

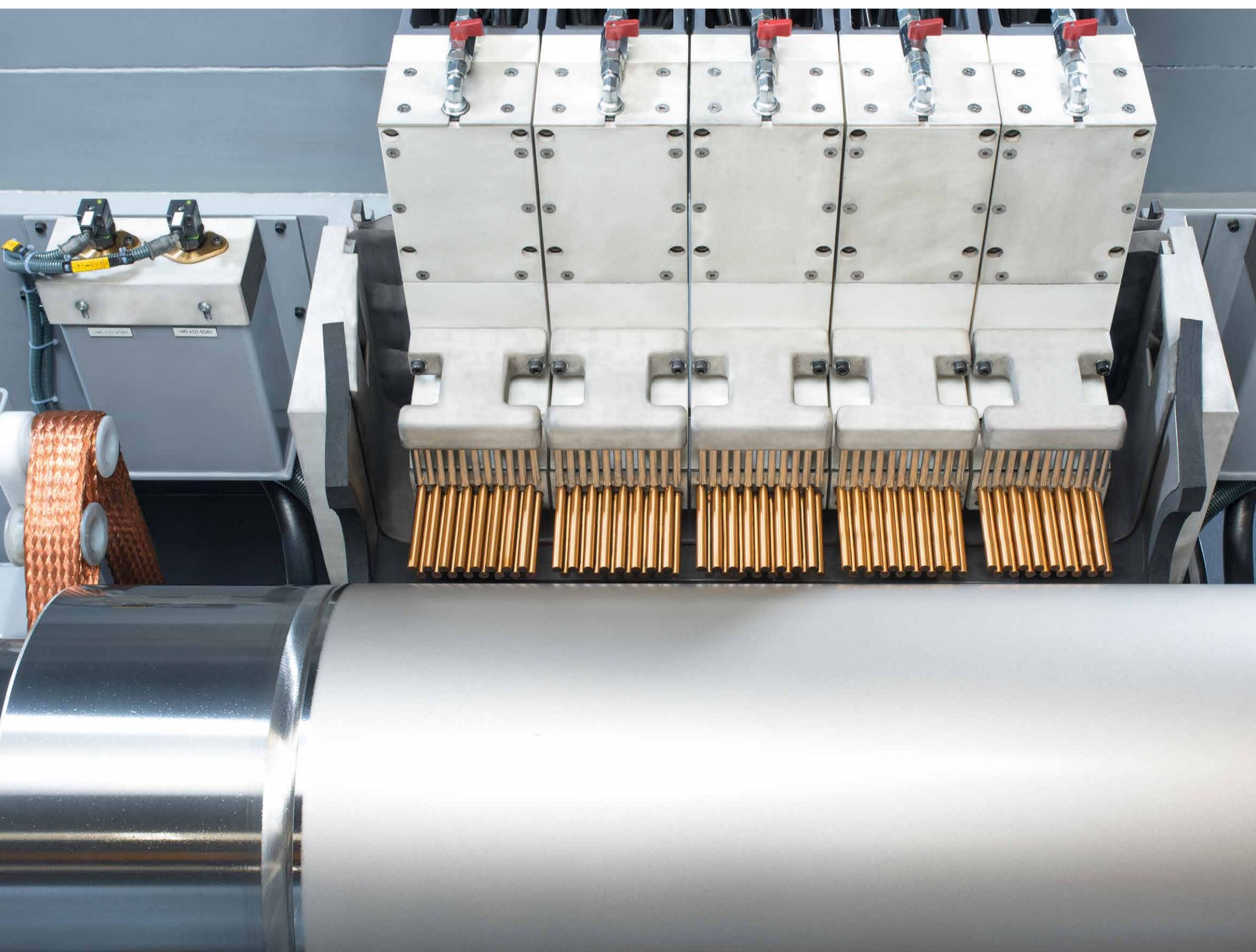
The Sideshift Method: A leap forward in roll surface texturing

Topics:

