

Motion

01.2022
The UNITED GRINDING Group's
customer magazine

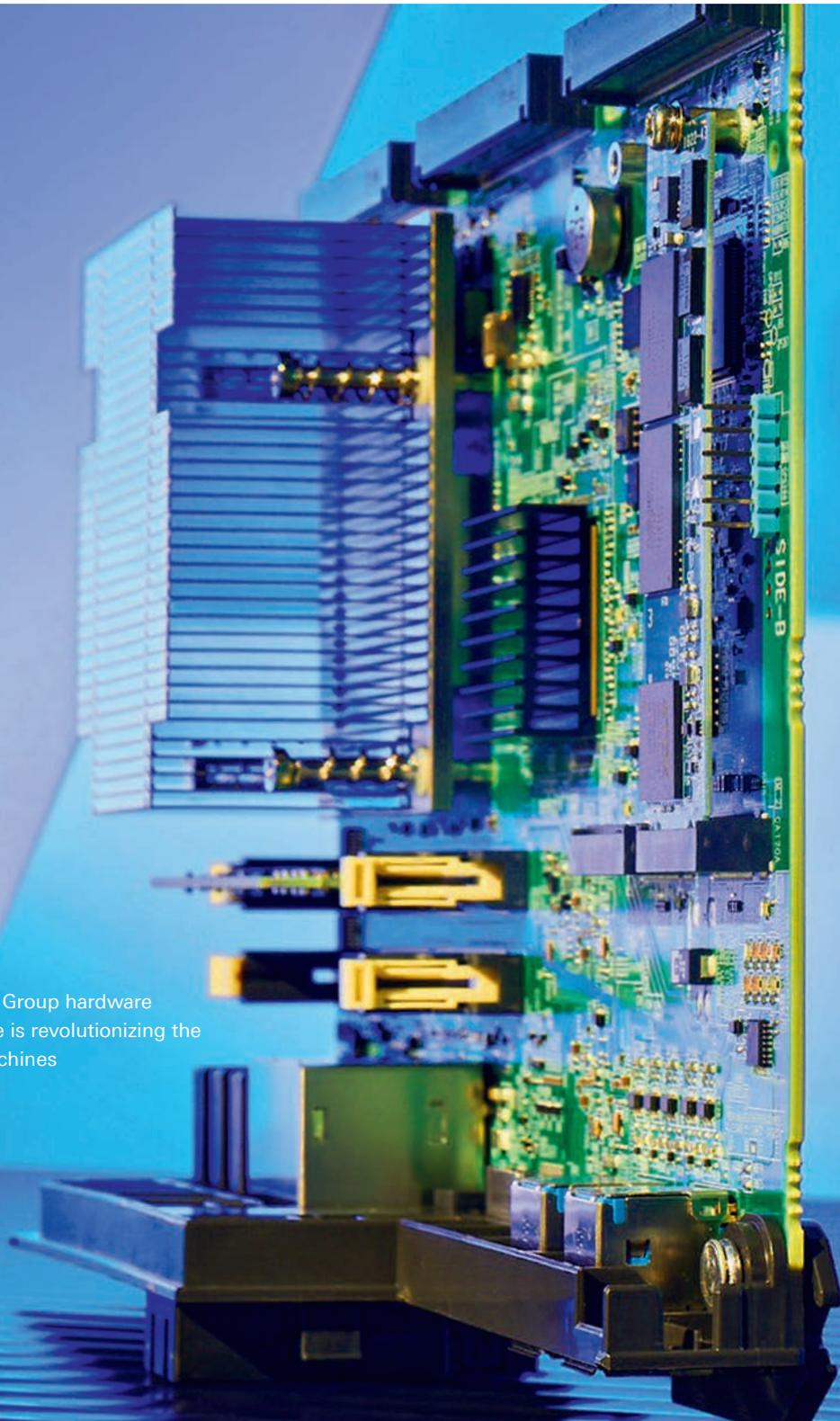
**INDEPTH
INTERVIEW
IDEAS**

Climate protection: good for the environment and companies
How does the industry handle resources efficiently?
An increasingly complex economy must be crisis-resistant



THE HEART OF C.O.R.E.

