

Motion

02.2022
The UNITED GRINDING Group's
customer magazine

INTERVIEW
INTERNATIONAL
IN-DEPTH

What can additive manufacturing do for machine tools?
Worldwide at your service! UNITED GRINDING in facts and figures
Knowledge transfer and fostering young talent go hand in hand



*Alex Frauchiger is
on the IRPD team,
which is behind
the development of
IMPACT 4530*

WHEN LASERS DANCE

In the "Motion" report, you can experience how the IMPACT 4530 creates components as if by magic – as the world's first industrially compatible machine tool for additive manufacturing, "Made in Switzerland".



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IMPRINT

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“PROVEN AND INNOVATIVE
TECHNOLOGIES SUCH AS
GRINDING AND ADDITIVE
MANUFACTURING CAN
COMPLEMENT EACH OTHER
PERFECTLY.”

DEAR READERS,

The UNITED GRINDING Group looks back **on over 100 years of tradition** in the development of high-quality machine tools. To date, more than 150,000 systems have been delivered around the world. This success is built on proven know-how and the ability to innovate technologically. **Our IMPACT 4530 from IRPD** is the world’s first industrial-grade ‘Made in Switzerland’ machine tool for additive manufacturing to reach the market, and customers are already benefiting from the use of 3D metal printing processes for quality components. In addition to surface, profile, cylindrical, and tool grinding, eroding, and (laser) measurement, the UNITED GRINDING Group is now also active in additive manufacturing. The fact that **proven and innovative technologies do not have to compete** with each other, but rather can complement each other perfectly, can be seen in the report on IRPD in St. Gallen on page 8 and in my conversation with Professor Markus Bambach from the Advanced Manufacturing Lab at ETH Zurich on page 18.

The success of our customers is always our number one goal. **Around the world, the roughly 2,500 employees** of the UNITED GRINDING Group work to provide our customers with high-quality systems, expert advice, and superb service. To find out how we can turn our motto **“We are where you are”** into reality, check out our network of more than 20 locations around the world on page 34. Similarly, a modern approach to knowledge transfer **is also becoming increasingly important in this age of skilled worker shortages and digitalization**. We highlight our strategy in the “In Depth” section on page 14.



*Stephan Nell,
CEO, UNITED GRINDING Group*

Stephan Nell
CEO, UNITED GRINDING Group

PS: We conducted a reader survey as part of the last issue of “Motion.” The respondents indicated a high level of satisfaction with our stories. As far as distribution channels are concerned, the preference for “Email with a link to download” as a PDF and “Continue as a printed magazine” were roughly equal. By far the most requested topic is “Application of new technologies.” As such, I think that this “Motion” squarely aims to satisfy the needs of our readers.



BETTER GRINDING WITH 3D PRINTING

The innovative SmartJet® nozzles, used here in the STUDER S31 cylindrical grinding machine, demonstrate that grinding and additive manufacturing complement each other perfectly. The nozzles, manufactured by IRPD through a 3D printing process, deliver an improved coolant supply without requiring a manual intervention by the operator. The machine control oversees the entire process. Thanks to additive manufacturing, the nozzles have a flow-optimized design and are automatically adjusted by the system.

The technology guarantees precise and reproducible cooling and produces a coherent coolant jet with a high exit velocity of up to 20 meters per second (3,937 sfpm). SmartJet® not only reduces set-up and process times (improved efficiency and productivity) for operators, but also reduces coolant and energy consumption by up to half compared to conventional cooling methods. With the SmartJet® nozzles as an example, it is clear that additive manufacturing boosts both efficiency and sustainability when grinding.

USA

INTRODUCTION OF VERSALOAD

UNITED GRINDING NORTH AMERICA presented its new automation cell for cylindrical grinding machines at IMTS in Chicago. The loading system, known as versaLoad, is compatible with various STUDER cylindrical grinding machines and can be flexibly integrated into a variety of work processes. Thanks to its high-mix, low-volume concept, easy operation, strong mobility, and good value for money, the system is also of interest to smaller companies. A single versaLoad system can increase productivity by up to a third.



GERMANY

WORLD INNOVATIONS AT THE OPEN HOUSE IN TÜBINGEN

A STRONG STREAM OF CUSTOMERS visited the Open House at WALTER in Tübingen. The system and solution supplier for tool production used the event to demonstrate the latest developments in tool production and reshaping, live from September 14 – 16. Two world premieres drew extra attention: The HELITRONIC MINI PLUS CNC tool grinding machine and the HELICHECK NANO CNC measuring machine both set new standards and accents in the production and quality assurance of high-quality tools. The HELITRONIC G 200 tool grinding machine presented at this year's GrindingHub trade fair and the revolutionary C.O.R.E. hardware and software architecture from UNITED GRINDING were put to work in the demo center to allow for up-close assessment.

SWITZERLAND

STRONG PARTICIPATION AT SWISS SKILLS 2022

MORE THAN 120,000 VISITORS and over 1,000 young professionals took part in SwissSkills 2022 in Bern. From September 7 – 11, roughly 150 Swiss career categories, ranging from the trades to industry and services, were presented at the BERNEXPO site. It was the biggest SwissSkills in history, the organizers report. The exhibition covered roughly 110,000 square meters, which corresponds to around 14 soccer fields. The UNITED GRINDING Group presented its companies and served as a sponsor at the event, which is aimed at trainees, young and experienced professionals, high school students, parents, and teachers. The trade fair appearance was entirely in the hands of the trainees: A core team of five trainees from MÄGERLE and STUDER was responsible for the concept and implementation.

USA

UNITED GRINDING EXHIBITS AT IMTS IN CHICAGO

THE UNITED GRINDING GROUP PRESENTED ITS LATEST PRODUCTS AND TECHNOLOGIES at the International Manufacturing Technology Show (IMTS) in Chicago in September. Under the motto "To the Future", the BLOHM PLANOMAT XT Essential with tool changer and the WALTER HELICHECK PLUS with integrated 3D sensor were on display for the first time in North America. C.O.R.E., a cross-brand hardware and software architecture, was a focal point of the exhibition. "After four years away from the IMTS, we were delighted to return to Chicago and see our customers again and to present our latest innovations to the world," said Markus Stolmar, CEO of UNITED GRINDING North America.



Photo: David Schweizer

SWITZERLAND

MODERNIZATION OF THE APPRENTICE FACILITY

STUDER HAS FURTHER MODERNIZED its apprentice facility for polymechanics trainees. This includes, for example, a modern CNC lathe to enhance training in the area of CNC part production. "Skilled workers are in especially high demand for this discipline, and we are delighted to now be able to impart this competence to the trainees," said Roger Leuenberger, head of vocational training at STUDER. The expansion is part of the "Vocational training 2025" project. One year earlier, the training workshop was outfitted with a new cycle-lathe. The machine park is now divided into two areas: conventional machines for basic training and specialized devices for CNC specialization and production.



SWITZERLAND

STUDER WINS UNITED GRINDING CHAMPIONSHIP

THE STUDER SOCCER TEAM won the UNITED GRINDING CHAMPIONSHIP 2022. All companies in the UNITED GRINDING Group take part in the annual soccer tournament, held this year on September 3 at STUDER at the facilities of FC Rot-Schwarz Thun. A total of seven teams competed for the title; STUDER ultimately claimed the title 7: 6 after a penalty shootout over runners-up WALTER Kuřim. BLOHM JUNG took third place. Host STUDER also offered the participants a guided tour of the plant and a festive evening event at the Zündkapselabrik in Thun, where the medals were awarded.



CZECH REPUBLIC

NEW MACHINING CENTER IN KUŘIM

WALTER HAS INVESTED in a new machining center at its Kuřim site. The machine with a μ -Precision package will be used to produce a strategic range of precision parts for WALTER machines, such as grinding spindle slides or axles. The DMC operates with an accuracy of up to $4 \mu\text{m}$ (0.00016") and has a new type of rotary magazine for 250 tools. The operation of the fully climate-conditioned machine is integrated into the company organization. This investment increases the site's production capacity for mechanical processing by around a third.

CHINA

LAUNCH OF ECOGRINDER SALES

ECOGRINDER, A CNC UNIVERSAL CYLINDRICAL GRINDING MACHINE developed by STUDER for the Chinese market, is now available. Sales started in June with a virtual unveiling show. The ecoGrinder machine is designed for grinding medium-sized workpieces in single and series production. It features distances between centers of 650 (25.8") or 1000 millimeters (40") and a center height of 175 millimeters (6.89"). It can machine workpieces with a maximum weight of 80 kilograms (176 lbs) or 120 kilograms (265 lbs). A solid Granitan[®] S103 machine base provides the foundation for the cylindrical grinding machine, which is equipped with high quality components, thus guaranteeing maximum precision, performance and reliability over many years.



With its IMPACT 4530, the UNITED GRINDING Group has developed the world's first "Made in Switzerland" additive machine tool for industrial use—from the small town of St. Gallen. How was this success achieved?

TEXT: Michael Hopp

PHOTOGRAPHY: Thomas Eugster

THE MIRACLE

The Roman Catholic Stift Church and Cathedral of St. Gallen, built in the monumental style of late Baroque period, lies only a few kilometers from the innovation hub where IRPD developed the IMPACT 4530

FROM ST. GALLEN

*The IMPACT 4530 uses 3D printing to
produce high-quality metal
components in all possible shapes
and structures*

Components manufactured using 3D metal printing from IRPD are of the highest quality and meet even the strict demands of industry

THE CLEAN NEW TURNKEY IMPACT 4530 stands in a room at the St. Gallen IRPD R&D center that was built especially for it. Its reputation already far exceeds it: the world's first industry-ready machine for additive manufacturing. There's no grinding of workpieces in this case; "manufacturing" in this case is actually precisely the opposite process. "Unlike classical production technology, where material is removed from a solid block by machining," explains Paul Kössl, Head of Business Development and Marketing of UNITED GRINDING Group, "metal powder is used to build up a component additively, bit by bit as a layer beam melts it layer by layer (LPBF process)."

The "face" of the IMPACT 4530 is an almost human-sized 54-inch touchscreen

display in a friendly and intuitive design. This human-machine interface transmits the live images of the micro-welding process from a camera installed in the installation space and combines them with control elements and information on the process sequence. UNITED GRINDING Digital Solutions™ transfers data to the C.O.R.E. operating system. "It was a priority for us to integrate the IMPACT 4530 into the highly automated system network in a user-friendly way, enabling efficient networking with other machine tools," says Kössl.

THE DANCE OF THE LASER

The IMPACT 4530 consists of two separate decoupled machine units. The thermostabilized, vacuum-capable machine core built on a cast-iron machine stand, the construction



"IN THE 3D PRINTING PROCESS, COMPONENTS ARE CREATED THAT WOULD NOT BE POSSIBLE WITH CLASSIC MACHINING."