[Obituary for Sam Kube,](#)
President of the HerkulesGroup
companies in the USA

[40 machine tools for Nucor](#)
Steel giant invests in Herkules
machine tools

[DMI expands capacity](#)
Production for the Asian market
moves from China to India



The texturing machine PTM 500 allows for an absolutely homogeneous surface texture up to the very end of the barrel thanks to the new Sideshift Method

The next level of texturing: PTM 500

Herkules sets a new benchmark in EDT technology with the PTM 500. With 80 electrodes on five electrode heads, this new machine concept offers a much larger machining capacity than its predecessor, the PTM 200. The challenge: all five electrode heads must be coordinated in such a way that the texturing result is absolutely homogeneous up to the end of the roll barrel. The solution: the new Sideshift Method.

EDT machines (electrical discharge texturing) roughen the surface of rolls so that these in turn create a defined roughness on the rolled products, such as car skin components for the automotive industry. To roughen the roll surface, electrodes are run along the barrel. They give off electric charges that remove minute pieces of the roll and thus create a stochastic structure with a homogeneous surface.

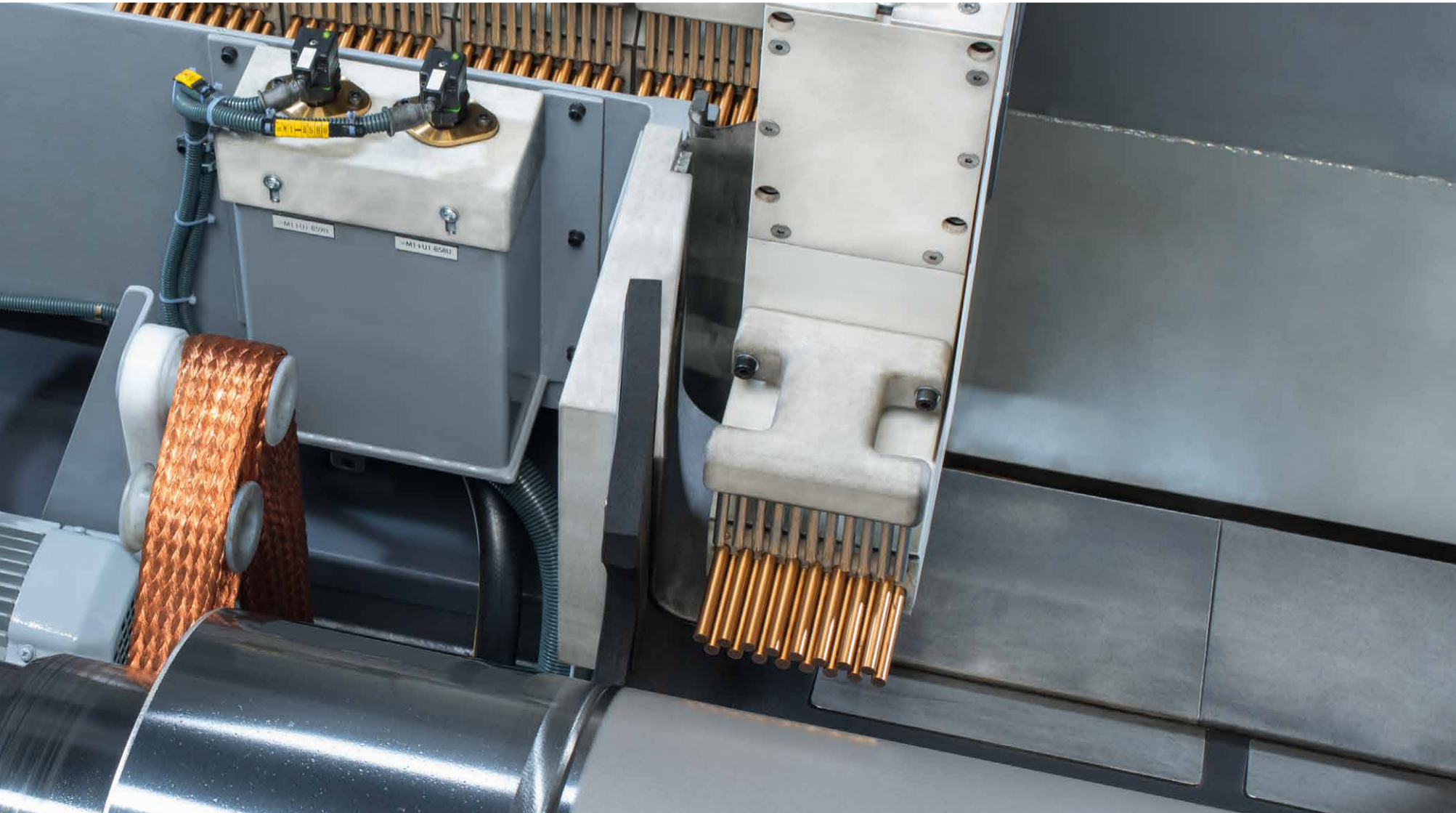
The new PTM 500 offers a significant texturing capacity increase. Instead of the 32 electrodes spread on two electrode heads that were used previously, it comes with up to five heads with a total of 80 electrodes. 32 electrodes equal a capacity of approximately 400 rolls per month. In contrast to that, 80 electrodes allow for the machining of 800 – 1,000 rolls per month, depending on the machine’s degree of automation and the application area. A single machining pass is enough to texture the entire surface of the roll. In the case of machine concepts in use up to now, a capacity increase would necessarily correlate with an impairment of the homogeneity of the surface texture. This problem has now been solved by the innovative Sideshift Method.

