EHRT

Punching and Bending Machines


PERFORM

EXPECTANCE

Our industry is currently undergoing a revolution. Information and communication technology are increasingly common in production facilities and a completely new kind of intelligence is emerging in the form of Industry 4.0. Methods and processes are in a state of flux – just as our customers' need for modern production solutions.

The requirements of our customers have shaped EHRT since the company was founded in 1963. The very first order processed by Dieter Ehrt's engineering firm was for a tailor-made machine. In cooperation with our customers, we aim to find solutions for their production processes to this day, which allows us to master challenges and create new room for fresh ideas.

This brochure intends to provide a snapshot of and journey through our company. Experience how customer closeness and our tradition – characterised by innovative strength – add up to a standard and a promise all at once, keeping in line with the company motto: "EHRT – Expect Performance".

Thomas Ehrt
Managing Director

Richard Neuhoff
Managing Director

HOME

1.0_The Home of Precision

“For most people, copper is simply copper,” explained Richard Neuhoff while holding a heavy rod of the reddish metal in his hands, “but experts know that individual raw material batches can differ a lot.”

The chemical composition of various copper alloys, the direction of rolling during manufacturing, even storage conditions are all things that affect subsequent processing of the metal. For the manufacturing electrical industry – in which cooper is a prime material due to its thermal and electrical conductivity – this very literal uniqueness of each batch poses a great challenge.

Precision “Made in Germany”

1982 was the year in which the company founder, Dieter Ehrt, developed the bending process with spring-back compensation. The totally innovative process enabled a previously unattained degree

of bending precision of flat profiles and turned the company headquarters in Rheinbreitbach into the home of precision bending – to this day.

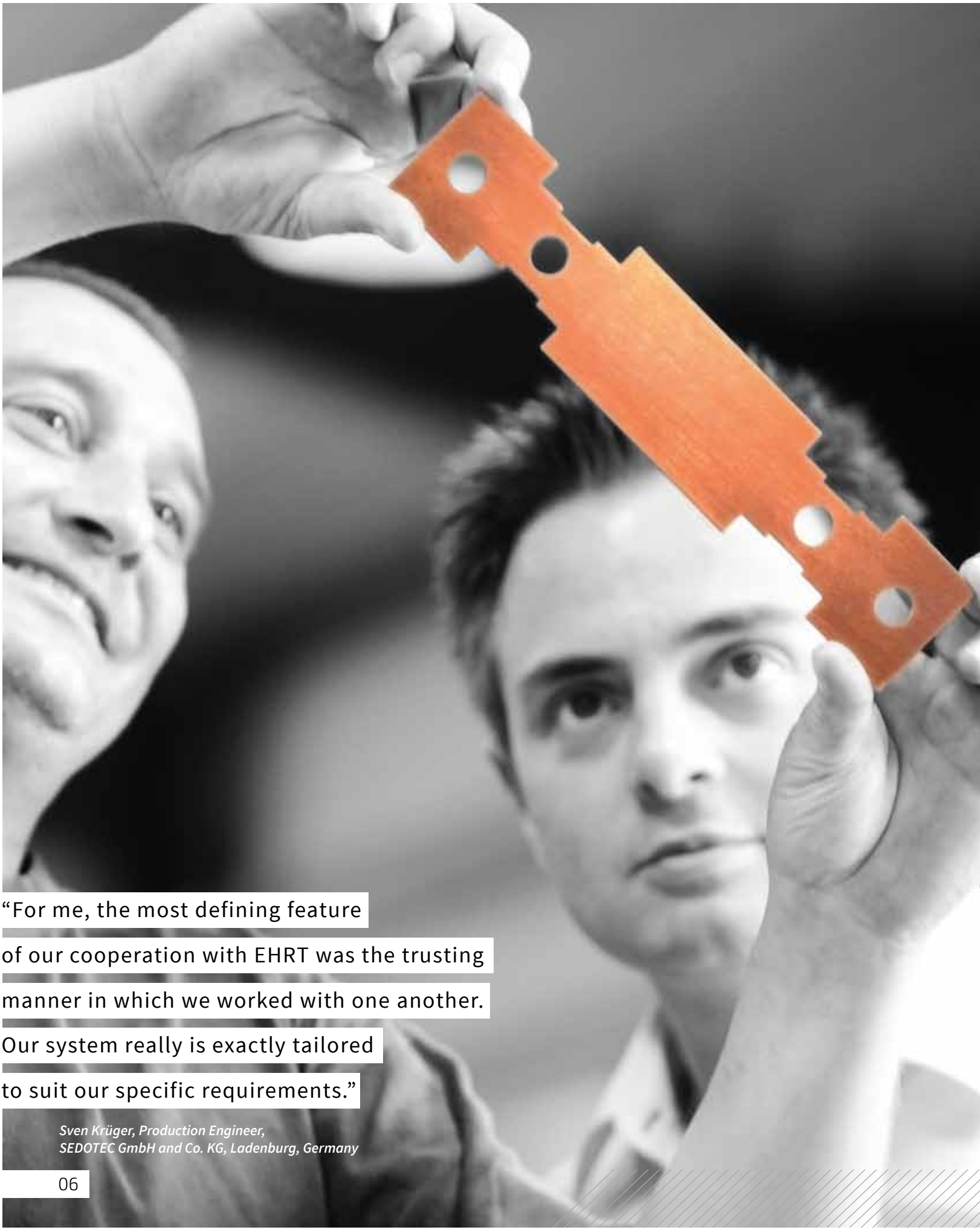
During the bending process, two flattened bolts turn within bending prisms fitted with an electronic angle gauge. With the turning of the bolts directly recorded by rotary encoders, a computer then calculates the required final stroke using the measured values. The workpiece is finally "over-bent" in such a precise manner that the machine compensates material spring back. And thanks to the proprietary EHRT method, the process guarantees success from the very first workpiece onwards, without requiring any reprocessing even if material properties change.