Alex Frauchiger, Head of Process and Material Development



The different metal powders are stored separately in the IRPD Job Shop in 37-liter special containers with rollers. The labels here stand for the alloys: stainless steel (l.) and aluminum-silicon (r.)



The 54-inch 4K screen allows a view into the system via a camera installed in the interior

space, and the supply unit designed as a welding construction are successfully implemented as a separate operating and loading area. Together with the integrated automatic changeover system for the gas-tight metal powder containers and the components, this ensures the machine operable never comes into contact with the metal powder.

While the IMPACT 4530 goes about its work, the screen shows the lasers dancing like four yellow flames, building circles, lines, corners, and edges atop a layer of the metal powder. This process is called selective laser melting of metal powders in the LPBF process (Laser Power Bed Fusion), which it handles with two or four 1000-watt industrial fiber lasers.

IDEAS IMMEDIATELY BECOME REALITY

The metal components are ultimately welded together layer by layer on the plate. The metal powders are offered in different grades and in steel, aluminum, titanium and nickel-based alloys as well as special metals—the right selection and mixing is crucial for the quality of the products. One of the greatest advantages of 3D printing is that new, creative ideas can be implemented quickly and at low cost, says Michael Schneider, head of additive services & customer care at IRPD. “This inherently leads to better components and thus to better products.” Alongside Pascal Brunner, Kai Gutknecht, and Alex Frauchiger, Schneider is one of the experts who has been closely involved in the

THE PREVIOUS GENERATIONS



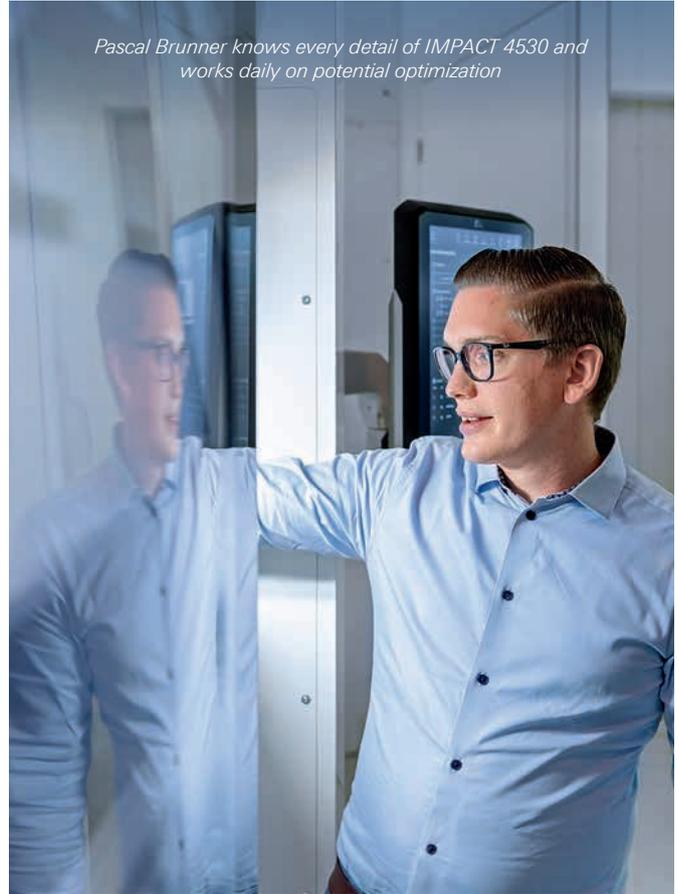
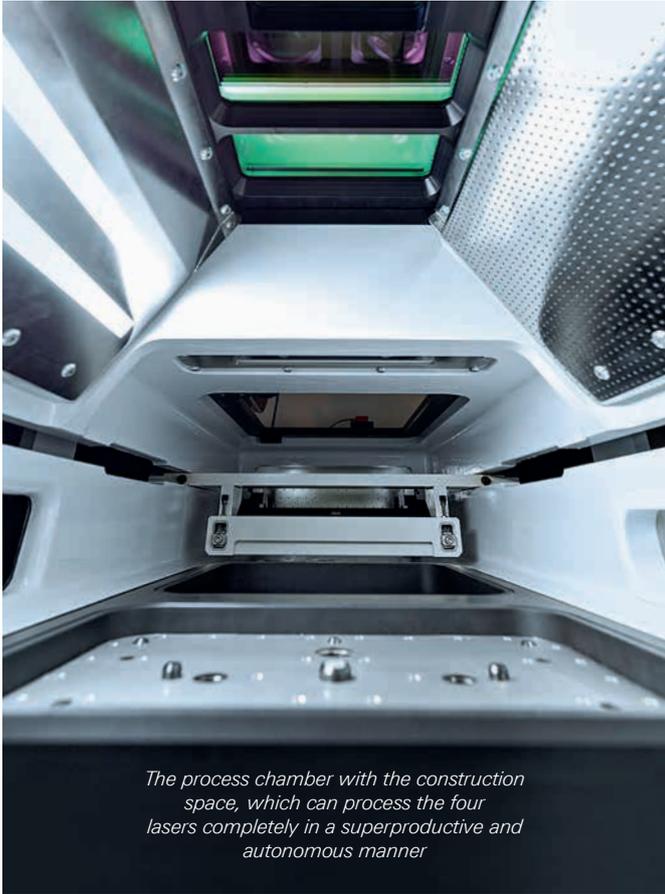
The IMPACT 4530 is a third-generation AM machine tool based on 20 years of experience. The two previous models are still in use today

LAB 00

The success story of the IMPACT 4530 began with the LAB 00 (pictured above). This machine has by no means been put out to pasture, but rather is still at work providing important insights in material and process parameter development. The hard-won knowledge it provides is expected to deliver a future where each IMPACT machine will be ready to engage in up to four different production strategies involving a wide range of materials, all tailored to the customer's requirements. The focus is on high productivity, high material density, top surface quality, and low component costs.

LAB 01

The LAB 01 (pictured below) was the start of the next generation, and has been used by IRPD in recent years to produce components for internal or external customers using the additive manufacturing process. Numerous cooling nozzles for MÄGERLE, BLOHM, JUNG were also produced and refined together with the development departments of IRPD's corporate siblings, always taking into account the required functions and requirements.



development of the IMPACT 4530 since 2016. Schneider explains creating workpieces seemingly out of nothing requires only the CAD 3D data of the desired component, which the printer uses to calculate the various layers. For example, the movement plan for the deflection of the laser is created by a mirror system, which melts the individual layers at specific points, thus fabricating the component.

“The 3D printing process allows for components to be created that would not be possible at all using classic machining,” says Alex Frauchiger, who is responsible for process and material development. This is perhaps the most important principle in the use of additive manufacturing. It is not a question of replicating the classic process,

but rather rethinking the components themselves and thus realizing the added value of additive manufacturing. “It always starts with the analysis of where additive manufacturing actually adds value,” he explains. This might involve faster production, new functions, or a combination of features.

3D PRINTING HEDGES AGAINST SUPPLY CHAIN ISSUES

Speed is an important factor, agrees Pascal Brunner, who is responsible for product development and IMPACT mechanics. “No tools need to be changed, no new blanks need to be clamped, and the machine doesn’t need to be adjusted for each job,” he says. All that’s needed is the CAD 3D software file containing the relevant pro-

cess data. By eliminating setup time, IMPACT can be warmed up in minutes and is highly flexible. Thanks to these advantages, it is suitable for the fast production of a large number of complex components, from single-unit batches to series production — for spare parts, standard production, and prototyping.

“The tailor-made component topology helps optimize a variety of processes and activities related to the different aspects of mechanical engineering,” explains material expert Frauchiger, “because the functionality of tools and components often depends on their surface.” Additive manufacturing can be used to manipulate properties in a targeted way, including corrosion and wear protection or sliding and lubricant behavior, adapting them seamlessly to customer requirements. The potential audience is huge and diverse: the classic job shop, automotive suppliers, or the aerospace industry.

“IN THE END, CUSTOMERS BENEFIT, WHICH WE CONSIDER OUR GREATEST SUCCESS.”

*Paul Kössl,
Head of Business Development and Marketing*



INNOVATIVE ATMOSPHERE

How could so much innovation have possibly come from this team in the small town of St. Gallen? First of all, IRPD is no ordinary mechanical engineering company. Starting with its modular building on Lerchenfeldstraße featuring plenty of glass and style, the

innovation and media hub is known as a “starting block” across the region. Machines stand here like polished exhibits, with a young engineer appearing now and again, a plexiglass visor over his face, to check on one thing or another. Its a contagiously good atmosphere, where everyone can feel like they are part of something big. The company’s origins in the nineties lie in an ambitious university project entitled “Institute for Rapid Product Development,” established at the Intercantonal Engineering School of St. Gallen (ISG), the university of applied sciences, and the ETH Zurich.

“Being able to experience the interplay between research and development up close and personal and tied to the provision of services, that’s unique,” says Frauchiger. The team proudly shows the two predecessor models of the IMPACT 4530, a pair of machines still in use on a daily basis for the refinement of AM processes or for the production of components. The new 4530 is therefore the third generation of the machine, albeit one now capable of meeting the high demands of industry.



These are cooling nozzles from the AM process that IRPD is developing and optimizing together with BLOHM JUNG

“THE IMPACT 4530 COMES WITH THE REVOLUTIONARY C.O.R.E. HARDWARE AND SOFTWARE ARCHITECTURE, MAKING IT COMPATIBLE WITH ALL OTHER BRANDS IN THE GROUP.”

*Kai Gutknecht,
Head of Software Development*

THE SPIRIT OF ST. GALLEN

This university-style start-up spirit is one factor why one of the most innovative machine tools in the world was developed here in St. Gallen, just a few kilometers from the magnificent Baroque cathedral. The other reason is the integration into a leading international group of machine tool construction companies. The UNITED GRINDING Group has been the sole shareholder of IRPD since 2019, but enjoyed a long-standing cooperation long prior to that. “We can take advantage of synergies, and if we need support, we can find it, both in terms of expertise and capacity,” reports Michael Schneider. The IMPACT 4530 is being developed in St. Gallen, but is being built by its sister company STUDER in Thun, some 200 kilometers away. On the other hand, the sibling firms also benefit from additive manufacturing at IRPD. For example, the nozzles of the new SmartJet® cooling system are produced using the 3D printing process.

Customers also benefit from synergies in terms of user-friendliness, networking, intelligent data processing, and automation: “The IMPACT 4530 comes with the C.O.R.E. hardware and software architecture, so it is compatible with all other brands in the Group,” explains Kai Gutknecht, who is responsible for software development. “The strong cooperation here in the team and with UNITED GRINDING,” he adds, “is the main reason why the IMPACT 4530 exists today.” There are nodding heads, smiling faces, and a good mood. “In the end, the customers benefit, which is the greatest success for us,” says Kössl and heads out from the “starting block” on Lerchenstraße, to the mountain landscape of St. Gallen, a place where a minor miracle has happened with the IMPACT 4530—one of teamwork, know-how and the conviction that extraordinary things can be achieved with the right will. o

The technical specifications of the IMPACT 4530 and their benefits at a glance can be found here in the magazine in the “Tools & Technology” section on page 28.