How UNITED GRINDING Group hardware
and software architecture is revolutionizing the
operation of grinding machines





26



18



8

IN THIS EDITION OF MOTION, YOU WILL FIND:

- 3 **WELCOME**
CEO Stephan Nell on the industry of tomorrow, climate protection, and C.O.R.E. technology
- 4 **A LOOK INSIDE ...**
... the C.O.R.E. motherboard
- 6 **NEWS**
News from the UNITED GRINDING Group
- 8 **INNOVATION**
Following the introduction of the revolutionary cross-brand operating system, the developers present an update on C.O.R.E.
- 14 **INDEPTH**
Trade fairs have become increasingly digital due to the pandemic. What does this mean for the industry?
- 16 **INSIDE**
A new generation of software professionals working with an experienced team
- 18 **INTERVIEW**
Technical discussion on climate protection in mechanical engineering and the consequences of increasing efficiency
- 24 **INDEPTH**
What is the UNITED GRINDING Group already doing right now to protect the climate?
- 26 **A DAY WITH ...**
... Daniel Schafroth. The Systems Division Manager at STUDER creates custom machines
- 29 **TOOLS & TECHNOLOGY**
STUDER has a new SmartJet® machine and automatic loading systems. WALTER provides 3D laser measurement, new functions for TOOL STUDIO 3, and now sells the COMPACT LINE. In addition, a report from BLOHM customer Axito GmbH
- 36 **INTERNATIONAL**
Why the machine tool industry in Switzerland recovered from the consequences of the pandemic better than elsewhere
- 40 **IDEAS**
Has the global economy become too complex for people?
- 43 **INTOUCH**
The Motion calendar: Important shows and events

EDITORIAL DETAILS

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“OUR CUSTOMERS ARE WELL PREPARED FOR THE FUTURE THANKS TO MACHINES WITH C.O.R.E.”

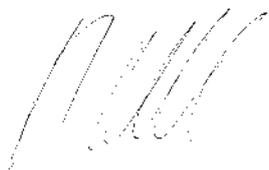
DEAR READERS,

The new **cross-brand C.O.R.E. technology** in our machine tools is already making day-to-day work faster, more user-friendly, and more cost-effective. Above all, our technology and software departments have created a smart and networkable system that prepares our customers **for the industry of tomorrow**. The cover story of this issue of Motion focuses on this topic and more. As great achievements always rely on **teamwork and the people involved**, we will also present **some of our software experts**.

Last year, we presented C.O.R.E. directly to the trade show audience at EMO in Milan with a spectacular show (in compliance with strict hygiene measures). And as trade shows are becoming ever more virtual due to the COVID-19 pandemic, the article on page 14 discusses **why digital tools cannot replace in-person events**, but can certainly enhance them.

Fortunately, the **mechanical engineering industry in Switzerland** has recovered from the pandemic faster than in other countries. Find out which factors were pivotal in this recovery in the International section.

We also take a look at **climate protection and sustainability** and show the positive contribution already being made by the companies in our group. A fundamental first step is always to increase the efficiency of machines, which saves resources on multiple levels. But the goals of climate protection and the way we approach them also have an **impact on our industry** as a whole. I discuss these with two experts in the Motion interview on page 18.



Stephan Nell
CEO, UNITED GRINDING Group



Stephan Nell,
CEO, United Grinding Group

COVID-19 PANDEMIC:

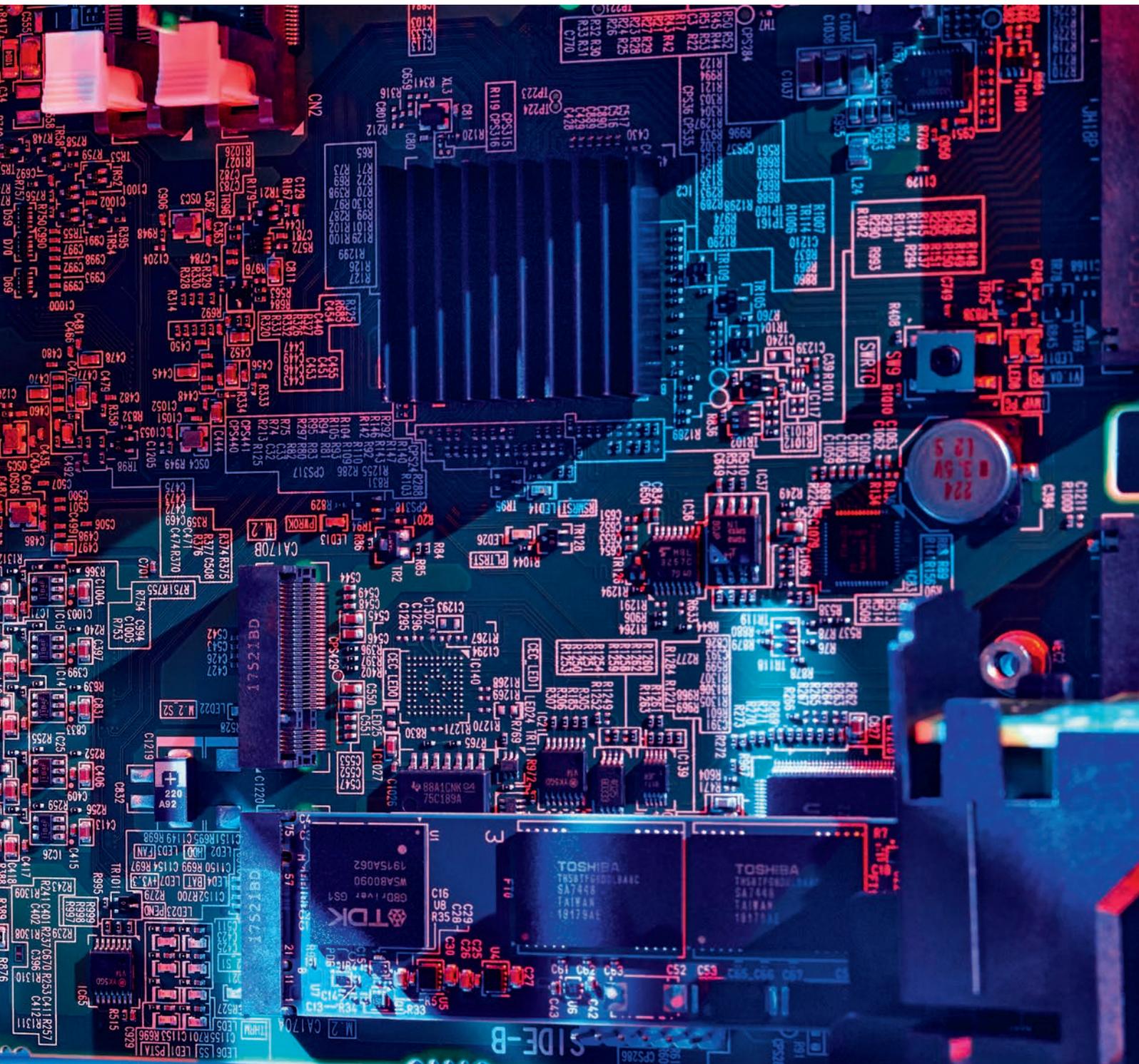
The UNITED GRINDING Group complies strictly with hygiene regulations and social distancing rules and followed these measures rigorously when producing the articles for this issue of Motion



P.S.: Dear reader, your opinion is very important to us. So we would like to ask you how you like Motion, which parts are of particular interest to you, and whether you prefer to read the printed magazine or the digital version online. If you subscribe to Motion, we will invite you to participate in this survey by email. Alternatively, you can also access the survey via this QR Code. Many thanks!



Photo: Maya & Damiale



I AM C.O.R.E.

This is one of the mainboards on which the smart, cross-brand C.O.R.E. technology does its work. The board's brain is a powerful, latest-generation, high-end multicore processor (CPU). All components are robust, suitable for industrial use, durable and work in an extended temperature range. This C.O.R.E. control center is found in new machines made by the UNITED GRINDING Group and was specially designed for high-performance applications in the Internet of Things.

USA

ONLINE GRINDING ACADEMY OPENS

THE EX-BOXER Titan Gilroy has opened the ONLINE GRINDING ACADEMY. Following exemplary rehabilitation, the former inmate has today established himself as an expert for CNC machining in the aerospace industry and as a successful entrepreneur. He is also the USA brand ambassador for the UNITED GRINDING Group.



GERMANY

C.O.R.E. NOMINATED FOR DESIGN PRIZE



NEW C.O.R.E. TECHNOLOGY from the UNITED GRINDING Group has been nominated for the renowned UX Design Award. The prize is awarded by the

International Design Center (IDZ) in Berlin to honor outstanding design and user-friendliness. The jury is composed of international experts from industry and business.