Technical data PTM 500	
Roll weight:	3 – 20 t
Roll diameter:	300 – 920 mm
Roll length:	2,000 – 7,000 mm
Number of electrodes:	16 – 80
Ra:	0.8 – 15
Pc:	230 – 30
Curve shapes:	Sinus, CVC grind, cylindrical

The Sideshift Method

If all five adjacent electrode heads were to approach the roll simultaneously, the electrodes would be in contact with the roll surface for a shorter period of time at the end of the barrel than in its middle. In order to guarantee absolute homogeneity, this new

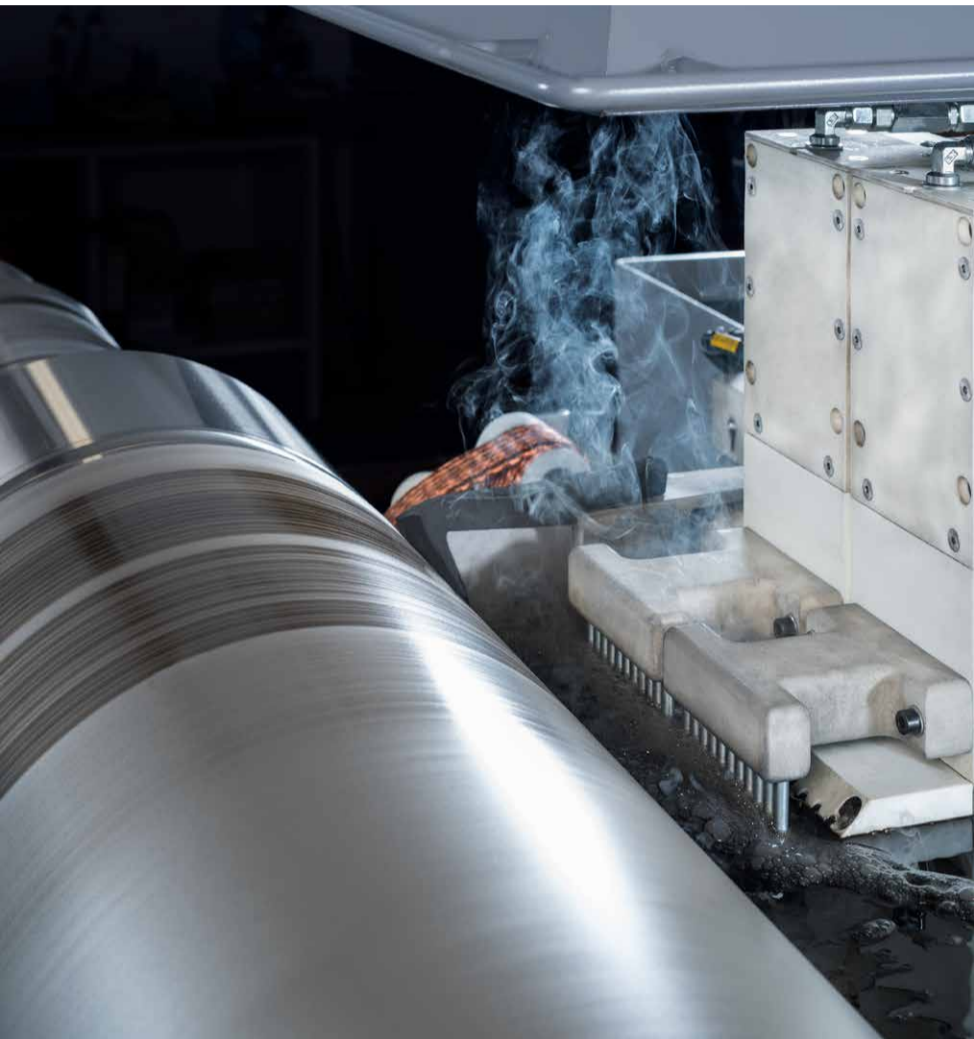
machine concept has each electrode head approach the barrel end with a separate drive (compare pictures left and right).



After the first electrode head has been placed on the roll, the second and the following electrode heads approach separately and are placed on the same spot as the respective preceding head (see picture on the right). This guarantees a homogeneous surface texture up to the end of the barrel

Selectable number of electrode heads

Depending on the desired machining capacity, customers can choose the number of electrode heads they would like to invest in to meet their individual requirements. A thoroughly tested prototype with five heads is currently in operation at Herkules; however, the number of heads can easily be reduced. An upgrade to include up to five electrode heads can be achieved at any time.