Lessons learned: Pascal Brunner, Alex Frauchiger, Kai Gutknecht, and Michael Schneider (v. l.) share their experiences daily

LEARNING THE STATE OF THE ART

The modern transfer of knowledge and the development of young staff are becoming increasingly important at the companies of the UNITED GRINDING Group

TEXT: Markus Huth

IN AN INDUSTRIAL HALL, A GIANT OF A MAN WITH TATTOOED ARMS walks past machine tools from the UNITED GRINDING Group and speaks into the camera: "The BLOHM, the STUDER, the WALTER: We've got a series for each individual machine, and we'll show you the journey of how they arrive, how we set up and install them and then configure them." The man is Titan Gilroy, and many on the CNC scene know the story of the US ex-boxer from being a criminal to a successful entrepreneur and star of the popular video-forming platform "TITANS OF CNC." Gilroy is now working with the UNITED GRINDING Group to share his know-how and inspire young people to be-

come professional grinding techs. His series, the "GRINDING Academy," went live in July 2022. The free tutorials invite grinding enthusiasts to acquire valuable knowledge. "The precision and quality that is possible with CNC grinding should be better known. The academy will highlight all these possibilities and show viewers how they can use them," says Paul Kössl, Global Head of Marketing & Business Development at UNITED GRINDING Group.

Knowledge transfer — the topic is playing an increasingly important role. Whether online or in person, as an offer to the general public, customers, in-house junior staff, or technical specialists. If you want to survive in times of skilled worker shortages and digitalization, you have to build up a reputation for imparting knowledge and training using modern methods and up-to-date technology.

Angela Fahrenkrog, who has taken on the newly created position of training officer at BLOHM JUNG, has observed the same thing. "The tables have turned, and nowadays, we're trying to convince the few qualified candidates of why they should work with us, and not the other way around," she says. The company with 220 employees at locations in Hamburg and Göppingen



currently has three trainees. Fahrenkrog's three-person team handles support and acts as an interface to the individual departments. Her tasks also include presenting the company to potential young talent: "This year, we will be represented for the first time with a stand at the dream career high school fair in Hamburg."

TRANSFER OF KNOWLEDGE FOR YOUNG PROFESSIONALS AND SPECIALISTS

Recruiting new talent nowadays also means clearing up old stereotypes: This is why WALTER regularly takes part in "Girls' Day", the world's largest career orientation project for female students. The aim is to bring greater interest and involvement by girls in professions and fields of study in which the proportion of women is below 40 percent. "We are visited by as many as five female high school students in the assembly hall

every year, looking to find out more about the practical side of working as a mechatronics technician," says Celine Ruckaberle, who oversees the project.

STUDER also gives young people an on-site tour of the company, letting them know about the attractive career opportunities. At the 'Future Day' every year, young people from the region can visit the Thun location and learn more about the work of automation technicians, automation system assemblers, the sales force, designers, logistics specialists, and polymechanics. In addition, there are multi-day "test apprenticeships," which draw up to 200 high school students each, notes Michèle Zeller, head of marketing communication at STUDER. In addition to attracting young talent, training and continual professional development of in-house technical specialists is another important aspect of modern knowledge transfer. This is because they are increasingly spread around

the world, in order to be as close as possible to the customer. The "WE Academy" at WALTER and EWAG, for example, was set up for the internal transfer of knowledge in sales, service, and applied engineering. "All employees worldwide are trained online and in person as required to ensure they are bringing our customers up-to-date knowledge," says Christoph Ehrler, head of marketing at WALTER and EWAG.

STUDER trains its service specialists and customers at the "STUDER Academy," using digital multimedia equipment with cameras to complement face-to-face teaching and online instruction (live on machines and on-demand videos and documents). This means that the most complex knowledge and know-how can be acquired from anywhere in the world. Because at UNITED GRINDING, it all ultimately comes down to quality and trust, whether it's the learning is conducted digitally and remote or face-to-face. ○

Photos: David Schweizer (2)

1. STUDER uses its own multimedia equipment for the online training of technical service personnel. 2. Two female high school students at the "Girls' Day" at WALTER 3. High school students can complete a multi-day "trial apprenticeship" at STUDER 4. BLOHM-JUNG mechatronic trainees 5. Well-known CNC trainer Titan Gilroy collaborates with the UNITED GRINDING Group on his online knowledge platform "Grinding Academy." 6. The "WE Academy" provides training for applied engineering experts from all over the world 7. One of the "Girls' Day" activities at WALTER involves pouring liquid metal into molds 8. A high school student at "Future Day" at STUDER



SIMPLY GOOD PEOPLE – EVERY- WHERE

The companies of the UNITED GRINDING Group operate in many countries on numerous continents. Our employees speak different languages and come from different cultures – which demands talented human resource managers. “Motion” introduces five of them



**“KNOWLEDGE
MUST BE APPLIED IN
PRACTICE.”**



HELENA WANG

POSITION: Director Human Resources,
UNITED GRINDING China, Shanghai

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“I SEE THE NURTURING OF SKILLS and talents in our employees, especially with regard to the needs of the company, as the main task for Human Resources,” says Helena Wang. A graduate in intercultural communication, she heads the HR department and has been working for the company for six years. She always follows one guiding principle: Knowledge alone is not enough, it must also be possible to put it into practice. “That is an ancient Chinese philosophy,” she says. Wang is currently working on the implementation of an E-HR system.



**“SOFT SKILLS
MATTER TOO.”**



ULRIKE ETTL

POSITION: HR Director BLOHM JUNG,
Hamburg, Germany

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“THE FLAT HIERARCHIES of a medium-sized company, combined with the international environment of the UNITED GRINDING Group, give our employees real scope for development and global opportunities,” says Ulrike Ettl. The business administration graduate started working for the company in 2005 and is now responsible for the entire operative and strategic spectrum of human resources at two locations. Her sharpest focus is on recruiting new talent, advising managers, and ensuring attractive working conditions. “We put a lot of emphasis on retaining our employees,” says Ettl. In addition to professional qualifications, they should also have soft skills such as a sense of responsibility and teamwork.



“GOOD TEAM SPIRIT MATTERS.”



HANSUELI SCHÜRCH

POSITION: HR Manager STUDER,
Thun, Switzerland

CONTACT: Hansueli.Schuerch@studer.com

“WE ARE AN EMPLOYER with a long tradition, a strong reputation, and good roots in the region,” explains Hansueli Schürch. The university-trained HR manager and master mechanic has been working for the company for 33 years. His tasks include the recruitment, support, and professional development of employees. In addition to professional cooperation, a good team spirit with joint leisure activities is important to him. Schürch also considers the offer of flexible working time models and home office options as essential for a modern employer. “Due to the shortage of skilled workers, companies will increasingly have to market themselves to potential candidates,” he says. Schürch likes the variety inherent to his responsibilities and is currently working on the digitization of HR processes, among other projects.



“WE ARE AN ATTRACTIVE AND STABLE EMPLOYER.”



KATEŘINA HÁLOVÁ

POSITION: HR Manager WALTER,
Kuřim, Czech Republic

CONTACT: Katerina.Halova@walter-machines.de

“WE ARE KNOWN FOR HIGH-PRECISION WORK in a modern technological environment and have been a stable employer on the market for 25 years,” says Kateřina Hálová. These factors make her company a very attractive employer for the employees. A lawyer by trade, she specializes in human resources and labor law and has been working for the company for more than five years. As HR manager, she feels it is important that employees have the benefit of continuing professional development, language courses in German and English, as well as fair working conditions. “The ability to identify relationships, engage in open communication, and a sense of helpfulness are fundamental characteristics that employees should have,” she says.



“I LOVE HELPING PEOPLE.”



AMY LUTHER

POSITION: Director of Corporate Human
Resources UNITED GRINDING
North America, Miamisburg, USA

CONTACT: Amy.Luther@grinding.com

“WE WANT TO EQUIP EVERY one of our employees with the necessary toolbox to be able to work at the highest level,” explains Amy Luther. She studied economics, communication and analytics and has worked in HR for over 25 years, the most recent three with our company. Online and in-person training courses are available for employees, as is an offer for tuition fees reimbursement. Beyond the technical skills of the team, Luther sees soft skills such as a good customer service attitudes as important. She takes particular joy in the side of her work dedicated to helping people achieve a happy and fulfilling professional life, while at the same time satisfying customers with first-class products.

“WE’RE WELL UNDERWAY”



The UNITED GRINDING Group's IMPACT 4530 is the world's first 'Made in Switzerland', industrial format additive machine tool. In an interview with Professor Markus Bambach from ETH Zurich, CEO Stephan Nell explains the potential of the new technology

TEXT: Michael Hopp

PHOTOGRAPHY: Thomas Eugster



The interview participants at the Technopark Zurich (from l.): Professor Markus Bambach, CEO Stephan Nell and Editor-in-Chief Michael Hopp

Mr. Nell, does the UNITED GRINDING Group with the IMPACT 4530 strive to become the technology leader in machine tools for additive manufacturing?

Stephan Nell: We certainly want to be at the forefront. There are many established manufacturers with years of experience with additive manufacturing and a solid track record. But we wanted to bring our own DNA to the topic, and this includes high reliability and availability. Our focus is always on making our customers successful. By offering the best technology available.

What's the strategic value of this area?

Stephan Nell: Additive manufacturing can be one manufacturing stage prior to grinding, and it goes to certain consumer industries that represent potential customers for 3D printing. And it is, of course, a new manufac-



Michael Hopp is editor-in-chief of Motion



“YES, I CERTAINLY THINK WE ARE DEALING WITH A TECHNOLOGICAL LEAP HERE. WHAT MATTERS RIGHT NOW ARE THE SOFTWARE SOLUTIONS.”

Markus Bambach



“I BELIEVE IN THE THING THAT GENERALLY DRIVES THE MECHANICAL ENGINEERING INDUSTRY: CONTINUOUS INNOVATION.”

Stephan Nell

turing field that requires a lot of innovation. After all, grinding has been around forever, it's fair to say. The only way forward is evolutionary. Of course, new innovations are constantly being added and the machines are getting better and better. But there are no new giant steps. By contrast, 3D printing is a fundamentally new technology. And that caught our attention.

Mr. Bambach, can we already say with certainty today that additive manufacturing represents a real technological leap?

Markus Bambach: Yes, I certainly think we are dealing with a technological leap here. If you think back to the first industrial revolution, where the loom was invented and later made programmable with a punched card, you can find many examples over time when hardware and software innovation went hand in hand to create a technological leap. Additive manufacturing needs be no different – we must have a good machine on the hardware side, while also mastering the entire chain on the software side.

