

**Next Generation**

Maximilian Thoma takes over the responsibility for the HerkulesGroup companies in the 4th generation

**Investments**

New production capacities at the Siegen and Meuselwitz locations

**Industry Reports**

Herkules roll grinders for the production of foils, flat and long products, and paper

**Apprenticeships**

Tomorrow's experts are prepared for their professional careers in our new training center

# Herkules is investing strategically in an even stronger future





# Herkules in the 4th Generation

After 42 successful years at the helm of the company, Christoph Thoma has handed over the reins to his son Maximilian Thoma.



When Christoph Thoma was appointed CEO of Maschinenfabrik Herkules on December 16, 1978, he was responsible for 270 employees producing mainly roll grinders for German and Central European customers. Today, around 1,500 employees work in the companies of the HerkulesGroup, which under his leadership has developed into a globally established specialist for large machine tools in the fields of grinding, texturing, turning, milling and drilling.

In addition to its headquarters in Siegen, the HerkulesGroup is always close to its customers, both nationally and internationally, with numerous production and service locations. Christoph Thoma was responsible for the expansion of technological market leadership as a core objective of the company. Future-oriented electronic measuring systems and machine controls were

developed for the high-precision machines and new sales markets were opened up internationally. In 2004, Christoph Thoma acquired the Waldrich companies in Chicago and integrated the milling machine specialist WaldrichSiegen into the HerkulesGroup. In order to be able to set up an autonomous position with in-house developments and in-house production of as many components as possible, other companies from the special machine construction sector were integrated in the ensuing years.

With the decision in favor of the largest investment in the company's more than 100-year history, Christoph Thoma most recently set the course for the return of WaldrichSiegen from the Burbach location to Siegen, where WaldrichSiegen was originally founded 180 years ago. In the ultra-modern production and administration complex in the Eisenhüttenstraße, which was built in 2020, the two companies will be able to utilize even more synergies from the close proximity in order to continue to develop the HerkulesGroup dynamically in the world market.

At the end of last year, after 42 years at the helm of the company, Christoph Thoma handed over operational management to his son Maximilian Thoma. To prepare for his new role, Maximilian Thoma previously spent 6 years as the CEO of Herkules Maschinenfabrik in Meuselwitz, Germany, where he headed up the modern manufacturing facility in Thuringia, which employs 300 people. As "Chairman of the Board", Christoph Thoma will continue to accompany the destiny of the group and will be available for consultation if desired.

Investments

# New Production Facility for WaldrichSiegen

With the construction of a new production facility for WaldrichSiegen, the milling and turning machine specialist of the HerkulesGroup, and the new administration building, the HerkulesGroup is investing more than ever in a strong future.



Light-filled offices and a great deal of transparency underline the contemporary nature of the interior as well



The XXL heavy-duty machine tools from WaldrichSiegen will be produced in the impressive new production facility in the future





The new administration building offers 3,500 m<sup>2</sup> of state-of-the-art space for new office capacity

### Huge Dimensions

With a length of almost 250 m, a width of 32 m, a height of 24 m and an area of more than 8,000 m<sup>2</sup>, the new production facility provides a lot of space for state-of-the-art production machinery. In the spring of 2021, the first machines from WaldrichSiegen were brought from Burbach to the new production location in Siegen to successively put the new production facility into operation. Directly in front of the head of the production facility, a new administration complex was built, which provides a further 3,500 m<sup>2</sup> of modern office space in addition to the existing 1,800 m<sup>2</sup> of office space at Maschinenfabrik Herkules, in order to bring the technical and clerical employees even closer together within the HerkulesGroup.

### Even More Synergy and Sustainability

Shorter communication channels, a management that works closely together in terms of space, improved logistics and a centralization of parts production ensure numerous optimizations and synergies to generate further growth. With a shop height of 24 m, WaldrichSiegen's heavy-duty machine tools can be efficiently manufactured and assembled. Four modern crane systems with lifting capacities of 30 to 100 t support the high-performance manufacturing process.

The walls of the facade, constructed in a sandwich isopanel design, guarantee excellent thermal insulation, while the roof of the innovative production facility is prepared for the installation of a 4,000 m<sup>2</sup> photovoltaic system. In addition to a modern air-water heat pump for air conditioning of the industrial plant, the production facility is also equipped with a highly efficient concrete core activation of the floor slab, which ensures economical and environmentally friendly heating and cooling of the shop floor.