Operator-friendly: the eroding fumes are drawn in and cleaned

Generators specially developed by PowerSparks

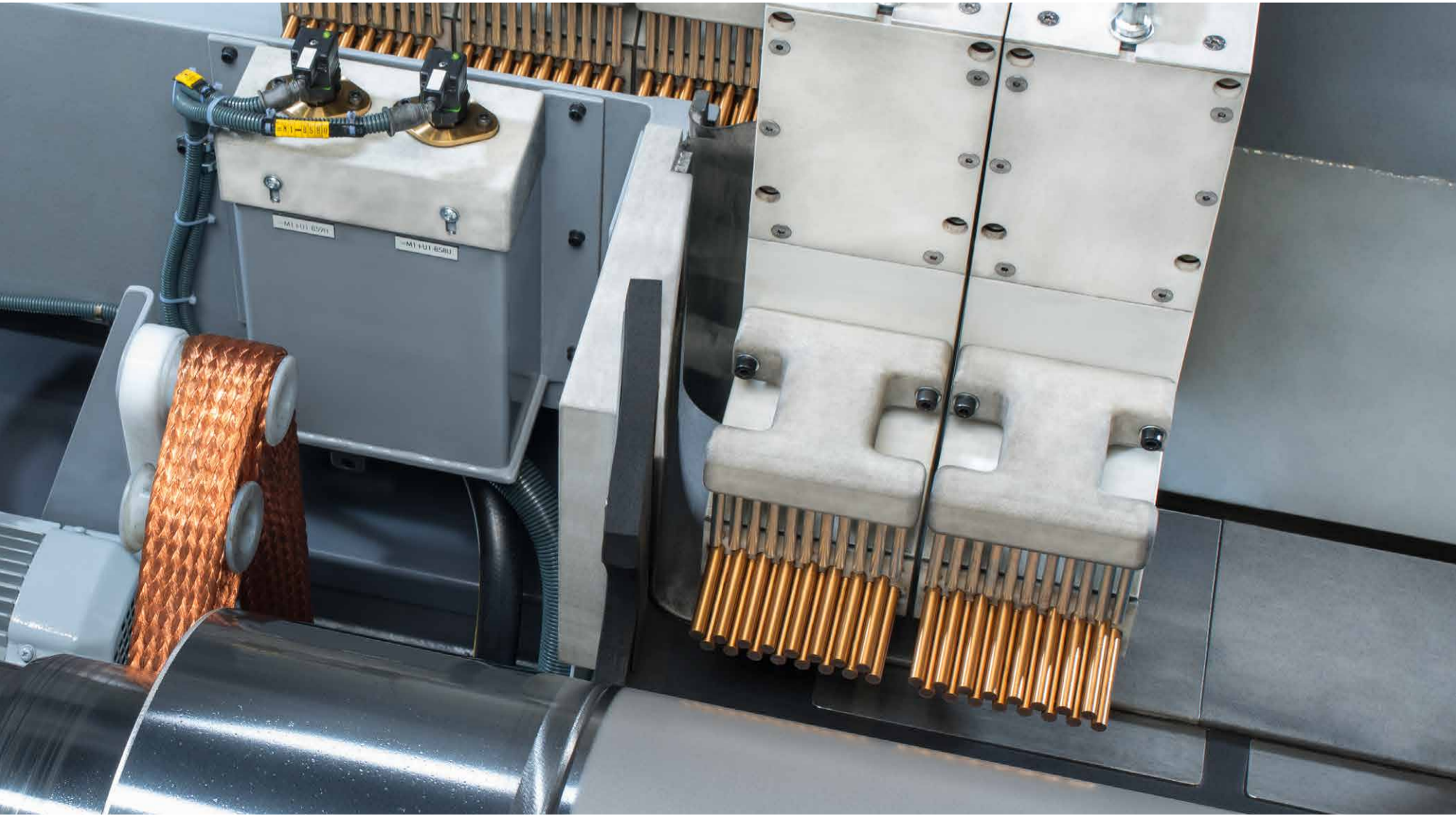
Each of the 80 electrodes is driven by its own generator. These were developed by the HerkulesGroup company PowerSparks, based in southern Germany, a manufacturer of power electronics specializing in this application. Thanks to the combination of highly sophisticated generator and control technology, the PTM 500 offers a wide range of applications in order to obtain exactly the desired surface characteristics in terms of roughness and peak count – eight different machining modes are available.

Sustainable and user-friendly

While new machine concepts usually aim to increase capacity, saving resources remains an important focus. During texturing, the roll and the electrode heads are submerged in cooling and isolating dielectric fluid. Most texturing machines, like the PTM 500, use graphite to optimize the behavior of the electric charges on their way through the dielectric fluid from the electrodes to the roll. The graphite contaminates the dielectric fluid; usually, it would have to be disposed of as special waste and replaced. This is not the case with the PTM 500: it is equipped with a filter unit in which the graphite and other foreign substances (such as small particles of the roll) are reliably filtered out. Subsequently, with the exception of minor losses, the dielectric fluid can be continually re-used.

For the first time, this texturing machine features a three-stage air filter to clean the eroding fumes. It draws in the fumes (see picture on the left) and cleans them thoroughly enough for the cleaned exhaust air to be directed straight back into the roll shop. The combination of a particulate air filter H13 and a special carbon filter allows for a high separation performance. It reduces the concentration to a level that is significantly lower than the permitted occupational limit value.

