page 8 supply important starting points in optimising production – because only processes that are consistently perfected offer us the basis for facing the future confidently.

We, too, as makers of high performance punching presses can ultimately only be as good as the challenges that you present us with. Of course, I cannot exclude the possibility in specific cases that some goals cannot be attained without an unreasonable expenditure of time or resources. But I can make this promise with self-confident optimism: If it can be done, it can be done with BRUDERER!

It only remains for me to wish you much enjoyment in reading this issue and to once more invite you to communicate with us directly. No matter whether it's by means of a phone call or face-to-face at the "StampingDays" in Pforzheim/Germany from 21 to 23 September, to which I warmly invite you. We'd also like to take this opportunity, to encourage you to send your ideas, questions or criticism directly to us at [stamper@ch.brunderer-presses.com](mailto:stamper@ch.brunderer-presses.com). Whatever form it takes, we look forward to getting more of your feedback.

Yours Markus E. Bruderer

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## COMPLETE RANGE

Process safety, and this applies no less to automatic punching presses, is constantly increasing in importance. With the conclusion of the BSTA 1250 and BSTA 1600 developments, all BRUDERER machines are now equipped with the new ram height adjustment mechanism which enables an adjustment during the stamping process. It is indisputable that this represents a major advance in the provision of a more accurate and safer punching process for larger applications.

The two series of the redesigned BSTA 1250 and BSTA 1600 round up the top end of the BRUDERER range that will in future be even more impressively precise and safe.

Other key components in the drive of the above models with rated forces of 1250 and 1600 kN respectively besides the ram height adjustment were completely redesigned. Moreover a lot of importance was attached to the ease of service and long service life of both the machine and the control system.

However, the outstanding feature of the new series is certainly that the ram height can now be adjusted during the stamping operation. This enables the operator to maintain the BDC position of the ram within the narrowest tolerances without interrupting the punching process.

Another contribution is made by analogue measuring systems that can be installed in the tool and can compensate for the even the slightest deviations in the ram height via the machine control system. Both the BSTA 1250 and the BSTA 1600 series will be available for delivery from March on 2006.

TECHNICAL DATA		BSTA 1250	BSTA 1600
Tool loading area L – R	mm	1170 / 1510 / 1810	1170 / 1510 / 1810
Standard stroke range	mm	16 – 75 (in 10 steps)	16 – 75 (in 10 steps)
Special stroke range	mm	19 – 100 (in 9 steps)	19 – 100 (in 9 steps)
Speed range	spm	100 – 850	100 – 800
Ram adjustment range	mm	89	89

## KLEINER'S 20<sup>TH</sup> ANNIVERSARY – A PASSION FOR PRECISION

**In June 2005 Kleiner GmbH was able to look back over 20 successful years in business as a respected authority in precision pressings and high-performance tools for the automotive, plastics, electrical engineering and electronics industries.**

The company was founded by the brothers Thomas and Joachim Kleiner. The focus back then was the making of high-performance punching tools. Today, 20 years on and with a workforce of 120, Kleiner GmbH is one of the leading specialists in the production of precision parts.

Under the direction of the two managing directors Thomas und Joachim Kleiner and with a team of highly-qualified staff and know-how that always reflects the state of the art, Kleiner GmbH could not be better equipped for the constantly increasing demands of the market.

"We have a passion for innovation, and complex tasks simply increase our motivation," says Thomas Kleiner, summarising the reasons for the company's success. He adds: "The motivation of our employees is just as important for us as a modern machine inventory, because at Kleiner man and machine always work hand-in-hand to constantly achieve maximum quality and



\* A national foundation in Germany for investment in the development of young people.

## RECONDITIONING

Even if you choose used high performance stamping machines, you can rely on BRUDERER competence. A general overhaul restores the precision and productivity of used BRUDERER machines to good-as-new standards.

And that's not all: After a complete mechanical and electrical overhaul, customers receive a full guarantee for all reconditioned parts. And of course each machine is customised to the respective customer requirements.

This offer also applies if there is a change in a user's product structure. It should also be emphasised at this juncture that BRUDERER customers who buy a used machine of course enjoy unrestricted access to the BRUDERER Group's unique worldwide maintenance service.

So, with used machines from this manufacturer you can be sure of unproblematic, high-precision and high-performance production.

customer satisfaction."

So that this objective can continue to be met in the long-term, training of technical staff enjoys a high priority in the company culture. This is underlined by the 20 young people – an impressively large number for a company of this size – that are at present laying the foundations for successful careers at Kleiner in traineeships of various kinds.

Furthermore, Kleiner GmbH has decided to enter a special relationship on the occasion of its 20th anniversary and is to become a sponsor of the "Jugend forscht\*" Foundation. This step will allow the specific promotion of useful projects, with school pupils from the immediate vicinity being supported in the practical realisation of their ideas.

[www.kleiner-gmbh.de](http://www.kleiner-gmbh.de)

## NEW FEED

BRUDERER's new BBV 260 feed unit is the successor to the highly successful BBV 202. The roll feed updates the family of mechanical driven feeders and features several impressive innovations. The automated thickness setting and the quick-action roller change are only two examples.

The mechanical design of the BRUDERER BBV 260 strip feed unit is very similar to the BBV 450 which has been introduced to the market two years ago. In comparison with the predecessor model – the BBV 202 – the new feed has been consistently developed to increase the advantages for customers yet further. One improvement is the automatic material thickness adjustment that dispenses with manual adjustments or the use of adjustment motors. This unique feature has been realised through the rearrangement of rocker arms and rollers and through the selected length ratios of the components.