Mr. Nell, how exactly did you enter into this new field of technology, because it's not that kind of thing you can simply decide to do overnight.

Stephan Nell: Yes, it was a bit of a journey. We started by imagining ourselves in the role of the customer to such a machine manu-

facturer. This is what we did with Inspire – who have experience with 3D printing since 1996, and we subsequently gained access to this network directly with the purchase of IRPD. And then we let the development team and the Inspire people with previous 3D experience come together with the instructions: Do your thing. The result is the IMPACT 4530 – 9.2 tons of Swiss mechanical engineering.

Mr. Bambach, is the UNITED GRINDING Group simply following the textbook here?

Markus Bambach: No doubt, there are some unique selling points for additive manufacturing. For example, cost per component can be made more independent of the complexity of the components and the number of units. That's not the case with other procedures. In addition, production can be handed locally, in a decentralized fashion. Nevertheless, one must always think about the cost structure in production chains. And if the cost question is dominant, then you can't make the case commercially for additive manufacturing as we know it today. Because it often takes a relatively long time and requires a lot of experience before a component can be printed at all. For more complex components and more difficult applications, you'll need to hire a team of engineers and let them work for several weeks before you actually have a component that meets the

TAKING PART IN THE DISCUSSION

MARKUS BAMBACH

Markus Bambach is Professor of New Manufacturing Technologies at ETH Zurich and head of the Advanced Manufacturing Laboratory. His research focus is on new manufacturing technologies, with a particular interest in additive manufacturing.

STEPHAN NELL

Stephan Nell has been Chief Executive Officer of the UNITED GRINDING Group worldwide since 2012. He joined STUDER in 2003 as Sales Manager for Europe and served there as Chairman of the Board from 2007 to 2011.

MICHAEL HOPP

Michael Hopp is editor-in-chief of Motion and also owner and managing director of Hopp and Frenz Content House in Hamburg.

requirements. But UNITED GRINDING now has a very solid machine on the market — on a market in which it is already established. These are very good prerequisites.

Mr. Nell, Mr. Bambach still seems to be waiting for the technology to keep advancing.

Stephan Nell: We never believed that additive manufacturing should replace grinding. On the one hand, the process does not offer the same surface quality. Nor can it match its precision. But it does provide us with a new generative process upstream of the grinding machines that can enhance their abilities. It is one of many technologies that complements our existing portfolio well. If you look at a MÄGERLE machine tool today, it can not only grind, but also mill and drill. It is a machining center. At WALTER EWAG, we developed laser technology. Many people don't even know that we produce more measuring machines than some of the leading special-

“TODAY WE KNOW SO MUCH ABOUT TECHNOLOGY THAT WE ARE CAPABLE OF EYEBALLING IT.”

Stephan Nell



ists in that technology. Additive machine tools also fit into this concept.

In conversation with the young engineers at IRPD in St. Gallen, the idea was that additive manufacturing would give us better products overall. Where do you see the boundaries of this utopia?

Stephan Nell: Here's what the engineers got right: 3D production can open up completely new possibilities for designers. Firstly, they have to learn to design a part in such a way that they can take the advantages of 3D printing. There is no point in moving an existing part that is being made today on a milling machine or lathe one-to-one to a 3D printer.

Markus Bambach: If you were to sell a 3D machine to a service provider who earns money in the machining sector, without a designer — it's unlikely you'd end up with better parts. After all, they're still thinking in terms of a design to be manufactured by machining. The successful examples I'm aware of come mainly from the hydraulics sector. Or cooling, where integral parts can be printed instead of producing many individual parts. These examples each show a technological leap in which the potential is systematically increased. For example, in the aerospace industry, where extreme lightweight construction is possible. Then we can look at medical technology, where individualized components are important. But it's a little too much for me to say right now that the technology inherently means better products for society. The largest 3D series production I know is a couple of tens of thousands of designer spectacles per year. It's just not possible to produce two million parts — the technology has its limits.

Stephan Nell: There are limits, of course. But at the same time, we can observe progress underway. To this point, most 3D printers have been used in the metallurgy departments at universities and in testing departments of companies. But now customers want to use the machines for industrial production and are not interested in optimizing processes. They want it to work. And that's what the IMPACT 4530 does.

What exactly are customers' requirements for an industrial-grade 3D printing machine tool?

Stephan Nell: It must run stably, work quickly, and not make any mistakes. This is why the IMPACT has up to four lasers with 1,000 watts each. They do however naturally leave traces of smoke residue, which must be dealt with. Then there are seemingly simple

“THE POTENTIAL OF THIS TECHNOLOGY MUST BE INCREASED SYSTEMATICALLY. TO DATE, THIS HAS ONLY HAPPENED ON A CASE-BY-CASE BASIS.”

Markus Bambach



things: We monitor the lip that coats the material, and replace it automatically if a defect is detected to prevent it from continuing to operate improperly. And then it is also important, at an industrial process level, that the customer does not have to constantly monitor the machine with personnel, which costs money. It must therefore have a high level of autonomy and largely be able to monitor itself. Generally speaking, parts and material change, and the machine needs to be able to deal with that. I cannot lose one or two shifts just to change materials. We take just 120 minutes to change materials, and it takes 15 minutes from job to job. In addition, we have many customers who mill, turn, grind, who have many production technologies in-house with a correspondingly high headcount. They'll need to integrate 3D printing accordingly. So I need to design the machine in such a way that there is no contamination of the environment. Because people must not come into direct contact with the metal powder.

That sounds like the right way to go. Perhaps this utopia is attainable, Mr. Bambach?

Markus Bambach: Perhaps, presuming additive manufacturing continues to evolve as a technology. But I don't yet view it as being a substitute for established mass production-capable technologies, so to speak. Ongoing development of the software solutions is also important.

Stephan Nell: I think it's great to orient oneself towards Utopian ideas. And the IRPD team in St. Gallen is hard at work optimizing the software solutions. In the end, it is an efficiency question for most customers. Ecological aspects also play a major role here. Additive manufacturing has a lot of potential in this area. There's less need for transportation, and supply chains can be shortened. I am convinced that additive manufacturing will find its way into the machine tool industry. But it will not displace or replace everything else. ○



PASSION FOR TECHNOLOGY

Kirsten Brinck heads up the technology department at BLOHM JUNG and, together with her team in the company, drives innovation

TEXT: Markus Huth PHOTOS: Dennis Williamson

"I REALLY ENJOY ANALYZING AND SOLVING technical challenges," says Kirsten Brinck, head of technology at BLOHM JUNG. Her team of 31 engineers, two working students, and external service providers are responsible for mechanics, electrics, software, and driving innovation in surface and profile machines at the Hamburg location. A university-trained mechanical engineer by trade, Brinck has worked for the company since 2019 and previously held various specialist and management positions in the mechanical engineering industry. "I also really enjoy coordinating and motivating my team," she says, adding: "Because ultimately, the customers benefit."

CONTACT:

Kirsten.Brinck@blohmjung.com

9:00 A.M.

START OF THE DAY

The day starts for Brinck at the BLOHM site in Hamburg with phone calls and virtual meetings with her team, some of whom are working from home. She then heads over to the assembly building to get an overview of the tasks



10:15 A.M.

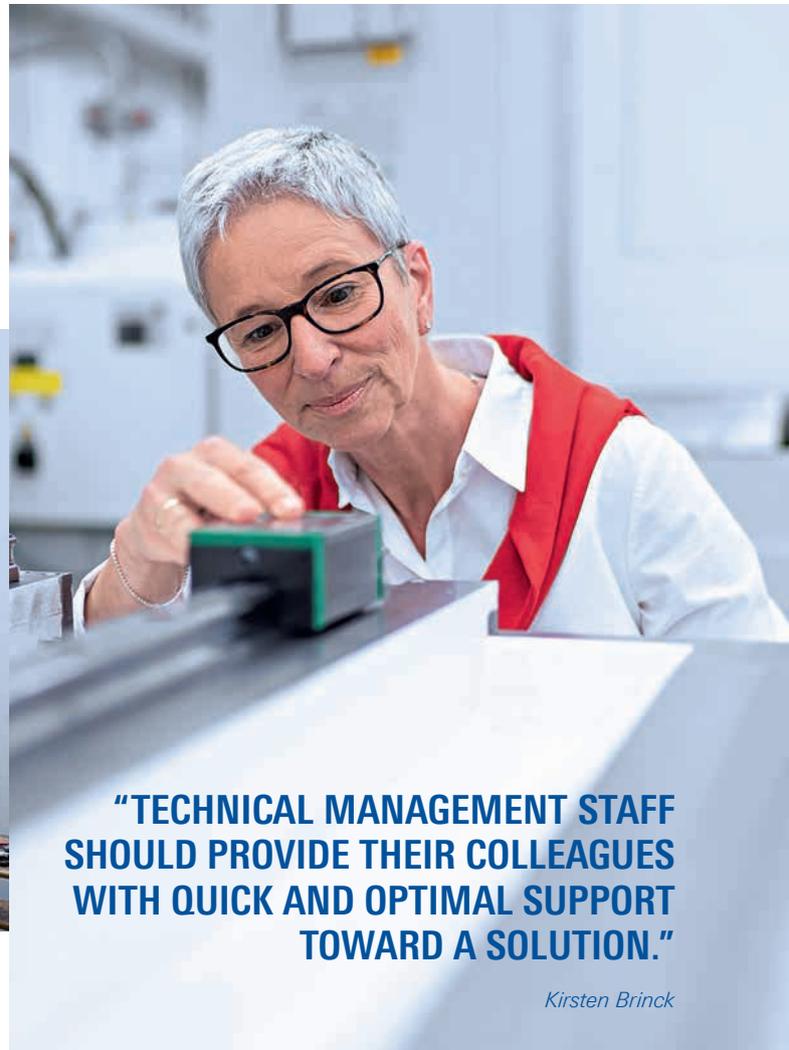
ASSEMBLY BUILDING

For a brand-new project, Brinck works with employees from other areas such as Sales, Purchasing, Customer Care, and Assembly to identify and harness potential improvements to an existing machine.

NOON

TEST BUILDING

In addition to good grinding performance, the projects are all focused on improving production costs and energy efficiency in the machines. To this end, Brinck's team not only prepares theoretical calculations, but also validates them on the machines.



“TECHNICAL MANAGEMENT STAFF SHOULD PROVIDE THEIR COLLEAGUES WITH QUICK AND OPTIMAL SUPPORT TOWARD A SOLUTION.”

Kirsten Brinck



2:00 P.M.

OFFICE FOR MECHANICAL DEVELOPMENT

Development Engineer Henning Federmann talks with Brinck about his project to validate the recently ordered PL/PR XT machines and the best way to implement the customer requests



3:00 P.M.

FINAL INSPECTION

Together with software programmer Phil Clasen, Brinck does a final inspection of the new PLANOMAT XT with tool changer before it starts its journey to the USA. "The tests were all positive," she says.