GERMANY

WALTER APPRENTICES BUILD A GRINDING MACHINE

APPRENTICES at WALTER constructed a complete tool grinding machine over a period of two years. The machine is a HELITRONIC POWER SL that grinds milling cutters and drills with the highest precision. The project involved four mechatronics technicians in the third and fourth years of their apprenticeships. The grinding machine is of such high quality that it is now used in daily work at the plant. The project demonstrates the very high quality of training provided at the UNITED GRINDING Group companies.

SWITZERLAND

STUDER INVESTS IN BIEL AND THUN

STUDER HAS INVESTED IN EXTENSIVE conversions and expansions of its Swiss production sites. Due to the very satisfactory growth of the internal grinding business, the hall layout of the Competence Center in Biel has been optimized to house a larger number of machines. The measuring room and the Customer Center were also extended. Furthermore, the expansion of large-scale cubic production at the Thun site involved one of the largest investments made in recent years.

SWITZERLAND

SPONSOR OF SWISSKILLS

TO PROMOTE YOUNG TALENT, the UNITED GRINDING Group is supporting this year's Swiss professional championships held in Bern. From September 7 to 11, 1,000 young people will be presenting 150 professions at the Bernexpo site. During the five-day major event, competitors from all over the country will compete to be crowned champions in 80 different vocational categories.



swiss skills
2022

CZECH REPUBLIC

SALES OF THE HELITRONIC G 200 GO GLOBAL

STARTING THIS YEAR, the HELITRONIC G 200 tool grinding machine produced in Kuřim and initially only intended for the Asian market will also be marketed worldwide by WALTER. The machine has sold very successfully to date. It can produce and resharpen rotationally symmetrical tools with a diameter of up to 125 millimeters and a maximum weight of 12 kilograms. The integrated, swiveling 21.5-inch multifunction touch panel with included control software is particularly user-friendly. Its footprint of just 2.3 square meters makes it ideal for all production sites where space is limited.



CHINA

GRINDING COMPETITION USING WALTER MACHINES

DUE TO THEIR HIGH QUALITY and precision, WALTER tool grinding machines were selected for use in grinding competitions in the Chinese city of Changzhou. Every year, the China Metal Cutting Tool Engineering Association (CMCTEA) organizes two international competitions in which the best grinding operators compete on WALTER machines. These competitions are extremely significant for demonstrating the capabilities and high standards of intelligent CNC-tool manufacturing present in China. Last year, around 1,000 competitors took part.



CHINA

TWO NEW STUDER MACHINES

STUDER HAS DEVELOPED two new grinding machines to meet the demands of the local Chinese market. The KC33 and the ecoGrinder entry-level machine were launched with an impressively staged unveiling show. Both machines are unbeatable value for money. The machines can be used in a wide range of applications, from high-precision machining of spindles to processing valve bodies, impellers, and gears.

Photo: SwissSkills/Michael Zanghellini

INDIA

JOINT VENTURE WITH FRANCIS KLEIN



THE UNITED GRINDING GROUP and Francis Klein, our long-standing partner company in the Indian market, are pooling our expertise in a joint venture. The Bangalore-based joint venture is headed by C. R. Sudheendra,

former president of UNITED GRINDING INDIA LLP. This is intended to further expand our prominent position on the Indian market. "Francis Klein is a powerful partner that shares our commitment to quality and our concept of good service," says Stephan Nell, CEO of the UNITED GRINDING Group. Francis Klein has sold high-precision machines on the Indian market for more than 70 years. The two companies are bound by a long-standing, trusting partnership in consulting, sales, and service for precision grinding, electrical discharge, laser cutting and measuring machines made by the UNITED GRINDING Group.

A portrait of Urs Diergardt, a middle-aged man with short grey hair, wearing a dark button-down shirt. He is looking slightly to the right of the camera with a neutral expression. The background is a soft, out-of-focus blue gradient.

“C.O.R.E. MAKES WORK
MORE FUN — AND OUR
CUSTOMERS ARE FULLY
PREPARED FOR FURTHER
DIGITALIZATION.”

URS DIERGARDT,
HEAD OF UX AT
UNITED GRINDING

FASTER, BETTER ...

Since its launch last year, C.O.R.E. has revolutionized the operation of grinding machines. Motion asked the developers what direct advantages they have already seen and what the future holds

TEXT: Markus Huth

PHOTOS: Natalie Bothur, Thomas Eugster



C.O.R.E.

“THANKS TO C.O.R.E., USERS FIND THEMSELVES
AT HOME ON ALL UNITED
GRINDING GROUP MACHINES.”