As it is now unnecessary to adjust the material thickness axis during the retooling process, the set-up sequence is significantly faster and easier. Moreover the rollers can be rapidly and simply clipped in and out for cleaning, replacement or profiling. This also extends the range of applications of the new BBV 260 to those sections in which pre-punched and profiled strips are used. These and other innovative solutions combine guaranteed maximum precision with the highest reliability and availability. The first BBV 260 will be used in conjunction with the equally new BSTA 1250 and BSTA 1600 types and will be available from March 2006. The product range will then be extended to embrace machines with press forces of 500 kN plus.

TECHNICAL SPECIFICATIONS		BBV 260
Feed length	mm	80 / 120 / 150
Strip width max.	mm	300
Stroke rate max.	spm	1500
Strip thickness	mm	0 – 6
Feed angle	degrees	180
Roller width	mm	120

## FIT FOR DEEP DRAWING

Most specialists are aware of the mechanical advantages of a BRUDERER automatic stamping machine. However, not many of them are aware that a standard BSTA can be easily adapted to make it eminently suitable for deep drawing and bending jobs.

The first solution for this purpose is the additional drive pulley that not only raises the available torque capacity but also reduces the minimum stroke rate depending on application to between 50 and 60 strokes per minute. Thus it is possible to perform trial and obviously also production runs at lower stroke rates, thereby increasing safety in set-up mode. At the same time, the same BSTA can also be operated at high stroke rates and is therefore equally suitable for conventional applications.

Another optional feature is the stroke heights. Each 250 kN or higher BSTA can be equipped with longer strokes than listed as standards. This increases its range of possible applications without reducing upward performance.

Finally, the BRUDERER servo feed unit type BSV allows you to adjust the feed angles. Here too, the feed does not restrict the performance for conventional applications but nonetheless enormously extends the options for bending and deep drawing jobs.

As you can see, a BRUDERER high-performance automatic punch is not only suitable for flat punching applications but can also offer, after minor adaptations, its well-known attributes in successfully performing in other segments.

## PRODUCTRONICA 2005

BRUDERER will be present at "Productronica" from 15th-18th November in Munich, sharing a stand with SLE Electronics. The BSTA 250-75 will be demonstrated along with a KRAMSKI high-performance stamping die. The interesting feature is that the punched part now being produced on the systems was previously machined with far less discharge of parts...

The exhibition stand is designed so that visitors can watch the complete production process of a wire harness for the automotive industry. This is an absolute first in this form and will certainly draw many visitors to the stand. The companies WIELAND, SLE and BRUDERER have also organised a seminar that offers solutions for increased competitiveness under the slogan "Process chain in the field of high performance stamping".

All interested visitors to "Productronica" can obtain an invitation from any of the above companies for seminar scheduled for Wednesday 16 November 2005. You can also get more information from BRUDERER by sending us an e-mail to the following address:

marketing@ch.bruderer-presses.com  
www.productronica.de



## STAMPING DAYS 2005



After just one event, the "Stamping Days" in Pforzheim have become established as an excellent platform for the presentation of new technologies in sheet metal processing and especially for the whole process chain in high performance punching technology. Accordingly, this event

has become one of the top three exhibitions of the year for BRUDERER, along with BlechExpo and Productronica. This time the focus is on an intensive dialogue on the subject of innovative processes in punching technology. "We want to acquaint customers, whether actual or potential, with punched parts that to date have not, perhaps unjustly, been regarded as core competencies of BRUDERER," is the word from company headquarters in Frasnacht.

As no machines can be presented at the event, BRUDERER will concentrate on applications, particularly for the industrial field, i.e. applications in which the key criteria are precision and flexible machine use and not high stroke rates. Contrary to popular opinion, the BSTA series is also highly suitable for such applications. It has long been accepted that the BSTA series is synonymous with precision – although mostly in conjunction with electronic and other small components. At the same time, it is a fact that high-precision equipment is also absolutely essential in industrial applications in order to achieve greater process security and hence reduce production costs.

Did you know, for example, that a BSTA can be operated at a rate of about 60 strokes per minute? Or that even at lower speeds, the available torque can be conveniently increased with a simple mechanism? BRUDERER looks forward to the opportunity of discussing these and other subjects personally with customers at stand 3-21.

www.stampingdays.de

## A BREATH OF FRESH AIR IN MICRO TECHNOLOGY

MICROSTATEC GmbH is a young innovative company in the micro-punching segment. High-precision punching tools used by the company for the manufacture of high-precision micro-parts of the most compact dimensions are designed and produced on its 450 m2 production site.

"Our attitude is that precision is the essential prerequisite for quality and functionality – and hence the starting point for functional, reliable technology and ultimately for the success of products on the market," says Wolfgang G. Christoph, highlighting the philosophy of his company that was only established last year. "Our know-how was acquired in precision engineering – specifically, the watch industry. Here it was always our job to work to the nearest  $\mu\text{m}$ ," says the committed company boss, who says that his success is based on four strategic pillars:

- exceeding quality requirements
- permanent gains in the miniaturisation of components
- assurance of reliable and timely delivery
- competitive pricing through the application of know-how and technology