"WE APPLY EFFICIENT WORK PROCESSES AND THE PRINCIPLES OF GOOD TECHNICAL DESIGN AND DEVELOPMENT TO HELP OUR CUSTOMERS SUCCEED."

Kirsten Brinck

4:00 P.M.

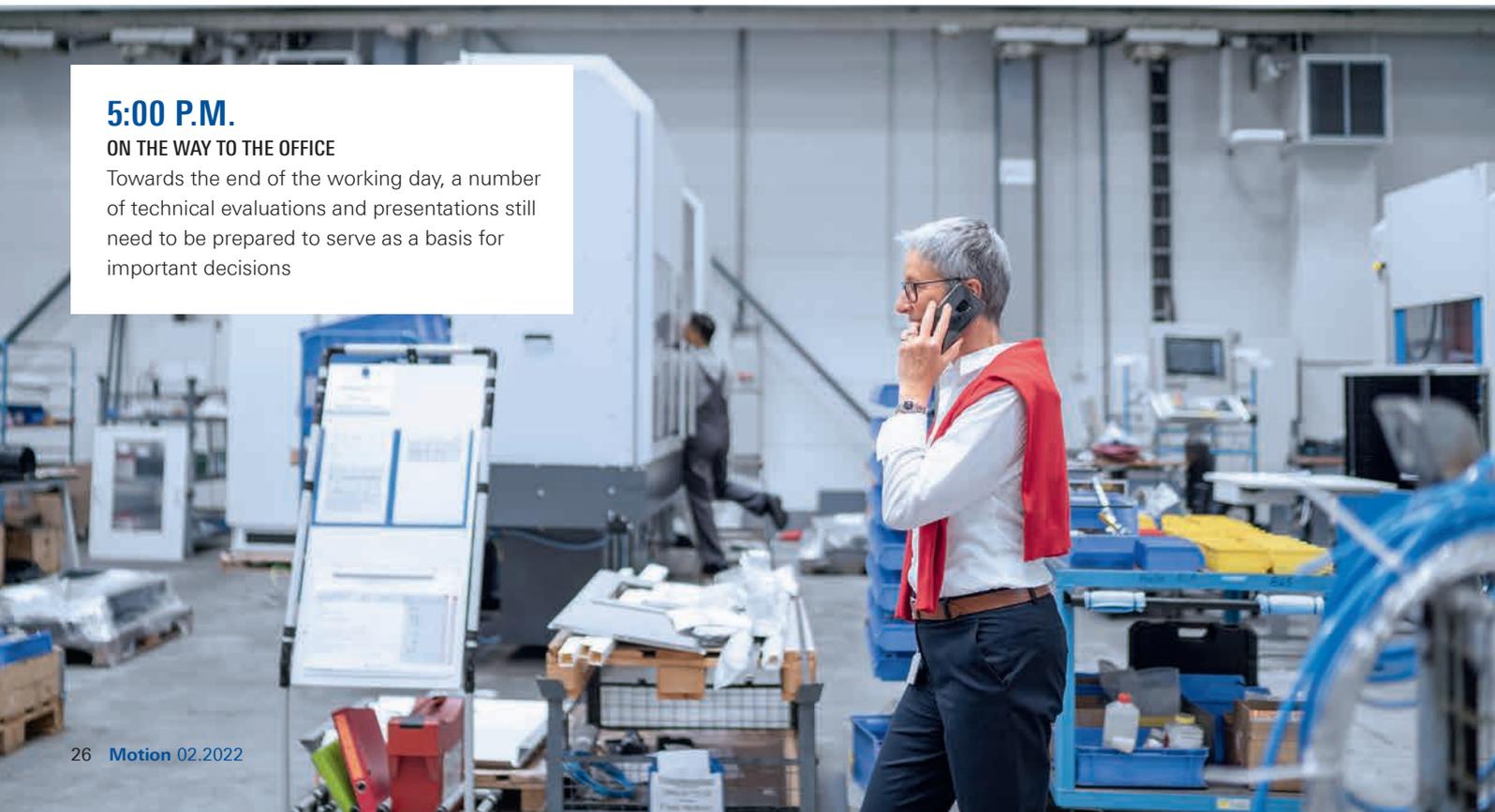
OPTIMIZATION

The continuous improvement of design and efficiency in mechanics, electrics, software, and documentation is very important to Brinck and her team and are given regular focus every day

5:00 P.M.

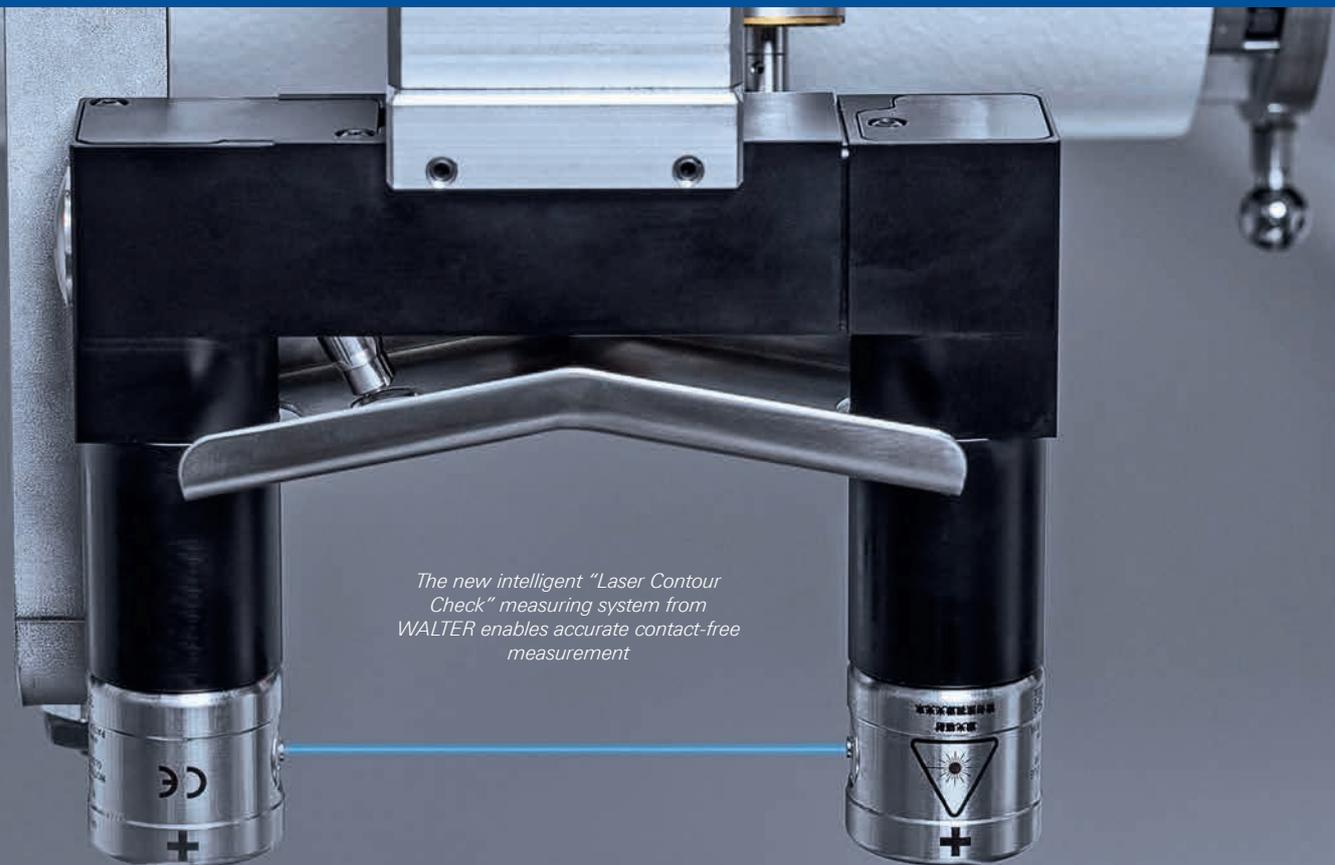
ON THE WAY TO THE OFFICE

Towards the end of the working day, a number of technical evaluations and presentations still need to be prepared to serve as a basis for important decisions



TOOLS & TECHNOLOGY

NEWS FROM THE UNITED GRINDING GROUP



The new intelligent "Laser Contour Check" measuring system from WALTER enables accurate contact-free measurement

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The IMPACT 4530 from IRPD comes with the C.O.R.E. hardware and software architecture.



TRAILBLAZING

IRPD's new IMPACT 4530 is the world's first industrial-grade, 'Made in Switzerland' additive manufacturing machine tool, and provides continuous process conditions

THE IMPACT 4530 USES THE LASER POWDER BED FUSION (LPBF) PROCESS for workpiece production: With a choice of two or four industrial 1000-watt fiber lasers, it can selectively melt metal powder, thus producing modular and scalable high-quality components for the classic job shop, aerospace, automotive,

energy, medical, tool, and automation sectors. "The IMPACT 4530 can handle all common metals and is the world's first 'Made in Switzerland' industrial-grade AM machine tool, with stable reproduction conditions, accuracy, quality, and scalability," says Luigi Retta, Key Account Manager at IRPD.

The microwelding process takes place in the thermostabilized machine core of the IMPACT 4530. At the heart of this is the vacuum-capable process chamber, an ultra-rigid and robust cast component that is hermetically sealed together with the build and powder storage containers. This innovative system design guarantees high productivity and safety. The separation between the operating and loading area, as well as an integrated automatic changeover system for

the gas-tight metal powder containers and the components, ensure operation without powder contamination. This design ensures short auxiliary times (job-to-job in 15 minutes) and fast, flexible material changes. The machine can be operated in a stand-alone mode or in an automated system network.

FIT FOR THE FUTURE THANKS TO C.O.R.E.

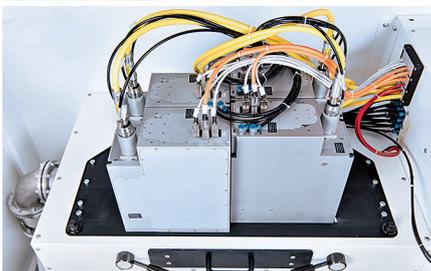
The IMPACT 4530 is delivered with C.O.R.E., the cross-brand hardware and software architecture of the UNITED GRINDING Group. A 24-inch multi-touch control panel provides simple, intuitive control of the system, which also features smart software for efficient networking with other machine tools.