**TOBIAS GRIMM,
SOFTWARE DEVELOPER
AT WALTER**

EVERY CNC TECHNICIAN KNOWS THE PROBLEM: searching through a baffling screen of gray boxes and tiny numbers until you finally find the value you want. Next, you have to take off your gloves because the touchscreen only works without them or the keys on the keyboard are too small. And there are instructions printed on paper next to the machine telling you which sub-menus to use to find the production program you need. All of this takes time that would be better spent on the actual work.

But those days are over now that UNITED GRINDING Group has presented its cross-brand hardware and software architecture at EMO 2021 in Milan: C.O.R.E. The name could refer to the core of the machine, but actually is also an acronym for Customer-Oriented REvolution. A revolution that benefits customers—and is already doing so: the system is pre-installed on new machines.

Revolution is a strong word. Is it appropriate to use it? “Yes, certainly,” says Christoph Plüss, Chief Technology Officer (CTO) and organizer of the project. The software departments of all UNITED GRINDING Group brands worked together for six years to develop a market-ready, future-proof system for standardized machine design. “C.O.R.E. is already making our customers’ work much easier,” stresses Plüss.

MULTI-TOUCH PANEL CAN BE OPERATED WEARING GLOVES

One new feature immediately catches the eye. Every new machine with C.O.R.E. is equipped with a gleaming, 24-inch, multi-touch display in elegant black. “You can see the process overview even from a distance,” says Liliane Schmid-Funke, who was involved in user experience design. Gone are the days of being bewildered by umpteen tiny numbers in gray boxes and an antiquated keyboard. The C.O.R.E. user interface features self-explanatory icons similar to a smartphone and is among the most modern in the machine tool

industry, explains the graduate industrial designer. Furthermore, the large display can even be operated while wearing gloves.

During the development of C.O.R.E., the user was always the foremost consideration of the cross-brand development team when implementing functions, says Urs Diergardt, Head of User Experience. He adds that discussions with customers and within the team resulted in two different philosophies that had to be reconciled: on the one hand, experienced operators want to have control of all areas of the machine. On the other, the younger generation wants to work with smart and intuitive computer systems. And C.O.R.E. combines both of these approaches. "If you wish to, you can continue working as before. But using the new features will make your work more fun and increase efficiency."

So what exactly are these functions? Andreas Meier, C.O.R.E. Team Leader for Software Development, explains: "Now, multiple users can create separate profiles on the same machine and customize the layout of the panel for themselves." The system also features special user roles and permissions: users with programming knowledge can perform the more complex machine set-up tasks in the lower software levels for different workpieces and usage profiles.

Last but not least, C.O.R.E. is compatible with all CNC control units made by the UNITED GRINDING Group and the display can be simply switched to the native CNC interface at any time. However, operators can remain in the intuitive C.O.R.E. layout during day-to-day work. "The resulting system is clearer, meaning operators can familiarize themselves with the machine more quickly," says Meier. This alone makes an important contribution to cutting costs and reducing the error rates in any facility. And if you have any questions, expert remote support is quickly on hand via video call right on the display.

"USERS NEED LESS TRAINING
TIME AND HAVE A CLEARER
OVERVIEW. CUSTOMER SERVICE
CAN ALSO BE CONTACTED QUICKLY
AND EASILY VIA THE PANEL."

ANDREAS MEIER,
SOFTWARE DEVELOPMENT TEAM LEADER
AT WALTER





“THE C.O.R.E. TOUCHSCREEN USER INTERFACE IS ONE OF THE MOST ADVANCED IN THE MACHINE TOOL SECTOR.”

LILIANE SCHMID-FUNKE,
UX DESIGNER AT UNITED GRINDING

FIND YOUR WAY AROUND ON ANY MACHINE THANKS TO C.O.R.E.

But C.O.R.E. can do much more. “Anyone familiarizing themselves with a new machine from UNITED GRINDING can also easily find their way around other machines with C.O.R.E. technology thanks to the standardized user experience,” explains Tobias Grimm, Software Developer at WALTER. This is a huge advantage for customers with multiple machines because C.O.R.E. can link them thanks to an integrated, high-performance industrial PC. C.O.R.E. machines can even exchange data with third-party products via the integrated umati interface (universal machine technology interface).