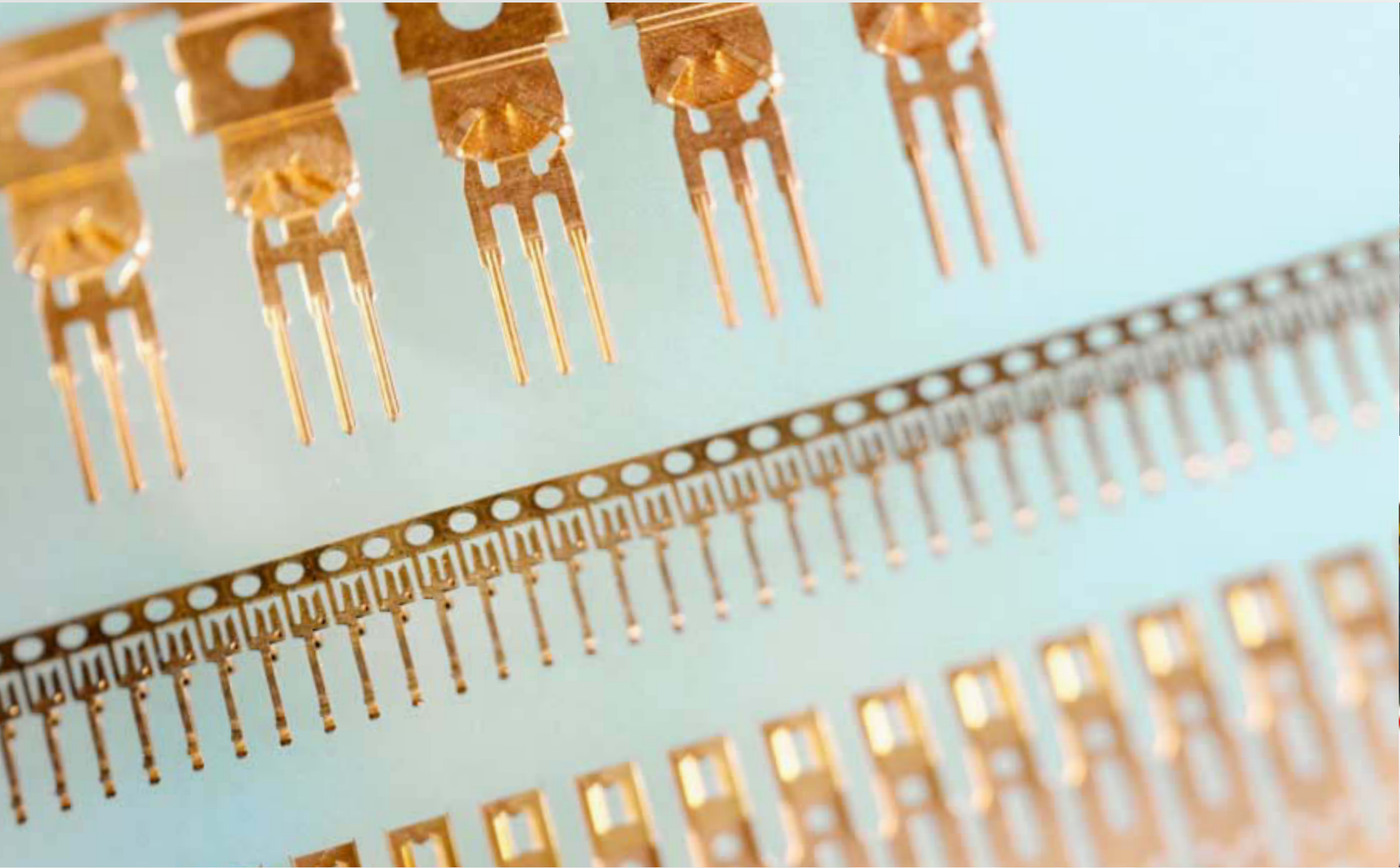
The basis for the above is the continuous improvement of the know-how and high-tech processes within the company that are in any case already of an impressively high standard. The development of new technologies, materials and surfaces constantly places new and ever greater demands on employees and machines, the realisation of which ultimately results in the advanced production of quality-assured and competitive products.

And on the subject of quality, Christoph says: "Quality orientation is achieved in our company, on one hand, through quality targets that are reset annually and that are monitored by regular reviews. On the other, highly qualified workers and state-of-the-art machines like BRUDERER stamping machines, provide assurance of the sustainable provision of high quality in services, performance and products."

www.microstatec.de



# STEPPER – JOINING FORCES FOR PERFECTION



*This small selection of stamping parts illustrates the impressive precision, which has to be provided even in a STEPPER-die, to make such fascinating parts out of simple strip material //*

**High-performance automated punches continue to enjoy a special position in the industry. However even the best equipment cannot attain top performance unless the tool also meets the highest specifications. By the same token, even the best tool in the world cannot perform if the automatic punch does not offer (in the fullest meaning of the term) the required framework.**

Anyone who as a producer of punched parts demands uncompromising quality and maximum productivity is well advised not to lose sight of optimising symbiosis instead of concentrating unduly on short-term cost savings when making investment decisions. That said, most European, and above all German metal stamping operations already subscribe to this credo. The best evidence for this is Bruderer's sales success and especially the expansion of

the highly expert toolmaking companies in and around Pforzheim.

Internationally, too, quality is increasingly gaining in significance, as the joint solution offered by BRUDERER and STEPPER for a customer in Korea shows. A local customer ordered a high-performance BSTA 500-110B automatic punching press from BRUDERER AG for an existing subcontracted component and then looked for an innovative and thus productive tool technology. Instead of staying in the country or at least the region, the Koreans decided to call in Pforzheim-based Fritz Stepper GmbH & Co. KG, a company that now clearly enjoys an excellent reputation in the Far East. In view of the rationalization effects promised during negotiations, the parties soon came to terms.