### New Production Facility for Union Bohrwerke

Production capacities at the Meuselwitz location were also significantly expanded and modernized. A new production facility with a length of 66 m and a height of 24 m was built at a cost in the double-digit millions, in which Union brand boring mills, such as the TM 125 compact boring mill, are manufactured. In addition, another ProfiMill gantry milling machine was put into operation in Meuselwitz, which is used in the old production facility and significantly increases the production capacity in Meuselwitz.

As of May 2020, Jan Otterbach has been managing the location in Meuselwitz as CEO and has set himself the objective of further optimizing the process coordination in production and further intensifying the cooperation between the various HerkulesGroup locations.





# Roll Grinders for Foil Production

Where foils only a few µm thick are produced, the accuracy of the grinding and measuring systems is crucial for outstanding product quality.



**Reliable Grinding Results**

With roll grinders from Herkules, manufacturers of flat products in the foil sector achieve significant competitive advantages. Copper and aluminum foils are subject to the most stringent quality requirements and even the smallest defect on the roll surface affects the quality of the end product, which is only a few µm thick. Herkules machines ensure reliably reproducible grinding results with maximum accuracy.

**The recipe for success:** Perfect measuring and control technology, ideal support of the rolls and outstanding vibration damping properties. Perfect surface qualities with a homogeneous texture and rolls with 100% geometric accuracy in barrel shape and concentricity are the result of Herkules roll grinding technology and are basic prerequisites for efficient and high-quality foil production.

**Lotte Aluminium Produces Battery Foil in Hungary**

A constant material thickness and an absolutely flawless surface are the most important requirements placed on high quality aluminum foil. With rolling speeds of up to 2,500 m/min, this poses a considerable challenge when it comes to the perfect grinding of the rolls and their geometric accuracy. For the new Hungarian mill of our South Korean customer Lotte Aluminium LLC Hungary, the choice therefore was made for a WS 450 KL Monolith™.

In the future, the supplier for battery cell manufacturers will produce ultra-thin aluminum foil as a sensitive carrier material in the new production plant, which will be used primarily for rechargeable batteries in electromobility. Absolute homogeneity of the surface roughness is a top priority here. Using Roughness Scattered Light Detection (RSLD), the surface roughness of the roll is determined and documented with scattered light to ensure perfect homogeneity.

Another highlight is the Roll Surface Inspection System (RSIS measuring system), which reliably detects possible surface flaws by means of a reflected laser beam and determines the surface quality of the roll with a threshold analysis. Defects are thus efficiently detected in advance and unnecessary roll changes are reduced to a minimum thus increasing the productivity of the rolling mill.

**Huaфон Uses Grinding and Inspection Technologies for its Aluminum Foil**

The new customer Huaфон Aluminium Corporation, a Chinese manufacturer of aluminum products, will also be relying on Herkules roll grinders in the future. The decision was made in favor of a WS 450 L x 4,250 CNC Monolith™ for aluminum foil production in the new rolling mill in Chongqing. The foundation-free installation of the roll grinder is made possible by the Monolith™ machine bed. The excellent damping properties of the machine bed are an essential factor for perfect grinding results, at the end of which there is also a perfect product. Huaфон Aluminium also uses the excellent RSLD measuring system to continuously ensure the high quality and homogeneous surface roughness of the produced aluminum and battery foils.

**Shanxi North Copper Counts on Herkules for Copper Foils**

Whether as a flat insulating material to protect electronic devices, for the production of printed circuit boards or for the manufacture of batteries for the rapidly growing e-mobility industry – copper foils are used everywhere and are among the most sensitive and demanding foils to manufacture.

China’s Shanxi North Copper New Material Technology Co., Ltd. is involved in the mining, smelting and processing of copper and has selected two WS 250 x 3,000 CNC Monolith™ roll grinders to machine all of its roll stand rolls. With the patented Monolith™ technology, the machine has excellent damping properties. The inherently rigid design is also thermostable and foundation-free.

Especially for the machining of slim rolls, the machines are equipped with an automatic single-point support steady rest. The use of this single-point steady rest, which is opposite the grinding wheel, prevents the rolls from sagging, thus ensuring the highest dimensional accuracy and the best quality of the foils produced.

The perfect measuring and control technology enables compensation grinding “on the fly”





# Highest Requirements for Flat Rolled Products

Performance, availability and absolute precision are requirements that rolling mills for flat products demand from roll grinders.

## Herkules Quality Convinces Novelis Yeongju

As a leading supplier of flat-rolled aluminum products and recycling, Novelis Yeongju has installed a WS 450 W × 6,500 CNC Monolith™ for its plant. The Herkules roll grinder grinds back-up rolls for the hot and cold rolling mill as well as work rolls for the hot rolling mill.