The innovative bending process with spring-back compensation developed by Dieter Ehrt not only provided a foundation for all further EHRT developments, but also served to define the company's tradition and standards. EHRT machinery continues to be developed and manufactured in Rheinbreitbach to the present day. The precision of EHRT machinery is also still setting standards. There's only one original: EHRT.

Focus: Customer Benefit

In addition, the precise spring-back compensation feature also means that EHRT bending machines require no time-intensive testing or adjustment phases. "Precision from the very first workpiece onwards saves material and time – especially for customers with small-lot production needs," explained Richard Neuhoff. But the innovative strength of our company is capable of even more. "The versatility of our machines helps our customers to tread fresh, more inventive paths. For instance, new and more efficient layouts have emerged for electrical control cabinets."

EHRT bending machines come with a gauge precision of 0.1 degree. The resulting angle accuracy of +/- 0.2 degrees – from the first workpiece onwards – remains unsurpassed.



“For me, the most defining feature of our cooperation with EHRT was the trusting manner in which we worked with one another. Our system really is exactly tailored to suit our specific requirements.”

Sven Krüger, Production Engineer,
SEDOTEC GmbH and Co. KG, Ladenburg, Germany

PUNCH

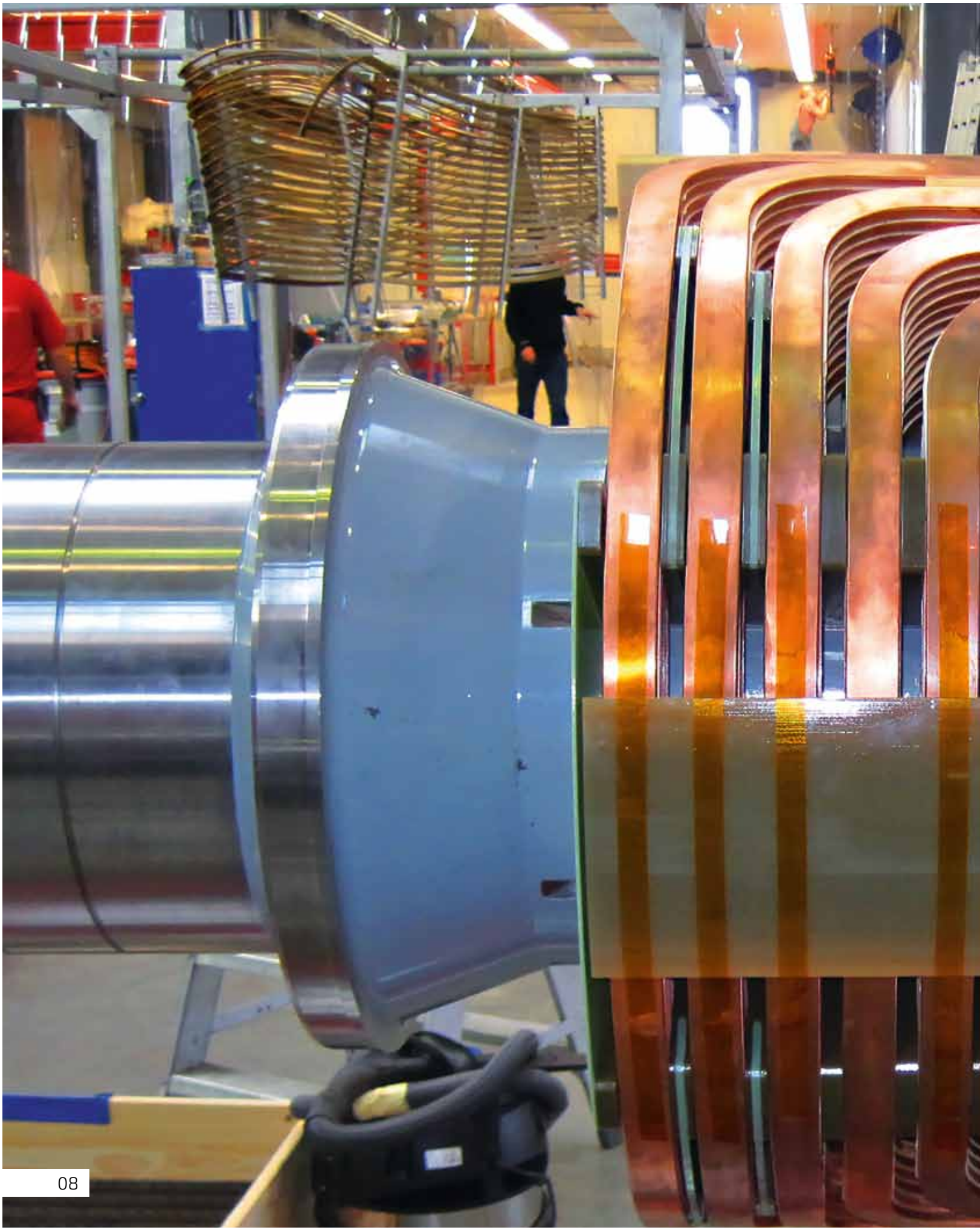
2.0_Packing a Punch for Superior Quality