About the project: Previously, the customer had produced the range of parts in question on up to four stamping machines seven days a week, around the clock to meet the demand for around 350 million parts. It is hardly necessary to emphasise that the machines still in use were not produced by BRUDERER and the tools not by STEPPER – what is perhaps more interesting is that in both cases they were provided by Japanese suppliers.

We do not know what will happen with these local stamping machines: Where the existing set-up struggled to achieve at production rate of 400 strokes per minute, the BRUDERER/STEPPER combination raises the pace to 800 strokes per minute and laid out as a double out die, that works out at no less than 1600 parts per minute. And these are rationalisation

effects that are even making people in Asia sit up and take notice.

However speed is by no means everything, as Michael Stepper, the managing director of the family business, makes clear, pointing to the high standards of availability demanded of the machine/tool system. And that's certainly the case: For it is only when the complete picture of high stroke rates, tandem production and extreme reliability over a three-shift production cycle is taken into consideration does a good solution reveal itself as something special, if not unique.

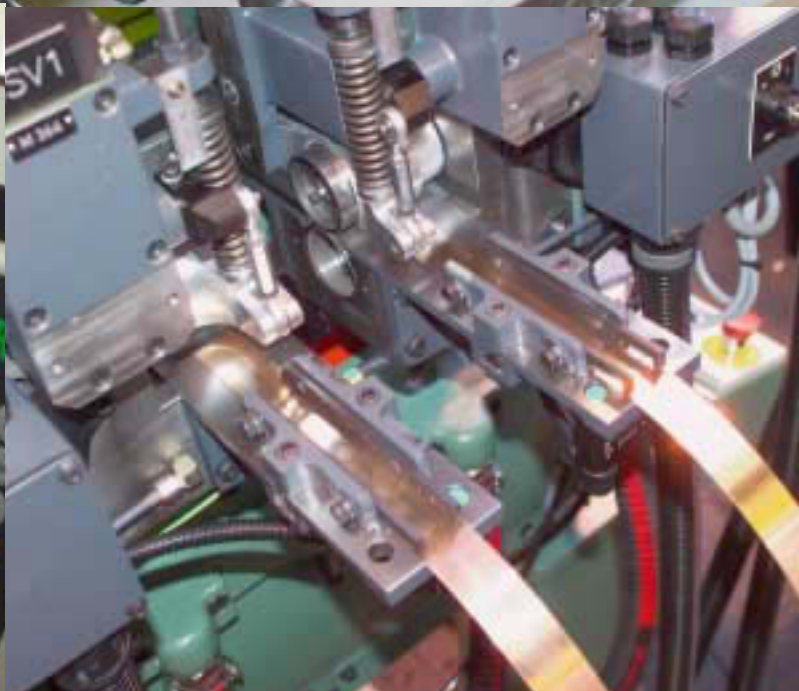
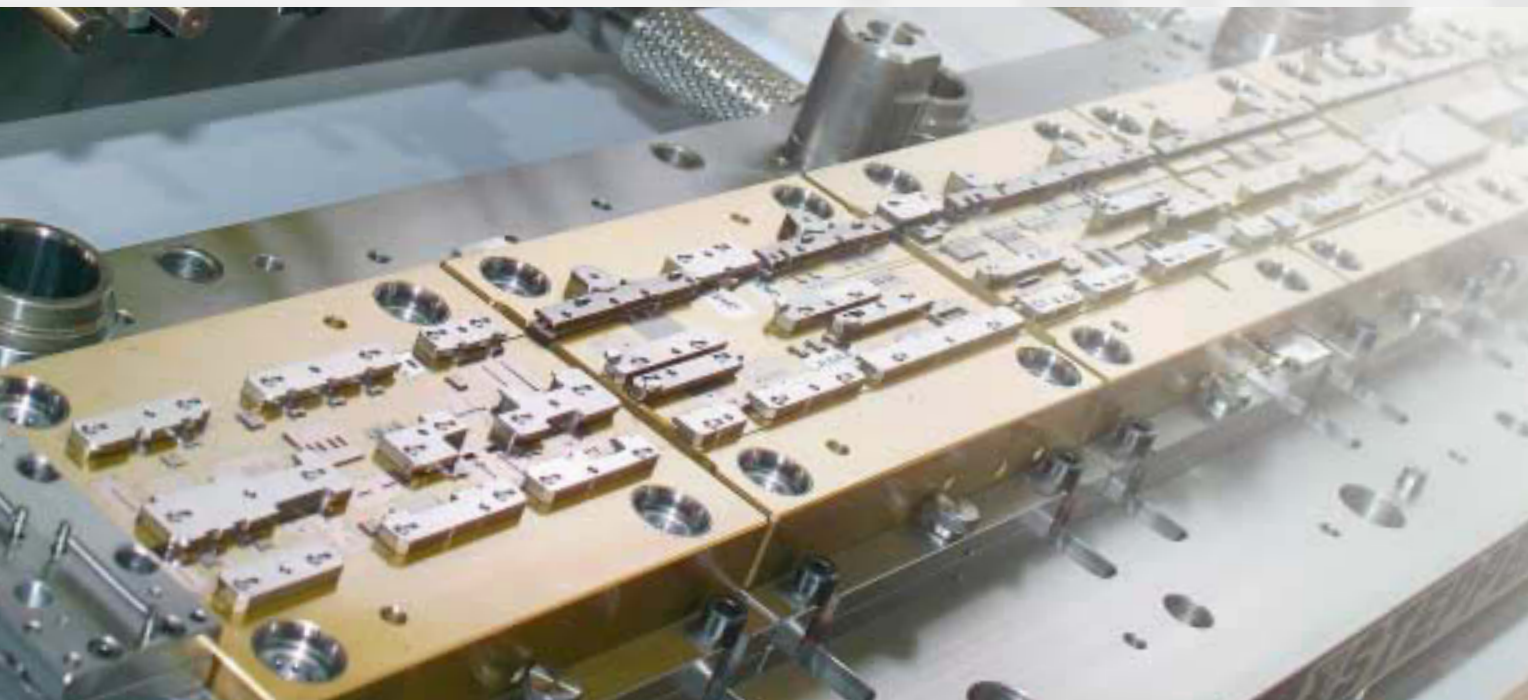
Much of the system's high-performance can be explained by a glance at the highly robust design of the BRUDERER presses that make no compromises in respect of extremely high precision. The basis for this is high degree of vertical integration of the Swiss specialists – although it is easy to say the same of STEPPER. There too, each qualitatively critical component of the tools is designed and built in-house.