CONTACT:

Luigi.retta@irpd.ch

THE BENEFITS AT A GLANCE

- Autonomous, scalable, and thermally stable
- Short auxiliary times
- 2 or 4 synchronized fiber lasers, 1000 W each
- Automatic process monitoring with state-of-the-art sensor technology and 3D scanner technology
- C.O.R.E. hardware and software architecture incl. 24-inch full HD multi-touch display
- 54-inch display for a virtual view into the work area
- Easy to maintain and clean
- Up to 10 measuring sensors
- Industry 5.0 standard



The microwelding process takes place in the IMPACT 4530's hermetically sealed process chamber

SURFACE AND PROFILE GRINDING WITH TOOL CHANGER

Reduced set-up times and process-parallel loading of the tool magazine during surface and profile grinding on the PLANOMAT XT

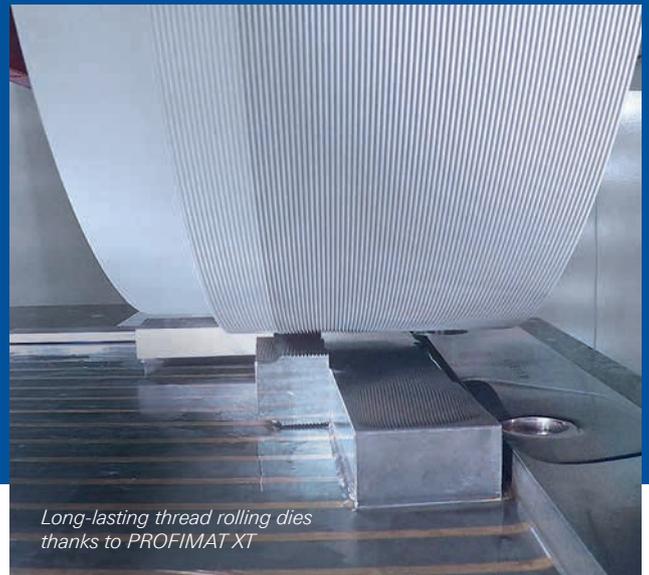
A LACK OF SKILLED WORKERS, SMALLER LOT SIZES, and more demanding products — the industry is tackling these challenges by automating processes for more economic and efficient manufacturing. The new tool changer for the PLANOMAT XT represents BLOHM's first automation option for profile and surface grinding, capable of reducing auxiliary times and relieving the operator. The changer, which is fully integrated into the control logic, replaces the grinding wheels on the spindle based on the running program. It can also be fitted with new wheels parallel to the process without disrupting the production process itself.

COMPACT AND DURABLE

"While we were developing the tool changer, we faced two challenges: the weight of the grinding wheel and the level of compactness for the changer magazine required by the market," explains Torsten Schulz, head of sales America at BLOHM JUNG. The new tool changer can be integrated into the machine environment in a highly space-efficient manner. The changing mechanism, which grips the grinding wheels from the magazine and inserts them into the spindle, can handle wheel weighing up to 40 kilograms without problem — a significant relief for the users. Depending on the tool width, the tool magazine can be equipped with five to eight grinding wheels of diameters of up to 400 millimeters. These strengths on the part of the tool changer are especially clear when machining similar workpieces with different tools, during complete machining in one clamping with different grinding wheels, and during highly productive grinding with high wheel consumption.

CONTACT:

Torsten.Schulz@blohmjung.com



FROM STANDARD TO SPECIAL

Thanks to the PROFIMAT XT profile grinding machine and its high-powered software, BLOHM JUNG offers everything you need for grinding high-precision, durable thread rolling dies

INCREASING AUTOMATION of manufacturing processes is driving industry demand — especially in the automotive and aerospace industries — for high-quality screws with functions. Specially shaped threads ensure, for example, that screws center themselves when they are screwed in. At the same time, manufacturers are facing rising quality demands in terms of service life and the quality of the thread rolling dies with which the screw threads are produced.

HIGH MACHINE RIGIDITY AND POWERFUL SOFTWARE

"Since ground thread rolling dies, in particular, are very effective at satisfying the high demands for permanent profile, shape, pitch, and surface accuracy, our customers are increasingly asking for technologies for grinding thread rolling dies with special profiles," explains Arne Hoffmann, head of technology and project engineering at BLOHM JUNG. He refers to the company's many years of expertise in this field: "Our PROFIMAT XT with its extremely rigid overall structure, high spindle power, and specially developed software is ideally suited for grinding high-precision thread rolling dies." The PROFIMAT XT is more than just an economic option for grinding common metric thread profiles. When equipped with a CNC swiveling table and counter bearing and a double Z-drive, it also enables efficient grinding of thread rolling dies for highly complex screw shapes.

CONTACT:

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The S100, a CNC universal machine for internal cylindrical grinding, delivers top STUDER quality

TOP STUDER QUALITY AT THE ENTRY LEVEL

The new S100, a CNC universal machine for internal cylindrical grinding, fills a gap in the portfolio at the entry level

THE NEW S100 CNC universal machine for internal cylindrical grinding offers proven STUDER quality and excellent value for the highest precision in standard internal cylindrical grinding operations. As such, it is the ideal universal internal cylindrical grinding machine for the entry-level segment and expands the broad portfolio of internal cylindrical grinding machines.

Like all STUDER cylindrical grinding machines, the S100 also has a Granitan® machine bed — an absolute must for consistently good grinding results. In addition to a fixed wheelhead, it can be configured with a manual wheelhead with a 2.5 degree Hirth coupling or an automatic wheelhead with a one degree Hirth coupling. This allows the machine to be equipped with up to two internal grinding spindles or one internal and one external grinding spindle. A synchronous motor drives the grease-lubricated ID and OD belt-driven spindles. The soft design of the machine enclosure promises maximum functionality at minimized costs.

AUTOMATION OPTION

With this configuration, the S100 is ideally suited for elementary grinding of a universal range of parts with basic geometrically defined shapes and also contours that can be generated with two interpolating axes. It also has all the prerequisites for the external and internal machining of flange parts, and the grinding of special shapes such as threads and non-circular forms. Typical workpieces are collet chucks for tool making, bearing rings and cylinders, as well as hydraulic control valves in small series. Optionally equipped ex works with a loader interface and an automatic operating door, the S100 is ready for automation and thus for the production of larger series.

CONTACT:

Kaspar.Schaerer@studer.com

TECHNICAL DATA AT A GLANCE

- Max. workpiece length: 550 mm
- Max. swing diameter 425 mm
- Max. (ID) grinding diameter: 180 mm
- Max. Diameter (ID) grinding wheel 63 mm
- Number of revolutions (ID) spindles: 20,000/40,000/60,000 rpm
- Max. diameter OD Grinding Wheel 400 x 40 x 127 mm F1N (16 x 1.5 x 5" Form1N)
- Workhead: ISO50/110 chuck workhead or MK4/70 chuck workhead
- Machine dimensions W x D x H: approx. 3090 x 2090 x 1990 mm (121.6 x 82.3 x 78.3")
- Machine weight: approx. 4,500 kg (9,920 lbs)

THE FIRST OF ITS KIND

The HELICHECK NANO is WALTER's first automated measuring machine for user-independent measurement of microtools in the nano range



THE TREND TOWARDS MINIATURIZATION in electronics, micromechanics and medical technology is driving demand for micro- and nanotools. Given that these tiny tools have diameters of less than one millimeter (0.04"), comprehensive measurement is not possible. For the current crop of measurement methods — including attempts to measure tools using microscopy — humans tend to be the most common error factor. In addition, some measurements require the destruction of the tool, for example when measuring the rake angle of tools with end face geometry. "Manufacturers must then hope that the other tools are truly identical to the measured ones. There is no proof," explains Bernd Schwennig, who is responsible for project management of measuring technology at WALTER.

HELICHECK NANO takes a different approach. This solution from WALTER offers manufacturers of micro- and nanotools non-destructive and user-independent measurement of their products. The new measuring machine reliably measures tools starting at diameters of 0.1 millimeter (0.004") in transmitted or reflected light. This is made possible by a new variable optics system with up to 800x magnification, based on microscopic reflected light measurement technology. In combination with high-resolution cameras, this microscopic optics system forms the basis for measurements in the nano range. The variable magnification also enables measurements on standard tools up to 16 millimeters (0.63") in diameter.

MEASURING LARGE SERIES OVERNIGHT

At the mechanical level, the HELICHECK NANO works similarly to its bigger siblings, the fully automatic HELICHECK PRO and HELICHECK PLUS measuring machines.

Like them, it has a solid granite base, which is crucial for the highest certified measurement accuracy and reliable measurement results. The fixed cameras are securely protected from dust and from external light in the machine's enclosed measuring space. The HELICHECK NANO also offers the option of automation. "Pallets with up to 7,500 tools can be measured automatically overnight without any operator involvement. This is an absolute innovation in the measurement of micro- and nanotools," says Bernd Schwennig. Tools that do not meet the specifications are sorted out as rejects.

Although the measurement options of HELICHECK NANO are already impressive, they will be expanded in the future to include additional functionalities such as cutting edge rounding, 3D digitalization and measurement of surface conditions.

CONTACT:

Bernd.Schwennig@walter-machines.de



The microscopic optics of the HELICHECK NANO allow measurements in the nano range

THE ADVANTAGES OF HELICHECK NANO AT A GLANCE:

- Tool diameter 0.1 to 16 mm (0.004 to 0.63")
- Non-destructive microscopic reflected light measurement
- Works independent of operator
- Can be automated
- Highest measurement accuracy and repeatability



The HELITRONIC MINI PLUS is flexible and individually configurable

MAXIMUM FLEXIBILITY

The individually configurable HELITRONIC MINI PLUS tool grinding machine grinds rotationally symmetrical tools with complex geometries and diameters from one to 16 millimeters in one clamping

WHETHER FOR PRODUCTION OR REGRINDING, as a cost-effective basic machine or as a fully automated tool grinding machine: The new HELITRONIC MINI PLUS can do it all. "The basic version of the HELITRONIC MINI PLUS can be individually configured with various efficiency options and loading systems — right up to the fully equipped high-end tool grinding machine for all current and future applications in the small and medium diameter range," explains Siegfried Hegele, product manager for applications at WALTER.

The basis for the exceptional flexibility of the HELITRONIC MINI PLUS is the unique WALTER portal design. Economical production of standard and complex geometries is ensured by the high-performance HSK belt-driven spindle with two spindle ends for up to six grinding wheels (standard equipment). The revolutionary C.O.R.E. hardware and software architecture also delivers intuitive operation, setup, operation, networking, and maintenance of the machine.

MULTIPLE OPTIONS FOR INCREASED EFFICIENCY

WALTER offers a wide range of options for the HELITRONIC MINI PLUS for application-specific configuration. This includes, for example, an automatic grinding wheel changer for up to six grinding wheel adapters (maximum diameter 152.4 millimeters [6 "]), as well as a coolant distributor that ensures safe wheel set changes and maximum flexibility. The "torque increase" option is also available for machines with a wheel changer. It can increase the torque and removal rate by up to 60 percent, guaranteeing maximum productivity.