With the KP 10 Touch, Novelis Yeongju opted for the best control software, and for the early detection of roll defects, the company also decided in favor of the reliable inspection technology from HCC/KPM. The Eddy Current and Ultrasonic System with Creeping Wave detects defects and flaws at an early stage and reliably prevents breakdowns and downtime. The machine is thus perfectly equipped to make a valuable contribution to productivity for many years to come.

## Complete Roll Shop for Tatmetal

A new Turkish customer, Tatmetal Çelik Sanayi ve Ticaret A.Ş., a manufacturer of cold-rolled flat steel, has purchased a fully automatic Roll Shop from Herkules for its new 6-high cold-rolling mill.

The Roll Shop is equipped with a fully automatic loading and unloading system. A semi-gantry loader is used to fully automatically load and unload the work rolls onto an EDT machine type PT 60 S from WaldrichSiegen and a WS 450 work roll grinder for grinding and texturing. The decentralized Roll Shop Management System (MRS) controls and monitors all roll shop processes, including collision protection monitoring of the cranes, thus ensuring trouble-free, unmanned and fast roll machining.

A separate WS 600 combi back-up/ work roll grinder as well as extractors for back-up and work rolls are also part of the scope of supply. Another WS 450 × 5,250 CNC Monolith™ roll grinder was ordered from Herkules in December to expand the production capacities in the fully automated roll shop and is already in operation and has been successfully accepted by the customer.



At the end of the C-frame, different sensors ensure perfect inspection of the roll

## Ultimate Expertise

For decades, manufacturers of flat rolled products have been placing their trust in Herkules roll grinders. In addition to the technical market leadership, worldwide service availability and the close partnership with customers are always decisive factors when making investment decisions.







# Superior Machining Solutions for Long Products

Highest dimensional accuracy of the grooves in the roll barrel are requirements placed on machine tools by the long products industry.

### Experience-Based Advantage

Herkules machines have proven hundreds of times worldwide that they meet these requirements. Whether for wire, bar steel, ribbed reinforcing steel, sectional steel or rails - Herkules always provides manufacturers of long products with custom machine solutions that are optimally designed for the application and leave nothing to be desired in terms of precision and durability.

Thanks to extensive equipment options, Herkules lathes have a wide range of applications and can be used to machine profiled rolls, rolls for flat rolling mills, forged shafts and rotors, among others.

### Worldwide Service

As a machine tool specialist for the long products industry, Herkules not only has a broad product portfolio, but also offers worldwide services in proximity to its customers thanks to its locations on almost every continent. With its tried and tested groove grinders, notch milling machines, lathes or combined grinding-milling or turning-milling machines, Herkules has been setting standards in the market for decades when it comes to the performance features relevant to manufacturers.

### High-Degree Automation Solution

With an HS3 CNC groove grinder and a robot for automatic loading and unloading of the roll rings, the Chinese Baoshan Co., Ltd., one of the largest steel companies in the world, has awarded a contract for a project with a hitherto unprecedented degree of automation.

Almost all work processes will be fully automated in the future: In addition to the loading of the roll rings, the groove grinder is equipped with a grinding wheel changing system. The transfer of roll rings between the roll shop and the machine is carried out by automated transfer cars. The rings are removed fully automatically from specially manufactured rack systems, each with 19 spaces, clamped in the machine and then replaced with unground rings after completion of the grinding process.