The range of STEPPER products is divided into the three areas: starting with tools from the PROTO range (for drawing-based, production-proximate prototypes and short delivery times) through tools of the MODULAR 1 generation (for the cost-effective production of small and medium-sized series and for complete product families) to the likewise modular F1 SUPERTEC technology (for big production runs with optimum efficiency).

Michael Stepper is especially proud, on one hand, of the modular concept with which his father revolutionised



*Michael Stepper, Managing Director, Fritz Stepper GmbH & Co. KG //*



Above: Progressive die in perfection „made by STEPPER“ // From the left: The “open” B-Control guarantees also at STEPPER best operating comfort // The latest proof for the “compounded perfection” is the new servo feed unit in double design from BRUDERER in ideal interplay with the innovative Two-Track die from STEPPER // “Only BRUDERER” – that’s what the STEPPER company chooses when it comes to perfect stamping parts //

traditional toolmaking in the mid-1970s and on the other, of the F1 SUPERTEC development, which has been causing excitement all over the world since the start of the new millennium. The main features of SUPERTEC tools, says Michael Stepper are “super material, super technology and super coatings”.

Besides the use of special ceramics, in this case “super material” means the application of a hardened metal that was especially developed for STEPPER with an extremely fine-grained structure with a grain size of only  $0.3 \mu\text{m}$  (for comparison: normal hardened metals have a grain size of at best  $0.7$  to  $1 \mu\text{m}$ ). And precisely because STEPPER hardened metal is so fine-grained, it provides the basis for extreme edge stability and therefore a very long useful production life, whereby other factors also come to bear here of course.

These factors include the super surface-technology developed in-house with makes it possible to reliably produce extreme surface qualities up to  $Ra 0.01 \mu\text{m}$  and contour precision with tolerances of  $1 \mu\text{m}$ . Another example is provided by STEPPER’s own coating facility for hardnesses up to 5000 HV.

To summarise its impressive properties, F1 SUPERTEC represents the perfect symbiosis of highest precision and maximum productivity. And for Michael Stepper this development is the best evidence for the contention that it is still possible to make money with tools “Made in Germany” – all over the world!

currently comprises 110 highly-qualified members, still regards himself primarily as a toolmaker, as he says: “Our goal is not to be the largest toolmaker on the planet, but to make the best high-performance punching tools in the world.” In accordance with this credo, there is no possibility of extending the business in other direction.

The fact that his workshop accommodates numerous automatic punching machines (it goes without saying all from BRUDERER) is not for him a contradiction: “On one hand, a punching shop is essential for us so that we can test and run-in our tools or so that we can develop innovative processes.

On the other, we of course have customers without their

own expertise in punching metal for which we provide production capacity and other customers who need help to cope with capacity bottlenecks.”

If you want to find out more about STEPPER, the “StampingDays” in Pforzheim provide an excellent opportunity to make contact. As well as being present there with its own stand, the company is organising a shuttle-service to the company premises, where you will be able to see the latest development of the BSV 75T servo feed unit in innovative combination with a two-track punching tool.

[www.stepper.de](http://www.stepper.de)



The result of a complex Two-Track production: highly precise contacts at the outlet of a STEPPER-die //

In fact, Michael Stepper, supported by his team which

# LFT MACHINE TECHNOLOGY – AMBITIOUS ONE-STOP-SHOP SUPPLIER

What comes after the stamping? This question is one of the central issues in high-performance punching technology. Often stamped parts undergo finishing processes such as assembly and over-moulding, for example, to create the final product. The prerequisite for successful products is the precise integration of several sub-processes into a carefully coordinated main process. LFT Lange Feinwerktechnik GmbH (LFT Machine Technology) based in Ölbronn-Dürrn has mastered this requirement for more than 20 years and has established itself as a leading supplier of special machines as well as precision parts and modules.

LFT develops special machines and produces customised parts and modules ranging from a few cubic millimetres to the size of a shoebox. These stamped parts, assemblies in automotive production, medical diagnostics products and so



on, all have the following in common: demanding technical requirements and an optimum price/performance ratio.

Easily scratched coatings or brittle galvanised surfaces must be punched and formed appropriately. Critical materials such as wolfram or niobium demand specialist machining. Processes such as clinching, welding or soldering are only successful if all parameters are precisely adjusted. Critical products, such as those that are typically used in the safety engineering of modern cars, must be 100 % tested. Basic parts can also become a challenge simply because of the extremely large volumes required for production.