To automate the HELITRONIC MINI PLUS, users can choose between a top loader and a robot loader with three different equipment packages that promise even greater flexibility. A top loader integrated into the working space offers a space-saving and cost-effective automation solution. Depending on the tool diameter, it holds up to 500 tools. The robot can load up to 7,500

tools depending on the tool diameter or type of tool. The maximum tool weight is five kilograms (11 lbs), the maximum diameter 125 millimeters (4.92").

CONTACT:

Siegfried.Hegele@walter-machines.de

TECHNICAL DETAILS

- Diameter for production: 1 to 16 mm (0.004 to 0.63")
- Diameter for regrinding: 3 to 100 mm (0.19 to 3.94")
- Machining length 255 mm (10.04")
- Tool weight: up to 30 kg (66 lbs)

BENEFITS AT A GLANCE

- Individually configurable
- Compact
- Dynamic
- Can be automated
- Efficient



Using the "laser contour check," high-accuracy measurements can be carried out fully contact-free



THE ADVANTAGES OF THE "LASER CONTOUR CHECK" AT A GLANCE

- Highly accurate measurement within seconds
- Automatic in-process correction of tool diameter and profile
- Suitable for automated series production
- Fewer rejects

INNOVATIVE LASER MEASUREMENT

The new "laser contour check" intelligent measuring system enables contact-free measurement in the machine

INTEGRATED TACTILE MEASUREMENT is standard equipment on WALTER grinding and eroding machines. It is now supplemented by the new "laser contour check" option. The innovative measuring system for high-precision, contact-free measurement of a wide range of parameters on cylindrical tools with diameters from one to 52 millimeters (0.04" to 2.05") can also be integrated into grinding and eroding machines. The measuring unit moves into position when required. An innovative blue laser registers the tool profiles and contours along its length and diameter, whether partial or complete. Unlike tactile probes, the laser cannot wear out, which eliminates the risk of measurement errors or potential damage to cutting edges.

Measurement takes place directly via analog laser beam along the entire tool contour, not just selectively as is the case for tactile or digital measuring methods. The system is also fast and accurate. For example, a diameter measurement, including cleaning, takes no more than 16 seconds (depending on the tool type) — with an absolute accuracy of $\pm 1.5 \mu\text{m}$ (60 mil). Deviations can be scanned and compensated for directly in the process. Operators can easily program or adjust optimized program sequences for cleaning the tool with compressed air and compensating for deviations.

CONTACT:

Siegfried.Hegele@walter-machines.de

+150,000

MACHINES AND INSTALLATIONS

have been delivered to date worldwide by the companies of the UNITED GRINDING Group

13

LOCATIONS

for the UNITED GRINDING Group in Europe

>100

YEARS OF GRINDING TRADITION

in Germany and Switzerland

AROUND THE WORLD IN ONE DAY

Around 2,500 people worldwide work on behalf of the UNITED GRINDING Group at making our customers successful

TEXT: Markus Huth

WE ARE WHERE YOU ARE, the UNITED GRINDING Group's motto, is a promise to our customers around the globe that they can count on world-class service. The Group's high-precision machines for surface and profile grinding (BLOHM, JUNG, MÄGERLE), cylindrical grinding (STUDER, SCHAUDT, MIKROSA), tool grinding (WALTER, EWAG), and additive manufacturing (IRPD) are in high demand worldwide and can be found everywhere from large industrial companies to mid-sized and small workshops. There are 13 UNITED GRINDING sales, service, R&D, and production sites in Europe alone, where the Group's companies have a tradition of more than 100 years in Switzerland and Germany. In addition, customers benefit from the Group's cooperation with trustworthy partners, such as in Turkey with the large CNC machine provider Form Makina. And so UNITED GRINDING customers in Europe always find good service: from Ireland in the west to the far east of Europe.



 IRELAND

AT THE WESTERN EXTREME

9:00 A.M.



IN THE CITY OF LIMERICK, our partner company Acorn Processes is the westernmost representative of the UNITED GRINDING Group in Europe. Under the leadership of Pat Murphy, who worked for STUDER back in the nineties, customers of BLOHM, JUNG, and STUDER are provided with expert advice and world-class technical service.

 IRELAND

 GERMANY

 CZECH REPUBLIC

 SWITZERLAND

 TURKEY



"OUR WORLDWIDE NETWORK LETS US QUICKLY AND COMPETENTLY SERVE OUR CUSTOMERS."

*Paul Kössl,
Head of Business Development & Marketing
UNITED GRINDING Group*

PRECISION AND QUALITY

UNITED GRINDING machines enjoy an excellent reputation all over the world

>1000
EMPLOYEES

ensure the customer success in Europe

>20

LOCATIONS AND REPRESENTATIONS for the UNITED GRINDING Group around the world

 **SWITZERLAND**

HISTORY OF GRINDING

9:30 A.M.

**QUALITY, TRADITION, AND MODERNITY:**

that's what Switzerland stands for like no other country. It is thus fitting that the UNITED GRINDING Group makes its administrative headquarters in the capital city of Bern. After all, the oldest company in the group was founded here in the canton when Fritz Studer opened his small workshop in 1912. STUDER has since grown into an international company with several hundred employees and over 24,000 systems installed worldwide. MÄGERLE in Fehraltorf and EWAG in Etziken also have decades of tradition and are today one of the most renowned names in the machine tool industry. IRPD, a pioneer in additive manufacturing in St. Gallen, is also part of UNITED GRINDING.

 **GERMANY**

TECHNOLOGY LEADER

10:15 A.M.



THE UNITED GRINDING GROUP ALSO HAS OVER 100 YEARS of GRINDING history in Germany. BLOHM was founded in Hamburg in 1924, JUNG in Berlin in 1919, and WALTER in Düsseldorf in 1919. Like their Swiss sister companies, these names have become an integral part of the machine tool industry, and developed in some areas, into international technology leaders, for example, BLOHM in the manufacture of aircraft turbines. It is therefore not surprising that the German UNITED GRINDING companies have already delivered several tens of thousands of systems worldwide, and continue to serve those customers with a competent service network.

 **CZECH REPUBLIC**

BASE

10:45 A.M.



BACK IN 1996, WALTER founded a large branch in Kuřim, near the Czech metropolis of Brno. Today, components for numerous machines of the UNITED GRINDING Group are manufactured here. Several hundred employees work in one of Europe's most modern machine tool production facilities and benefit from excellent career and continuing professional development opportunities. Multiple investments have been made to expand and modernize the site, including the 2014 expansion of mechanical precision manufacturing and the construction of a 2,500-square-meter assembly and logistics building (2017). In the end, everyone benefits: the customers, the employees, and the company.

10:45 A.M.



 **ISTANBUL, TURKEY**

STRONG PARTNER

WITH AROUND 10,000 CUSTOMERS, the CNC retail chain Form Makina is one of the largest in Turkey and is a strong partner of the UNITED GRINDING Group. The company, which was founded 30 years ago, is headquartered in Istanbul, with branches in many other Turkish cities as well.



"WE HAVE BEEN WORKING WITH THE UNITED GRINDING GROUP IN OUR COUNTRY FOR 16 YEARS."

*Muhterem Sanko,
Managing Director of Turkish CNC
company Form Makina*

~20 YEARS
UNITED GRINDING present
in China

>250 EMPLOYEES
work every day for UNITED
GRINDING in Asia

TOP 3 IN INDIA
in the imported machine tools
segment



UNITED GRINDING IN ASIA

ASIA, THE WORLD'S MOST POPULOUS CONTINENT WITH ROUGHLY 4.6 BILLION INHABITANTS, is naturally also an important region for UNITED GRINDING. Our largest location is China, with a large production hall in Shanghai and a facility in Beijing. The company today enjoys a strong market position in the mid- and high-end sector thanks to many years of dedicated customer care, explains Rain Zhang, head of surface & profile grinding sales.

This same philosophy is also pursued several thousand kilometers further south at UNITED GRINDING India. There are 18 employees working at the headquarters in Bengaluru in the state of Karnataka – and almost all of them speak several languages. “It’s a country with a wide variety of cultures and over 100 languages spoken,” says President C.R. Sudheendra.

The third important headquarters of UNITED GRINDING is located in Asia many thousands of kilometers further east: Japan. Due to its great demand for machines tools for fields like the automotive industry or toolmaking, the high-tech country is a very important market – and home to a highly competitive market with numerous international and domestic manufacturing companies. UNITED GRINDING has successfully earned a stable market share in this environment.

9

BRANDS

MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG and IRPD are found around the world, helping make customers successful

India has 22 official LANGUAGES,

with well over another 100 unofficial ones



TIMELINESS

is highly valued in Japan

30

NATIONALITIES

working together at UNITED GRINDING

 INDIA

REGIONAL EXPERIENCE

3:30 P.M.



UNITED GRINDING INDIA was founded in 2007, and recently expanded as a joint venture with Francis Klein, which has 70 years of experience in the sales and manufacture of high-precision machines in the region. UNITED GRINDING machines have also long enjoyed an excellent reputation in the country thanks to its sales partners.

 SINGAPORE

QUALITY MATTERS

4:00 P.M.



THE CITY-STATE OF SINGAPORE, the headquarters of WALTER EWAG Asia Pacific, is conveniently located on the maritime route between China, Japan, and Europe. The Asia-Pacific region (excluding China) is managed from here, including Japan, Taiwan, and South Korea. Customers of STUDER can also rely on excellent service from distribution partner DKSH.



“UNITED GRINDING MACHINES HAVE BEEN PRESENT IN INDIA FOR A LONG TIME, HELPING MAKE OUR CUSTOMERS SUCCESSFUL.”

*C. R. Sudheendra,
President of UNITED GRINDING India*



“OUR RECIPE FOR SUCCESS LIES IN OUR CLOSE TIES TO OUR CUSTOMERS BECAUSE WE MAINTAIN CONTACT OVER YEARS.”

*Rain Zhang,
Head of Surface & Profile Grinding
Sales UNITED GRINDING China*

 CHINA

BIG IN CHINA

5:00 P.M.



THE LARGEST LOCATION IN ASIA of the UNITED GRINDING Group is China, with two large branches in the capital Beijing and Shanghai, the largest metropolis in the country. Roughly 200 employees in China are hard at work ensuring the success of our customers — through competent advice and top-notch technical service.

 JAPAN

IN THE HEART OF THE COUNTRY

5:30 P.M.



SINCE UNITED GRINDING JAPAN has grown organically from two components (STUDER and WALTER/EWAG), there are also two locations. In the capital city of Tokyo, the focus is on STUDER installations, while BLOHM, WALTER and EWAG customers are serviced from the southern Japanese city Anjō in the Chūbu region.



“CUSTOMERS IN JAPAN ARE DEMANDING AND EXPECT THE BEST QUALITY AND TECHNICAL SERVICE AT THE HIGHEST LEVEL.”