C.O.R.E. can do all of this already and makes work more efficient, faster, and easier. However, Alexej Berger, Software Developer at BLOHM and JUNG, knows that it is equally important that customers continue to be well-positioned in the future. “We are currently developing further updates and applications,” he says, “which will run on all UNITED GRINDING machines thanks to the uniform architecture.”

What exactly can we expect here? Marcus Köhnlein, Head of Digital Business, answers: “Although C.O.R.E. is already one of the most advanced systems on the market, we are still only at the beginning.

We are currently working on extensions for the coming years that will help our customers save even more money.” One major topic is Human Machine Teaming, i.e.: how can man and machine work together most efficiently? For example, if someone has 30 years of experience in grinding, the machine should learn from this person. A young person in training, on the other hand, will be grateful for guidance from the software. From intuitive communication via the touch panel, mobile phone messages, or voice control, there is a multitude of possibilities.

PERFECTLY PREPARED FOR A DIGITAL FUTURE

CTO Christoph Plüss also agrees that the C.O.R.E. journey has only just begun. “The trend towards digitalization will continue to pick up speed,” he says. Thanks to better data evaluation, grinding machines will not only be able to service themselves in the future, but also to communicate with other software. Interfaces to accounting or logistics departments are just one example. “The customer should be able to concentrate fully on their product—the machine does the rest.” Of course, customers must always have full control over what data they share with whom.

“THE POSITIVE FEEDBACK FROM CUSTOMERS
ON C.O.R.E. IS OVERWHELMING.”

THOMAS BÄRTSCHI,
SOFTWARE DEVELOPER AT MÄGERLE



“THE CUSTOMER SHOULD BE ABLE TO CONCENTRATE
FULLY ON THEIR PRODUCT AND CORE BUSINESS —
THE MACHINE DOES THE REST.”

CHRISTOPH PLÜSS,
CHIEF TECHNOLOGY OFFICER
AT UNITED GRINDING



But it is certain that if you want to work more efficiently, simply, and cost-effectively today, there is no other choice but machines with C.O.R.E. It is pre-installed in all UNITED GRINDING Digital Solutions products and can be activated by purchasing a license. C.O.R.E. also provides remote support known for its quality and speed. This improves C.O.R.E. still further as the service specialists can access machine data directly when granted the appropriate authorization. This new technology perfectly prepares customers of the UNITED GRINDING Group for the trends of the future, such as increasing levels of digitalization and the more environmentally efficient use of resources. Thomas Bärtschi is a MÄGERLE software developer who attended EMO 2021 in Milan when C.O.R.E. was presented. In his words: “The positive feedback from our customers was absolutely overwhelming!”

INTO THE DIGITAL FUTURE WITH C.O.R.E.

Four key aspects make machines with C.O.R.E. fit for the digital age:

CONNECTIVITY

- Native data exchange between machines with C.O.R.E. technology
- Data exchange with third-party products via umati interface
- Runs autonomously in the customer's internal network, service requests to UNITED GRINDING via high-security server
- UNITED GRINDING Digital Solutions applications are already pre-installed and can be activated by purchasing a license

USABILITY

- 24-inch multi-touch display as command center of the machine and access point for the entire network
- Each user configures their user interface individually. This is called up automatically after logging in with an RFID chip
- The intuitive and uniform user interface of all UNITED GRINDING machines makes it easy to set up, operate, and maintain

MONITORING

- The Digital Solutions application Service Monitor knows when and what maintenance work is required based on the respective operating hours and indicates this in good time for every machine in the network
- When the user leaves the machine, the panel switches to Dark Factory Mode. Production progress and the machine state are also clearly visible from a distance
- The standardized collection and intelligent processing of data from all machines with C.O.R.E. creates transparency and supports process optimization with meaningful statistics
- Thanks to the Digital Solutions app, you can take the command center of the machine network with you wherever you go, even on a smartphone. Mobile help can be requested if required

PRODUCTIVITY

- The Digital Solutions app Production Monitor provides real-time insight into key production figures such as run-times, workpiece quantities, or downtimes on the C.O.R.E. panel
- The front camera and a Bluetooth headset enable the team to exchange information quickly directly on the machine

"C.O.R.E. IS ALREADY MORE
ADVANCED THAN ANYTHING ELSE
ON THE MARKET. AND YET IT'S ONLY
THE BEGINNING."

MARCUS KÖHNLEIN,
HEAD OF DIGITAL BUSINESS
AT UNITED GRINDING





The UNITED GRINDING Group exhibition booth at the EMO 2021 in Milan

BETWEEN

ANALOG

Trade and industry exhibitions are very important for the international marketing of UNITED GRINDING Group technology. But COVID-19 has led to the cancellation of live events and the digitalization of trade shows. What does this mean for the industry?