## Special-purpose machines

At LFT, the in-house scope for developing machines extends to all key areas: starting from design through the production of components and the assembly of production facilities to toolmaking. Curve controllers are the centrepiece of the machines. Coupled with the latest control electronics, machines are produced that can work very quickly, yet with high precision.

The linear arrangement of processing stations results in compact designs. They are easily serviced and require little space, yet operate with maximum reliability. In conjunction with standard cells, astonishingly modestly priced systems can be created, whereby each machine is completed with comprehensive measuring and testing technology.

## OEM products

In addition to investments in its own systems, LFT can also supply its customers with OEM products. The advantages are readily apparent: the high availability of the machines results in a favourable price/performance ratio and increases supply



security. The many different processes that LFT offers, increases design options and reduces development times. Moreover LFT offers the flexibility to react rapidly and effectively to product changes – whether it's a matter of further developments in the product cycle or versions of an existing product family.

Along with hoses, cables are a special challenge in assembly work. These non-rigid components must be handled with special care. LFT has many years of experience in dealing with them.

Finally, LFT has several patents in the area of punched and bent products. By using them, the customer obtains a unique advantage and also objectively quantifiable competitive advantages.

[www.lft-lange.de](http://www.lft-lange.de)

# OTB OBERFLÄCHENTECHNIK – SURFACE TREATMENT SURFACES

Since it was established in 1987, OTB Oberflächentechnik GmbH & Co. has developed into an effective, reliable, highly flexible and innovative partner for its customers in punching applications and electronic component production.

OTB regards itself as a technical service provider that in cooperation with its costumers provides surface technology solutions for the economic and technical challenges thrown up by the market. To this end, the company has developed new selective plating systems such as special brush technologies, SPINJET, DMS and MMS, as a result significantly cutting production costs, reducing the consumption of

precious metals (in some cases considerably) and making possible new technical solutions.

The range of services offered by OTB has been continuously extended over the years and now embraces the highly selective coating of 2 and 3 dimensional punched strips, the special galvanisation of single components, the gentle removal of grease and particles from punched strips and the production of strip galvanisation, deflashing and cleaning systems for the electronics industry as well as the delivery of turnkey galvanisation systems with all the associated infrastructure.

OTB has also developed an environment-friendly gold recycling and refining technology for the recovery of waste containing precious metals produced during the punching of hard-faced strips and markets this from its headquarters in Berlin. Especially today where the prices for gold and silver are very high, the small but very effective machines guarantee therefore a very fast return on investment.

Increasing quality expectations and the constant reduction in the size of components have turned cleaning into one of the principal preoccupations of the electronics industry. OTB has developed small and compact high-pressure water jets and atmospheric plasma systems specifically for machining filigree. These systems that can be integrated in production processes (e.g. they can be post-connected to the automatic punching machine) are used for cleaning and deburring punched parts, for deflashing plastic spray-coated chips and to activate metal and plastic surfaces. OTB's SPOX® cleaning systems are proving their performance reliability in Europe and South-East Asia for companies in the electronics and automotive industry.

Moving beyond its homebase in Germany, OTB will offer in the course of 2005 galvanisation services and above all selective punching strip coating to its customers in China.

[www.otb-group.com](http://www.otb-group.com)



# SLE – INTEGRATED SOLUTIONS FOR CLEANING PUNCHINGS

With its complete range of products and services, SLE GmbH offers its customers in the world of high-performance punching technology a continuous system for surface treatment which can optimise the entire process chain. Depending on the punching operation in question, various process parameters are selected and combined to create an optimum surface structure.



The prerequisite for the industrial processing of punched components, such as coating, soldering or bonding, is a grease-free surface. Optimum product quality can only be guaranteed with flash-free and oil-free surfaces.

Depending on cleanliness requirements, appropriate modules are combined from the SPR Cleaning System. Spraying, flushing and steaming modules in all imaginable combinations are selected to remove oils and coolants. Flashes and burrs are removed by a combined high-pressure and deburring module.



A punch strip with a width of 20 to 110 mm and a throughput speed of for example up to 8 m/min can be deburred, with the whole operation fully integrated in the production process.

Before the actual brushing process, the punchings are pre-rinsed to remove any grease. Any punched strips that have been contaminated with oil are degreased with pure water in order to prevent the brushes sticking or becoming contaminated.

The strip is then returned to the deburring module in which the brushes are arrayed for cross-grinding with a quick-change unit and can be simply swapped out and in according to strip width.

For optimised processing, the brush speed can be continuously set up to 20 m/sec, while an integrated brush



wear measurement system checks brush quality and adjusts them with a tolerance of  $\pm 0.15$  mm.

Finally, high-pressure cleaning is performed at a pressure of about 180 bar. The cleaning liquid (water) jets that hit the punched strips have a very strong mechanical cleaning effect that reliably removes flash, grinding dust and in many cases any burrs.

Cleaning steps with test ink	Dispersion of mechanical particles, oils and coolants	Spraying module	Brushing module	Steam module	Deburring module	High-pressure module
58-36	Cleaning for boronide products	●	●	●		
38-36	Cleaning for gear surfaces and variable products	●	●			
24-34	Cleaning for soluble and variable products	●	●			
32-30	Cleaning for particles and coffee products	●				
34-32	Cleaning and deburring of products				●	
Mechanical cleaning burrs	Mechanical device to remove burrs				●	●

[www.sle-electronic.com](http://www.sle-electronic.com)

# AGATHON AG NORMALIEN – PRECISION PAYS

Tradition is written just as large at AGATHON as innovation. Established back in 1918, the company has earned its reputation as a leading manufacturer of standardised punching tool components as well as bearings for machines, forms and tool sets.