*Jun Ikeda,
President WALTER EWAG Japan*

10,200 m²

OF SPACE

The new head office built in Miamisburg, Ohio in 2017, represents the strong market position in the region

1984

ALMOST 40 YEARS OF QUALITY

UNITED GRINDING North America was founded in 1984

COMMUNITY

UNITED GRINDING is a good corporate citizen in North America, offering scholarships and events



 CANADA

OUR PARTNER IN CANADA



HIGH-PRECISION PRODUCTION SOLUTIONS

are the specialty of Machine Tool Systems, the UNITED GRINDING Group's trusted partner in Canada. Founded in 1998, with locations in the cities of Toronto and Montreal, the company is managed by President John Manley and offers customers of MÄGERLE, BLOHM, STUDER, WALTER and EWAG competent advice and expertise in purchasing, installation, maintenance, and service.



UNITED GRINDING'S

SUCCESS is made possible by the commitment and dedication of its employees — modeled by Hans Ueltschi, who was on hand at the first North American site in the eighties. To provide the quickest possible help to a customer whose machine tool had failed, the young technician rented a single-engine Cessna and flew with his colleague Nick Schuetz to Norwood Airport in the state of Massachusetts. Today, Ueltschi is vice president sales cylindrical division.

200

EMPLOYEES

work for UNITED GRINDING
North America

60 % of the machines installed

by UNITED GRINDING in North America can be
reached from Miamisburg by car in no more
than five hours

WIN-WIN

SYMBIOTIC SUCCESS

Customer success is always shared by
UNITED GRINDING, and vice versa

 USA

HEADQUARTERS IN NORTH AMERICA

NOON



UNITED GRINDING NORTHAMERICA'S MODERN HEADQUARTERS were built only five years ago and offer 10,200 m2 for production, development, service, sales, and office space. In total, more than 200 employees work to ensure customer success in North America. Things started much more humbly in 1984, under the name Hauni-Blohm-Schaudt in the east coast American state of Virginia. The employees' tremendous dedication has brought the company to a strong market position, where it can quickly reach customers in the USA and Canada from its centrally located Miamisburg, Ohio facilities.

 MEXICO

BRIDGE TO LATIN AMERICA

12:30 P.M.

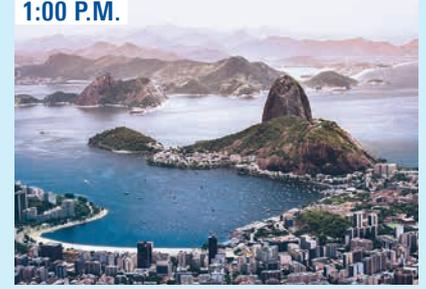


WITH A STRONG PRESENCE in Mexico and several employees, UNITED GRINDING supplies customers in Latin America with machines and systems from all the Group's brands and provides services such as maintenance, repair, and consultation. The city of Santiago de Querétaro in the state of the same name is ideally located to reach various regions quickly.

 BRAZIL

TRUSTED COOPERATION

1:00 P.M.



ON THE BRAZILIAN MARKET, UNITED GRINDING customers can rely on the competent service of the machine specialists at Tecno-How with locations in Valinhos and São Paulo. The company, which focuses on South America, specializes in high-quality systems and complete solutions for state-of-the-art manufacturing in the automotive, aerospace, medical, and energy sectors. The strong partnership with UNITED GRINDING has been in place since 2017. The expert technical staff delivers customer support, technical advice, and training.



"FROM MIAMISBURG, WE CAN OPTIMALLY COVER THE MARKET FOR CYLINDRICAL, SURFACE, PROFILE AND TOOL GRINDING MACHINES IN THE USA AND CANADA."

*Jacob Baldwin, Director of Corporate Marketing
UNITED GRINDING North America*



"MASS-PRODUCED COMPONENTS OR HIGH-MIX, LOW-VOLUME PRODUCTION: UNITED GRINDING CAN SATISFY ANY REQUIREMENT AND HELP OVERCOME CHALLENGES."

*German Gordillo, Managing Director
UNITED GRINDING Mexico*





BETTER DATA FOR INDUSTRY

The collection and evaluation of large quantities of data (Big Data) enable more targeted decisions toward increasing operational efficiency. But the potential has not yet been fully tapped

TEXT:Philipp Gölzer

IT WAS ALMOST EXACTLY 100 YEARS AGO THAT the first car rolled off the assembly line. The Ford Model T was revolutionary not just as a product, but also for the industrial production that went into it. Around 15 million units were produced for the mass market in the USA. Even back then, data played an important role: Quantities produced, employee hours, raw materials consumed, rejects, delivery times, prices, and many other factors were of interest to Henry Ford, a famously clever businessman. He ensured that they were regularly reviewed to optimize production. By the time they ended production of the vehicle, assembly times for one vehicle had fallen to roughly one and a half hours instead of twelve.

In this early phase of industrialization, the number of units produced in particular was an important parameter. If the daily target was missed, then a great deal of time was spent trying to determine why. Thanks to comprehensive sensor technology and networking, industry can now access infor-

mation about all processes in real-time and, if necessary, take corrective action. Every forklift, every robot, every machine tool and many other components in a modern production facility can be part of this network.

MACHINES COLLECT DATA VIA STATE-OF-THE-ART SENSOR TECHNOLOGY

The advantages are obvious: The status and progress of an order can be viewed in real-time. Instead of waiting until the end of a day or week, producers know at all times whether or not there is a problem with an order, and can take appropriate measures in very short cycles. Or, if the data provided by Logistics suggests a problem with the delivery of raw materials or components, produc-

tion can be changed to prioritize available components. In addition, analyzing process data allows manufacturers to improve efficiency continuously. Are there deviations in the temperature of a machine? Is there an unusually large amount of rejects? Is energy consumption within expected limits? These and other questions can be answered by machine learning based on the collected process data. Without consistent data collection and corresponding evaluation, it is hardly possible today to increase the performance, process quality, and automation of industrial production.

However, digitization of industrial processes is not a blueprint. Rather, each company must develop its strategy adapted to the product, working method, supply chains, and competitive situation. In addition to specific production processes, questions such as: Should production be as cost-effective as possible in a fiercely competitive environment? Or is does achieving the highest possible quality matter first and foremost? Or is

Left picture: This is what a quantum computer looks like, a new technology that could revolutionize our ability to interpret data

175,000,000,000,000 GIGABYTES

In 2025, the global data volume will be 175 trillion gigabytes (175 zettabytes).
A modern car produces around 600 gigabytes per day

CO₂ neutrality at the forefront? Depending on the objectives of the company, it is necessary to develop specific use cases and to collect and evaluate the necessary data.

THE LIMITS OF TODAY'S AI

One aspect that must never be overlooked in these considerations is IT security and data protection. Although personal data is generally not exchanged between providers and customers, process data is. If you want to benefit from the advantages of modern software and higher efficiency, networking and data exchange across the value chain are essential. Remote maintenance and regular updates are also major advantages of modern machines. In principle, companies have two options here: setting up their own servers and cloud services with appropriate protection or using open cloud systems, such as those from Amazon or Microsoft. In any case, trust between providers and customers and transparency in communication are important.

But at this point, we have to ask ourselves: What is already possible right now in terms of data analysis, and what are the limits? Clearly, the progress made in the areas of artificial intelligence (AI) and machine learning is breathtaking. A modern car is estimated to generate more than 600 gigabytes per day, with global data volumes expected to exceed 175 trillion gigabytes in 2025, according to a study by the International Data Corporation (IDC). While nobody can keep

track of such quantities, modern hardware and software can visualize, classify, and categorize them, recognize patterns and structures, and create forecasts based on them.

INDUSTRY NEEDS TO COLLECT MORE RELEVANT DATA

For example, an AI application today can most likely predict whether a workpiece that is still in production will end up as a reject. Another might provide information on which machine parameters can be used to produce a workpiece in a more energy-efficient manner. This is impressive, but it shows the limit of today's AI: It deals with small-granular issues and often requires humans as the final decision-making body. Higher-level

questions of an overall process chain cannot yet be supported or optimized with AI. R&D aims to develop more robust AI applications that answer operational questions and implement autonomous decisions based on them. In addition to the corresponding quality and quantity of the underlying data, this requires high-performance data processing. The latter is opening up new dimensions thanks to the development of quantum computers.

To date, industrial data has been generated primarily as a "waste product" of existing operational application systems (e.g. PLC, MES, ERP), whose primary task is the planning and control of productive operations; for example, sensor data (temperature, speed), transactional data (production orders, transport orders), or master data (material, work plans).

However, for high-performance AI applications, the processes must be reconsidered and redesigned from the perspective of AI data requirements. Which data is required in which quantity and quality in order to implement specific use cases? With such data, it will be possible in the future to create comprehensive and individual profiles for machines, including their strengths and weaknesses for certain situations and tasks. Ultimately, advances in AI will free people from routine activities and enable them to use their cognitive skills more intensively to optimize and innovate processes and products. ○

ABOUT

PROF. PHILIPP GÖLZER

Philipp Gölzer is the Business Area Coordinator for Digitized Production at the Fraunhofer Institute and Professor of Digital Factory and Material Flow Systems at TH Nuremberg. He wrote his dissertation on the topic of Big Data in Industry 4.0.





**LARGEST SHOW
FOR MACHINE
TOOLS IN CHINA**

APRIL 10–15, 2023,
BEIJING, CHINA



FOR MANY YEARS, THE CHINA INTERNATIONAL MACHINE TOOL SHOW (CIMT) has been the most important show for machine tools in the country and one of the largest in the world. The UNITED GRINDING Group will be represented at the international exhibitioncenter in Beijing (Shunyi Hall) in April, where CIMT will be held for the 18th time. A total of 1,500 exhibitors from 27 countries and regions are expected, presenting their latest products and technologies in the approximately 140,000 square meters of exhibition space. The most recent show in 2021 attracted an industry audience of more than 122,000 visitors. The UNITED GRINDING Group's exhibition area is led by UNITED GRINDING China, which serves customers of all brands within the Group from two large locations in Beijing and Shanghai. One focus at CIMT is current technologies in the field of metalworking machine tools, as is measurement and laser technology, as well as new automation and software solutions. The UNITED GRINDING Group and its companies are innovation leaders in many of these fields, and look forward to direct exchange with experts and show visitors.

18th China International Machine Tool Show (CIMT), April 10–15, 2023, Beijing, China, www.cimtshow.com

EXHIBITION CALENDAR:



JANUARY 2023

JANUARY 19–25, 2024
IMTEX –
BENGALURU, INDIA



MARCH/APRIL 2023

MARCH 30–APRIL 1, 2023
MECSPE –
BOLOGNA, ITALY



APRIL 2023

APRIL 10–15, 2023
CIMT –
BEIJING, CHINA



MAY 2023

MAY 9–12, 2023
CONTROL –
STUTTART, GERMANY



MAY 15–19, 2023
LIGNA –
HANNOVER, GERMANY

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www.grinding.ch/en/events**



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