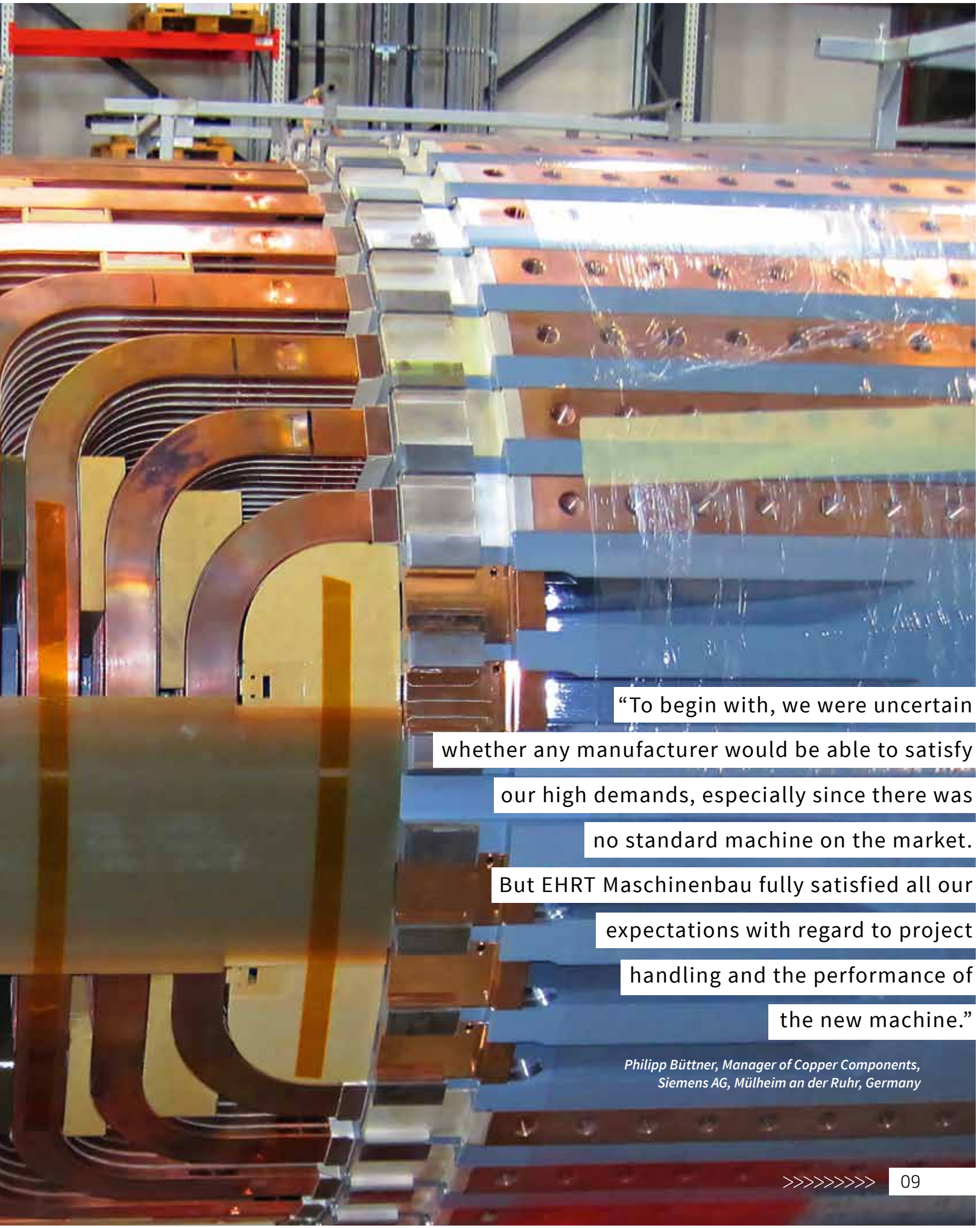
“Anyone who knows the industry well will also know that bending can never be seen in isolation from the rest of the production process. In most cases, bending goes hand in hand with punching,” commented Thomas Ehrt, son of the company founder Dieter Ehrt and current owner of EHRT Maschinenbau GmbH. “And the one influences the other.”

Although the bending step takes place at the end of the production process, it must already be taken into consideration during punching since – depending on various factors – bending shortens the material. As a result, any subsequent bending must be precisely calculated into the punching step to ensure that, in the end, all punched holes will still be in the right place. A further processing challenge is posed by the special thickness of the material. Material thicknesses of up to 20 mm are not uncommon in electrical control cabinets and up until the 1970s, no other punching machine on the market was capable of dealing with such requirements.