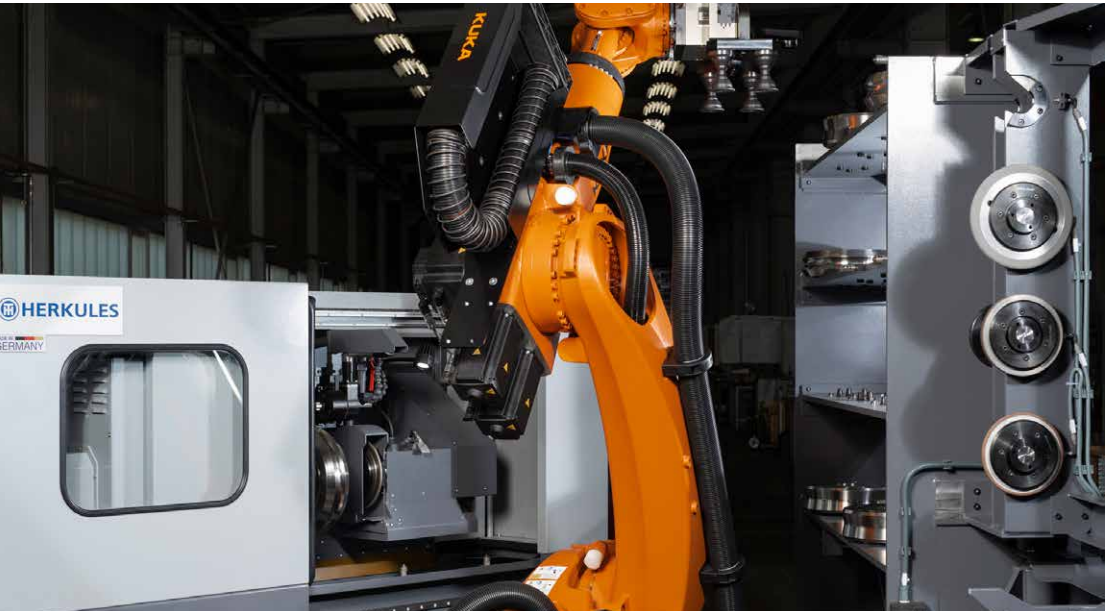
The highly efficient machine concept was developed and implemented in detail according to the customer's ideas. For this purpose, the loading robot was also integrated into HCC/KPM's KP 20 control system, which was specially developed for groove grinding. Direct communication between the robot, machine and transfer car is provided by a Manufacturing Executive System (MES system) from HCC/KPM. This significantly shortens the machining times of the roll rings and guarantees first-class grinding results.

### Lathe for Machining Grooved Rolls

Mechel OAO, a Russian producer of railroad tracks, has ordered a Herkules P 600 x 6,000 CNC heavy-duty roll lathe to machine its profiled rolls.

The P 600 x 6,000 CNC is specially designed as a roughing and finishing lathe to meet the customer's individual workpiece dimensions: It can machine rolls up to 1,500 mm in diameter and weighing 43 t between centers. Thanks to the deep plunge depth at the maximum workpiece diameter, the rolls can be machined in one setup.

The P 600 roll lathe is equipped with a 4-way bed. This guarantees a minimum center height, higher rigidity of the components and enables vibration-free and efficient machining of the rolls with modern cutting materials at maximum cutting forces.



Automation solutions shorten machining times and ensure optimum efficiency



The Herkules P-Series is always optimally customized to meet our customers' requirements





For highest production quality,  
modern paper mills trust  
Herkules roll grinders

# Indispensable Precision

Where paper is brought to constant thickness at high speed,  
the geometries of the rolls must be absolutely perfect.

## 200 Different Roll Types

For its two newest paper mills, Klabin S. A., one of the largest paper and cardboard producers from Brazil, chose Herkules' outstanding roll grinding technology. A true innovation for the industry, Klabin's sustainably produced paper is made with a new processing technology.

To perfectly machine the rolls required for this purpose, Herkules is building a P 100 WSB 450 × 13,000/12,000 CNC capable of machining over 200 different types of rolls from two mills to ensure the perfect surface quality and rotational symmetry for paper production. A wide range of flexible application possibilities is of great importance for the paper industry in particular. Rolls with a wide variety of lengths, diameters,

weights and coatings must be ground efficiently. Herkules is always the right partner for these demanding roll machining requirements.