The products of the Swiss company AGATHON AG Normalien are above all distinguished by the highest material quality, the highest quality of finish and the narrowest tolerances. Other impressive features include:

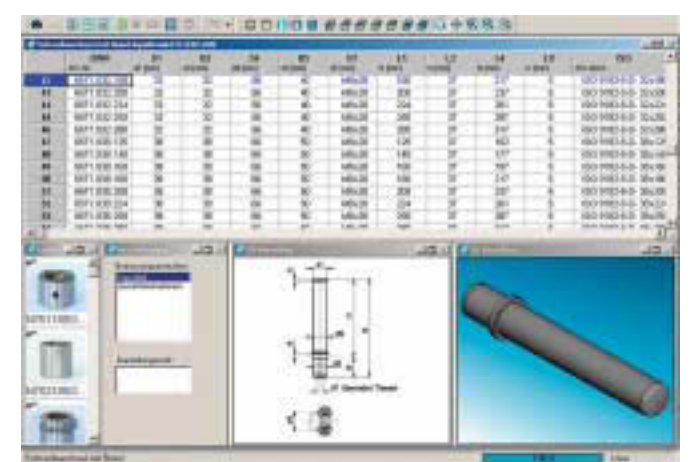
- Special leading edge geometries on die sets and collets for a longer service life
- The patented hot caulking of rollers guarantees optimum play and hold in the cage
- Delivery of standardised parts from stock
- An impressive price/performance ratio

An example of the high-performance of AGATHON AG standardised components is provided by the roller bearings

that extend service intervals and also increase the service life of the tools. The complete product range is as follows:

- Range of bearing components as per ISO/DIN standards
  - Cylindrical, quick-change die sets and for installation on the bearing plate
  - Sliding bearings
  - Ball bearings for high precision radial and axial movements (patented)
  - Roller bearings (patented)
  - Cage retaining system (patented)
- Miniature linear guides,  $\varnothing 3$  to 12 mm
- Guide elements dimensioned in inches in accordance with the AFNOR standard and for mould making
- Die sets in cast iron, steel and aluminium
- Special parts according to customer specifications/ drawings (e.g. in non-corrosive materials)

Another example from the wide range is the roller bearings. The roller cages have been equipped with newly developed retaining pockets for holding the rollers with corresponding caulking, produced in a process (patented) in which burrs were eliminated. This ensures high dimensional rigidity even under high radial loading and increased uptime.



In view of the extent of the range of standardised punching components and bearing elements, anyone who wants to simply get an overview and save themselves a lot of effort can do this with AGATHON's electronic product catalogue.

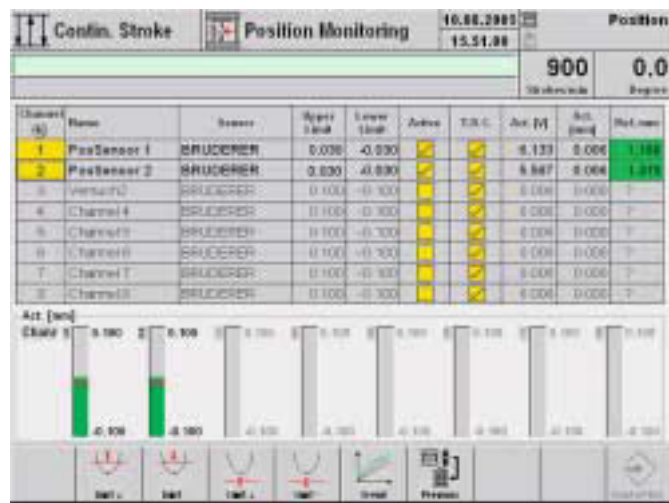
Instead of producing drawings themselves, users can download the required components as a 2D/3D file via the ISO/DIN/AFNOR program and insert them directly into their drawings. The CADENAS software used is compatible with most CAD programs.

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# EVERYTHING UNDER CONTROL

The monitoring of tool functions is essential for a secure process and constant workpiece quality. Moreover it protects the tool and machine from expensive damage.



With position monitoring, "analogue" sensors can be used for tool monitoring. One or more sensors are used to measure the closing position of the spring plate. If the spring plate does not reach the set tolerance range in the BDC area, this is recognised as an error and the machine is stopped. The cause may be a doubling up of the material or slugs, etc.

The use of high-resolution, inductive distance sensors (eddy current sensors) means that narrow monitoring tolerances can be employed so that positional aberrations of less than 1/100 can be reliably detected.