“The engineers at EHRT were already intimately acquainted with both the material and the process in those early days. As a result, it seemed only logical to extend our knowledge to include punching,” said Thomas Ehrt. “EHRT was the company that developed the very first punching machine for thick flat profiles – something that simply hadn’t been around before.” Moreover, EHRT was also the first company worldwide to introduce punching machines with a graphic user interface – a milestone in the industry. And ease of operation remains a defining characteristic of EHRT machines to this day.

The tool system integrated into EHRT punching machines is outstanding for serving the needs of the industry. No other tool system is as specialised as EHRT’s for stamping particularly thick materials and the plug-in system ensures quick and easy tool attachment. For many customers, this adds up to an invaluable advantage since setup times are reduced to a minimum. “Even today, we remain a decisive step ahead with regard to punching power, precision and flexibility – a step that makes all the difference to our customers,” added a confident Thomas Ehrt.





“To begin with, we were uncertain whether any manufacturer would be able to satisfy our high demands, especially since there was no standard machine on the market. But EHRT Maschinenbau fully satisfied all our expectations with regard to project handling and the performance of the new machine.”

Philipp Büttner, Manager of Copper Components, Siemens AG, Mülheim an der Ruhr, Germany

TAILORED

3.0_Flexibility that Liberates

“Such a 200 MVA generator really is a high-tech product, packing 3,000 RPM, 24 hours a day, 365 days a year. Equipment of this kind can only be produced if everything comes together perfectly. Failing that, it’s very quickly lights-out time.” Philipp Büttner knows what he is talking about since he is responsible for the production of these huge machines in Mülheim an der Ruhr. One of the raw materials used to make generator rotor coils are copper rods – either solid-drawn or hollow profile – that are installed in sets, resulting in a need for tight bending tolerances without any thickening. Each of these workpieces is huge – up to 11,000 mm in length and 52 mm in width, plus a thickness of up to 27 mm and a bending angle of up to 90 degrees.

In the past, bending had to be followed by time-consuming pressing to rectify material distortion on the inside of the workpiece. But this subsequent pressing process always changed the bending angle and radius again as well, an unsatisfactory situation for Philipp Büttner. “Bending, pressing, measuring, re-bending – all this often cost us a lot of time”, he said.

“When the people at Siemens presented us with their specification of requirements, we were reserved,” recalled Richard Neuhoff. “There’s no standard solution to satisfy such a requirement. But since processing copper is in our DNA, we faced the challenge head on.”

In a highly collaborative process, it was possible to reduce the previously two-step process to just one step in the space of no more than a few months. From bending to calibration, all process-related

steps are now automatically performed on a single machine without requiring any operator intervention. And to outstanding effect: the special machine developed for Siemens has increased production precision ten-fold. The time taken to produce each conductor is considerably less than a minute. Philipp Büttner concluded by saying, “To be honest, we were uncertain whether anyone would be at all able to satisfy our demands, but the colleagues at EHRT absolutely did.”

Unique Workpieces – Straight Off the Assembly Line

By contrast, the challenges faced by an internationally operating manufacturer of electrical control cabinets were entirely different. As a leading manufacturer in the field of energy management and automation, the company develops and builds electrical control cabinets for every conceivable area of application – worldwide. And what is more, each system is tailored to suit each given application. Differing current ratings, the most diverse safety regulations, the climate at the place of operation – countless factors influence the construction of an electrical control cabinet. For that reason, the workpieces installed during production are frequently and quite literally unique. However, they still have to be simple and cost-effective to produce – like a mass-produced item.

Thanks to the collaboration with EHRT, the company’s production sites at various North American locations have now been fully automated – from the blank rod right up to the finished workpiece, and upwards of lot size 1. All this is made possible by PunchPRO, a production planning software program developed by EHRT in close cooperation with the customer. As a special highlight, the software interlinks all units involved in production – from warehouse management and punching right through to bending – via networked databases, which in turn facilitates information exchange and responsiveness to changing requirements. “Our systems not only come with the mechanical features the industry needs, but also provide the kind of intelligence that customers require to produce small lots in an automated and a profitable manner,” Richard Neuhoff was pleased to report.