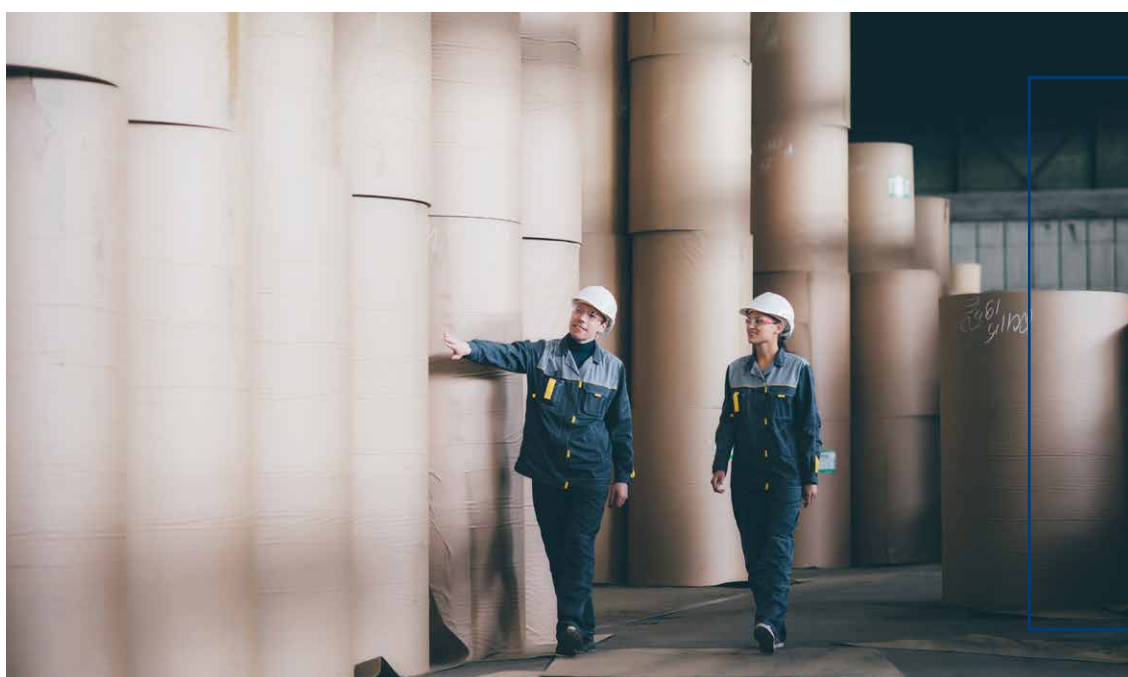
In addition to the Herkules technical know-how, the integrated control and measuring systems and the extensive equipment options, the local service provided by our South American location was also a decisive factor in the investment decision. The professional support with high availability provided over many years also secured the decision on a partnership level.

## Versatile Dimensions

For the new production plant of the Russian cellulose and paper manufacturer JSC Ilim Group (Voith)

Herkules will supply a roll grinder for paper production of the type P 100 WSB 450 × 14,000/11,000 with 2-point measuring device.

The Russian team trusts 100% in the expertise and experience of our specialists. The machine concept that we have developed and implemented meets all the customer's requirements with regard to a wide range of machining operations. In future, both existing and new rolls of up to 14 m in length, a diameter of 1,800 mm and a total weight of 80 t can be machined with reliability and precision. The machine is currently at the delivery stage and will be assembled in Russia at the beginning of 2022.



## Proven Quality

When it comes to high-precision roll grinders for the paper industry, Herkules is the global market leader in the industry. For decades, Herkules roll grinders have been part of the basic equipment for international paper manufacturers such as Valmet, Beloit, Voith, Scapa Kern, Stowe Woodward, International Paper and APP for the production of high-quality papers. Herkules roll grinders can machine paper rolls up to 17.5 m in length and 2.5 m in diameter. A wide range of equipment options, such as Ventanip milling, is also available for different applications.



# Investment in the Future

Best apprenticeship program for future specialists in the HerkulesGroup



The HerkulesGroup's new training center offers everything from workbenches and manual metalworking to state-of-the-art CNC machining centers for learning a profession with a secure future

For the companies of the HerkulesGroup, apprenticeships and training have always meant an investment in the future – in the future of the apprentices and thus also in the future of the company. Every year, around 40 new apprentices start their careers with us and learn their profession as

- Electronics technicians for operating technology
- IT specialists for system integration
- Industrial clerks
- Industrial mechanics
- Mechanical and Plant Engineering Field
- Construction mechanic
- Mechatronics technician
- Technical model maker specializing in foundry
- Technical product designer
- Technical system planner
- Electrotechnical Systems Field
- Milling, turning, grinding machinist

Due to the geographical consolidation of the two companies Herkules and WaldrichSiegen, the training sector is also being developed in a particularly sustainable manner. In a newly built and state-of-the-art equipped training center, full-time training managers ensure a perfect transfer of knowledge in the technical professions. But also industrial clerks and IT specialists are trained in the administrative professions and are taken over into a secure future after successful completion of their training.

## High Apprenticeship Quota

A total of 113 apprentices are currently learning their trade in the group of companies, representing an impressive apprenticeship quota of around 10%. And for good reason, because in the Siegen-based large machine tool segment, a significant proportion of the future specialists have been coming from within the company's own ranks for generations, and there are even families who now work for Herkules in the 5th generation. The basis for this is always a solid education that prepares for a successful professional career. Supplementary professional development measures, such as English courses, offer the trainees added value and additionally qualify them for later roles in the international environment of our customers.

“In addition to the classic technical training, I also try to convey our value orientation to our apprentices.  
It's great to work now with colleagues  
you once trained 20 years ago.”

**Rolf Letzerich**  
Training Manager