Florian Hudel and Stefan Neuser



This method reduces the critical area to the outermost edge of the roll barrel. This area is of no value when the roll is used in the rolling mill, as it is not in contact with the end product

In memory of Sam Kube President and Shareholder of Herkules USA

Dear business partners, dear readers,

Allow me to share a few personal words with you. On October 30, 2017, my good friend, Sam Kube, President and CEO of Herkules USA, died suddenly and unexpectedly. He was not only a determined businessman and technology expert, but also a strategically important advisor for the development of the entire group of companies.

Sam Kube was a free spirit who provoked contradiction in order to find unusual solutions. As a specialist in all technological matters he was a key figure in promoting innovations in the HerkulesGroup; as an advisor concerning both business and personal matters he was greatly appreciated.

Sam Kube founded KPM with Albert Plekker in May 1983. The headquarters: an office container in Albert Plekker's backyard in Greensburg, Pennsylvania. As a young founder with no market references and modest equity, Sam led the company through its first hard years with his characteristic perseverance and turned it into a successful, sustainable business by integrating it into the HerkulesGroup in 1999. As CEO, Sam Kube was as courageous as he was level-headed. He took into account the responsibility he felt for his employees in each strategic decision he made. Today, more than 170 people work at the HerkulesGroup companies in Ford City (USA).

His passing is a tragic loss for us and for the entire HerkulesGroup. We will miss him as a friend, fervent advocate of our ideas, reliable partner and competent engineer. We will continue his life's entrepreneurial achievement in accordance with his intentions. The new President Jakob Scheiffarth, former Plant Manager for many years and Sam Kube's close confidant, his son Johannes Scheiffarth, Plant Manager, and Sam's sons Devin and Dylan Kube, who have taken on leading roles in preparation for their future management responsibilities in the companies, will be the key figures in the future. We will honor Sam Kube's memory.

Sincerely,

Christoph Thoma
CEO of the HerkulesGroup



Sam and Shirley Kube at the HerkulesGroup Kart Trophy in Siegen, Germany in 2008



Sam Kube with a control in the early 1990s



The employees' last farewell at the memorial ceremony in Ford City

40 heavy-duty machine tools for Nucor

Nucor is the largest steel producer in the USA – the capacity exceeds 26 million tons (2017) – and a loyal Herkules customer when it comes to the equipment of its roll shops. So far, Herkules has delivered 40 machines to Nucor. The last four of these – a roll lathe of the type P 600 Power for Nucor Steel Berkeley and three roll grinders for the Hickman plant – have been ordered in the past year for current expansion projects.

650,000-ton expansion at Nucor Steel Hickman

To expand its production of special steel in Hickman, Arkansas, Nucor ordered state-of-the-art product lines for a new cold rolling mill by ANDRITZ METALS. The choice of roll grinders for the roll shop was granted to Herkules.

This decision was made not only because of the sophisticated technology of the three foundation-free roll grinders WS 250 Monolith™, WS 450 Monolith™ and WS 450L Monolith™ with cutting-edge measuring and control technology, or even because of the long and successful partnership between Nucor and Herkules. The main reason for the placement of the order was the unique machining concept that leaves competitors lingering when it comes to efficiency. The WS 450L Monolith™ is a prime example: it adapts to a broad range of roll specifications with minimum effort, saving elaborate modification efforts.

A small work roll with a length of 2.5 m, a diameter of 140 mm and a weight of less than 400 kg, for example, is mounted between the centers and supported during the grinding process by a fully automatic, traversing Herkules one-point steady rest. To machine a large work roll with a length of 4.5 m, a diameter of 400 mm and a weight of 3.2 t next, the one-point steady rest is simply put into a parking position. The new roll is mounted in standard steady rests. Setting up and dismantling the steady rests is made that simple. This set-up, unique in the market, allows for the highly efficient grinding of a very broad range of rolls with minimum set-up time and auxiliary process time – a good reason to invest in Herkules machines.