“Our investment in EHRT machines has succeeded in increasing throughput, lowering costs and simplifying work processes, all things that have made us considerably more competitive.”

Willi Plitt, Managing Director, Enertec GmbH, Pulheim, , Germany


EHRT
Smart Factory
Video

PDATE 4.0

Smart Mechanical Engineering from a Single Source

Information and communication technology are becoming common features in all areas of production and “Industry 4.0” is the current buzzword. By design, “smart factories” are made to respond to customer requirements quickly and flexibly at any time. Enabling individualised products to be manufactured as though they were mass-produced items is one of the major goals. “Cost-effective automation of ever smaller lot sizes is a demand that we are working on in cooperation with our customers,” explained Thomas Ehrt. “The electrical control cabinet example shows that we can already deliver solutions today that successfully address such challenges.”

With the production planning software PunchPRO, developed by EHRT, the company – together with its customers – has taken decisive steps on the road towards a “smart factory”. EHRT’s PunchPRO software solution networks all systems involved in the production process and seamlessly ties in with the customer’s ERP. Thanks to its nesting function, the software optimises work orders to ensure best possible use is made of raw materials. This results in lower material usage with a related increase in productivity. For Thomas Ehrt, just another example of the company’s innovative strength. “We are the first in our industry to have succeeded in developing this solution for bar stock – an accomplishment of which we are particularly proud.”

WOW

Karl Porth, US American expert for the metal bending sector and long-standing EHRT distribution partner, about the art of turning needs into solutions.

Thomas Ehrt: "Karl, when did you first come into contact with EHRT?"

Karl Porth: "In 1989, a Siemens engineer whom I had already known for many years invited me to take a look at a new machine he had purchased – it was an EHRT model. While I was there, he asked me why the company for which I worked at the time couldn't build a similar machine. I had to admit that we lacked the necessary technology. I was particularly impressed with the spring-back compensation feature. While all bending machines claimed to have spring-back compensation at the time, it only amounted to being able to over-bend a workpiece in line with fixed parameters. I had never seen a process before that actually precisely measured the spring back of every workpiece.
Back then, I wrote to Germany and asked whether the company for which I was working could distribute EHRT in the USA. Dieter Ehrt replied that he would be delighted to work with us. We met and I immediately knew I was dealing with real people. And that's how it has remained. In all these years, it has always been a pleasure to work with EHRT."

"Which characteristics do you think best describe EHRT?"

"A devoted company with employees that are not only committed, but are always prepared to manu-

facture high-quality, functional products. And are very friendly on top."

"Looking back, do you see any constants with regard to the company's characteristics?"

"The only thing to have remained unchanged is the basic design of the machines, which always was and still is geared to delivering functionality and a long service life. Changes – and these are changes for the better, I feel – came about because you were open for customer wishes and requirements. This afforded EHRT special status within the sector – a status that I firmly believe you will retain in the future."

"Karl, as a distributor, you maintain close customer contact. What do you think are key concerns for our customers at present?"

"Downtimes are the greatest challenge confronting our customers. Often enough, processing flat profiles is the key production process and downtimes cost real money. For that reason, the reliability of the machinery we distribute is seen as particularly important by our customers – and is why we are the market leader. In addition, our customers often produce complicated workpieces that feature unique bent and punched elements. An example is the construction of electrical control cabinets, for which some parts are manufactured only once. This is where EHRT is so exceptional. EHRT engineers are highly creative and nearly every required part is produced in house. On several occasions in the past, I personally witnessed EHRT developing and testing a new tool specifically for a customer who needed a unique workpiece – and bearing the cost of the exercise."

"Karl, is there any advice you'd like to give us going forward?"

"Try not to change simply for the sake of it. Every member of the company has a right to feel justly proud of themselves. And it's evidently not simply the products that are fantastic – above all the people at EHRT are too. And by that I mean each and every employee: fitters, developers, service staff and the sales force. Just stay the way you are."

"Many thanks, Karl."

EXPECT PERFORMANCE

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