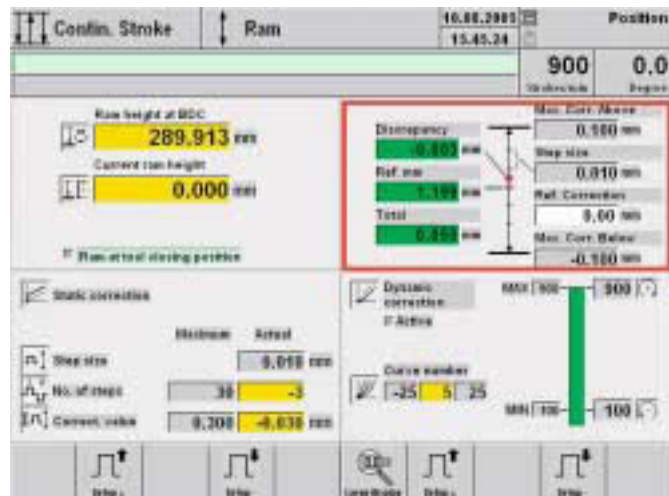
The teaching-in of required positions simplifies the use and operation of the position monitoring system. The display of the current and previous positional values keeps the operator constantly informed about the tool status. The highlights of the analogue sensors can be summarised as follows:

- narrow monitoring tolerances
- simple application through "teaching-in" of parameters
- high-resolution sensors for measuring distances

### Ram position control with sensor in the tool

The adjustability of the ram during the process is a vital and unique design feature of BRUDERER machines to keep the bottom dead centre position of the tool constant. Due to process effects (heating of the machine, tool and punch), the optimum tool closing position may change during the run-time.

For setting purposes, as depicted in the example, the distance R between a reference punch and the analogue sensor in the die is measured (see Fig. below). After the parameters have been taught in and the setting is activated,



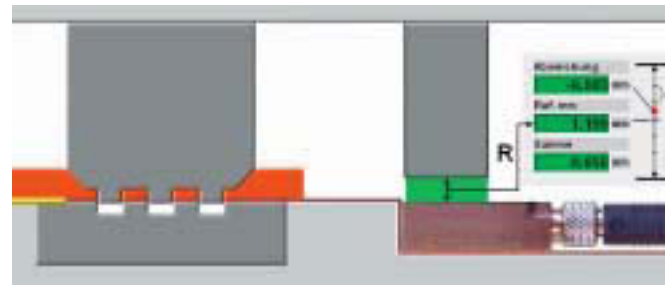
the distance is kept constant by automatic adjustment of the ram height. The setting leads to an optimum result if a change in the closing dimension can be detected and compensated for, through adjustment of the ram position, thus keep the quality of components constant.

Accordingly the most important features of ram position adjustment by sensor in the tool are:

- measuring and controlling of the BDC within the die and hence near the process
- ram BDC position adjustment during the stamping process
- retrofittable with BRUDERER B-Control\*

The ram position monitoring system is an add-on module for the B-Control and the ram position adjustment can be implemented as an additional function for the position monitoring system.

The \* in the above list signifies that retrofitting of the position monitoring system and ram BDC position adjustment of an existing machine with a B-Control is in principle possible but must first be discussed with BRUDERER.



# INDIVIDUAL ERROR MESSAGES

**Complex production systems are composed of an association of various devices from different suppliers. Immediate diagnosis of why a punching process is not running is the basis for its optimisation and at the same time is a decisive factor in the productivity and the cost-effectiveness of the entire production line.**

The "Customised Error Messages" module creates transparency and enables the operating statuses of all devices that are integrated in a B-Control system to be displayed. Inbound error messages – generated by external peripheral devices – are displayed centrally on the B-Control display panel and permit the operator to deal with the problem immediately.

The new "Customised Error Messages" module in the BRUDERER B-Control features:

- free parameterisation of message texts by the customer
- saving of a message text for each error signal (multilingual format also supported)
- establishment of dependency of enablement of operating mode and tool dataparameterisation of inbound error messages to initiate a TDC stop/immediate stop or parameterisation without stop
- definition of time delay in response to each signal
- definition of an automatic reset so that once an error has been rectified the display is automatically reset
- definition of whether in set-up mode, the error message can be cancelled without the error being rectified

Two examples of "Customised Error Messages" from practice are the delayed stop in automatic mode because of "open sound protection doors in the cabin" or a TDC stop because "suction device full".

The advantages of the new control options are manifest: starting with the transparency of the operating status of the

# SAVE AT NIGHT

In Europe in particular, the issue of how to increase productivity while at the same time reducing operating costs is a hot topic. This is precisely where BRUDERER's "Energy control/night switch" can help by supporting less labour-intensive production, reduced energy consumption and increasing the profitability of the entire production line.

This feature supports a gradual reduction of the machine drive status in a predefined scenario. Four energy saving functions are available which are activated with a time delay on receipt of an internal or external stop signal:



- Reduction to set-up speed
- Switch off main drive
- Switch off oil pump
- Main switch off/isolate machine from main power supply

Peripheral devices that are supplied with power from the sockets in the automatic punching machine can also be shut down via this module. In order to avoid data loss, in this event a warning signal is sent to the devices instructing them to save their data.

The "Energy control/night switch" module is immediately available for automatic punching machines with B-Control and can be retrofitted to existing machines with the same control system under certain conditions.

production facility through the central display of error messages and an immediate response in the rectification to an increase in productivity and cost-effectiveness.

The "Customised Error Messages" module is immediately available for automatic punching machines with B-Control and can be retrofitted to existing machines with the same control system. Moreover the values recorded by the control system support a functional extension to establish Machine Data Capture (MDC).

If you are interested in this option, the specialists at BRUDERER are of course available at any time for a personal discussion.

**PREVIEW OF STAMPER ISSUE 1/06**  
 After the first two editions of STAMPER appeared in short succession due to the close juxtaposition of BlechExpo and StampingDays, there will now be a somewhat longer interval to the next issue. The next edition of STAMPER will not appear until March 2006 and again it will be full of new developments to do with punching. Among the planned articles are reports on the following subjects:

- A report about an application from a customer in the industrial applications segment
- Innovations in the punching processes
- The latest news about control systems