Fifth machine for Nucor Berkeley

More than 760 miles east of Hickman, Nucor Berkeley ordered a turning lathe P 600 Power to machine rolls used in the manufacturing of profiled steel. This version of the P-series is much more powerful than the standard version and perfectly adapted to the requirements of heavy-duty cutting. Its extremely robust design with vibration-damping cast-iron components guarantees vibration-free machining in the entire speed range and high-quality surfaces.

For the machining of its 10 t section rolls with lengths of up to 3 m and diameters of up to 1,250 mm, Nucor Berkeley chose Herkules as a partner. Four Herkules roll grinders that already operate in the hot rolling mill to the customer's full satisfaction supported the decision in favor of the technology leader.

The P 600 Power will begin operation at Nucor Berkeley in September 2018. With its increased power (120 kW) and high torques (50,000 Nm), it allows for a great cutting performance in combination with short machining times and thus contributes to further raise the capacity of the highly productive beam mill.

Jared Jörgens, Dietmar Josche and Matthias Roth



Pictured above are the representatives of the Nucor Corporation who visited the Herkules USA production facility in Ford City, PA in September 2017, accompanied by our sales team



Nucor trusts in Herkules roll grinding technology with its investment projects

Addendum: Nucor Decatur orders another roll grinder

Nucor located in Decatur, AL ordered another roll grinder of the type WS 600 × 5500 CNC Monolith™ in February 2018. It will machine work rolls and back-up rolls with diameters of up to 1,450 mm in a cold rolling mill. The new roll grinder will be built at Herkules USA in Ford City, PA in close cooperation with the design department in Germany. In addition to Monolith™ technology, it is equipped with a C-frame measuring device and a KP 10 control. Moreover, this order includes two remanufactures of WaldrichSiegen roll grinders.

Tobias Wurm



GPH Ispat invested in two lathes P 300 made by Herkules

Herkules machines first choice for Bangladesh's steel industry

Herkules has sold turning lathes number seven and eight in Bangladesh in August 2017: GPH Ispat has invested in two machines of the type P 300. They will serve to machine profiled rolls and TC rings in a new bar and section mill that will rocket the company to third place among Bangladesh's steel producers with its annual capacity of 640,000 tpa.

GPH Ispat's Managing Director Jahangir Alam has no doubt that the investment in the superior Herkules technology will pay off: "These machines made in Germany will play an important role in the adherence to international standards. With the most advanced technology in the world, GPH's expanded plant will raise the steel sector of Bangladesh to international standards."

P. K. Mazumder

Modernization: 33-year-old machine now grinds rolls in chocks

In April 2017, Herkules received the final acceptance of the modernization of a 33-year-old back-up roll grinder made by INNSE in the cold rolling mill of Mobarakeh Steel Company (MSC), the largest steel producer in the Middle East. The challenge: equipped with the latest Herkules technology, the machine was to grind the cold rolling mill's back-up rolls in chocks after the upgrade.

For this demanding modernization, Herkules delivered a new C-frame roll measuring device with a C-probe including the inspection devices Eddy Current and Ultrasonic, a cutting-edge HCC/KPM 10 control and completely new electronics. In addition, the machine was equipped with a new Herkules grinding head with an additional device for turning applications.

Excellent cooperation with the customer's project managers and a high level of technical sophistication were necessary to fulfill the most difficult part of the task: cold work and back-up rolls, which weigh up to 40 t, will be ground in chocks in the future and no longer have to be elaborately de-chocked. This saves time and minimizes risks. The result is an efficiency increase of 50 – 70% while maintaining, and at times even exceeding, the necessary surface qualities.

Mobarakeh Steel Company had every reason to trust Herkules with this difficult challenge: in August 2016, a similar modernization of a working roll grinder in the roll shop of its hot rolling mill had been completed to the customer's full satisfaction – the tenth successful cooperation between the companies since 2004.

Tobias Wurm

Addendum: MSC orders another modernization

As a result of the excellent experience with the modernization in the cold rolling mill, MSC placed another order covering a nearly identical general overhaul to achieve state-of-the-art roll machining in the hot rolling mill.

Trade fairs & dates



Tag der Talente (Talents' Day)
28 June 2018
Meuselwitz, Germany



20th Annual Herkules Open House
10 – 11 August 2018
Ford City, Pennsylvania, USA



Hot Rolling Day
20 September 2018
Düsseldorf, Germany



ALUMINIUM 2018
9 – 11 October 2018
Düsseldorf, Germany

More production in India: DMI expands capacity

The production unit of the **HerkulesGroup** in **Jiaxing/China** has been closed in **February 2017**. Instead, the capacity at **DMI (Deutsche Maschinen India)** is being expanded. In addition to services, **DMI** offers state-of-the-art machine tools and roll shop equipment that have been engineered in **Germany** and built in **India**. **HerkulesNews** talked about the current and prospective developments at **DMI** with Managing Director **P. K. Mazumder**.

HerkulesNews: How has the production unit in Kolkata changed so far?

P. K. Mazumder: Traditionally, DMI’s core competencies have been the modernization, repair, maintenance and service of **Herkules** machine tools in the Indian market. In 2016, our team took on a new challenge: we succeeded in building a new lathe of the type **P 300** to the high standards expected by **Herkules** for a customer in **Bangladesh**. Since the production unit in **China** closed, we are expanding the production of new machines and equipment here to serve the **Asian** and the **world** market in general. We have added **1,700 m²** to our production facility and are currently setting up a new building as an expansion of our assembly shop that will be finished by mid-2018. We have also added several machines to our inventory. A new boring mill of the type **PCR 130** by **UnionChemnitz** will be installed in mid-2018 – it is one of the best machines available on the market for the precise machining of machine beds and other machine tool components.



The first lathe of the P-Series built at DMI

How will **HerkulesGroup** customers benefit from **DMI**’s expanded product and service range in **India**?

They value the instant service available at **DMI**, performed by **Indian** engineers who have been trained in **Germany**. There is no delay or language barrier and payment is in **Indian Rupees** in order to keep things as simple as possible for our customers.

You have been **Director of Deutsche Maschinen India Pvt. Ltd.** since its founding in 2007. How has the quality of service and technological expertise developed in the eleven years since?

During the past eleven years, several **DMI** engineers have been trained in **Germany**. The team provides quick, local support to our **Asian** customers during commissioning along with keeping their equipment running smoothly, providing spare parts, maintenance and modernization services. Our service is constantly expanding from **India** to neighboring countries and even as far as **Egypt**. Although the market situation has not always been supportive, we were able to multiply turnover about thirteen-fold. We are also expanding our competence in building new machine tools. The **P 300** lathe built for **BSRM Steel Bangladesh** in 2016 in close cooperation with our colleagues in **Germany** has been a milestone in that regard.

India’s economic growth forecasts have been lowered, yet it is still a huge – and growing – economy. How do you expect its heavy-duty machine tool market to develop in the coming years?

In spite of the slump in the global steel market, **India** was the world’s third-largest steel producer in 2016. The continuing growth in the **Indian** steel sector is driven by domestic availability of cost-effective labor and raw materials such as iron ore. Consequently, the steel sector is a major contributor to **DMI**’s business. There is no doubt among **Indian** customers that **Herkules** machines are the most efficient, durable and easy-to-maintain in the market; however, the **Indian** market is an extremely price-conscious one. Nevertheless, we observe that more and more **Indian** customers focus on quality and we receive enquiries for **Herkules** equipment even from remote areas, where the present generation of managers is bringing their equipment to international standards – good news for us and for the domestic industry.

“More and more Indian customers put a stronger focus on quality.”

– P. K. Mazumder (Managing Director of DMI)

Range of Products

- Turning lathes of the P-Series
- Notch milling machines
- Groove grinding machines
- Roll shop equipment: automatic loaders, de-chockers for rolls, chock tilters, roll racks, roll transport cars
- Services: modernizations, maintenance, repairs

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