TEXT: Markus Huth

PHOTOS: Christian Santi

“WE WANT C.O.R.E.!” chant women and men dressed in black and holding up corresponding banners across the exhibition hall. A moment later, the faux demonstrators transform into a dance troupe under the curious eyes of the show audience and a spectacle of light and sound begins. UNITED GRINDING Group staged this sensational production last year to present C.O.R.E. And where? At a live trade show for the metalworking industry—the EMO in Milan, Italy.

“Trade shows are our most important platform for presenting new machines and new digital solutions,” explains Head of Global Marketing Paul Kössl. The Group and all its brands exhibit at an average of three to four leading international trade shows every year. In addition to the EMO, which alternates between Milan and Hannover, these shows include the CIMT in Beijing, CCMT in Shanghai, JIMTOF in Tokyo, and IMTS in Chicago, all held every two years. The GrindingHub in Stuttgart will be a new addition early this summer. The individual brands are also represented at special inter-

national trade shows, such as Control, often in cooperation with the local distributor.

“Our competitors exhibit at all relevant trade shows,” says Christian Dilger, Chief Sales Officer (CSO) at WALTER and EWAG. Customers know that all relevant brands will be represented at major trade shows. “And so we also need to be present to demonstrate the advantages of our products compared to those of our competitors.” Sandro Bottazzo, CSO at STUDER, agrees: “EMO 2021 in Milan has shown how important it was to engage in face-to-face dialogue with customers after a long period without exhibitions.”

IMPORTANT FOR NEW BUSINESS

The trade show audience will be talking about elaborate unveiling shows like the one for C.O.R.E. for many years to come, says Bottazzo. Furthermore, the purchase of grinding machines has a lot to do with trust that cannot be established without personal contact. For Wolfgang Benz, CSO at MÄGERLE, BLOHM and JUNG, trade shows are important both for existing customers

and new business. "No other distribution channel," he says, "offers the same level of efficiency." It is a good opportunity for customers to take a closer look at the machines, to touch them and compare them directly with those of the competition. "We are all familiar with this principle from our experiences in the private sector: we would never buy our dream car from a brochure without seeing it in person," says Benz.

Manfred Kirchgeorg, Professor of Marketing Management and Sustainability at the HHL Leipzig Graduate School of Management, agrees. "The lack of live contact at capital equipment trade shows and events has been a major challenge for new customer acquisition during the pandemic," he says. However, Kirchgeorg also sees opportunities in strengthening the digital approach. With some trade shows being canceled overnight due to the pandemic, there was no other option than to compensate using digital tools. "This involuntary crash course made us realize that digital communication can do more than we thought possible."

*Christoph Plüss,
CTO of the UNITED
GRINDING Group,
answering questions
about C.O.R.E. next
to the machine at the
EMO 2021 in Milan.
Direct contact of
this kind makes
in-person trade
shows so important*



DIGITAL AND LIVE EVENTS MUST COMPLEMENT EACH OTHER

In some cases, the amount of direct contact with customers even increased through the use of digital tools, such as video conferencing, while the cost for travel and expenses plummeted. We also need to consider climate protection and sustainability. We must evaluate and weigh up the benefits of traditional live trade shows with their effects on CO₂ emissions and associated network effects. "It will be interesting," says Kirchgeorg, "to see in which sustainable direction digital and physical forms of interaction and trade shows will lead us in the post-coronavirus phase."

But it is certain that physical interaction with a trade show audience will remain important in the future, especially in the capital equipment segment. Nevertheless, the use of digital tools during the pandemic has shown that we have a multitude of options. "Digitalization has not damaged the role of the trade show," says Paul Kössl. The benefits for everyone involved are enhanced, particularly when digital and live elements complement each other well, for instance by using data-based trade show preparation, better-targeted information on social media, or virtual reality apps at trade show booths. "In the end, reassurance and trust are essential for customers buying high-quality capital equipment, such as grinding machines," he says.

AND DIGITAL



C.O.R.E. was launched at the EMO 2021 in Milan with a spectacular show. These supposed demonstrators soon transformed into a performance group

DEVELOPMENT TODAY

A new generation collaborates with experienced team members in the software departments of the UNITED GRINDING Group. Motion introduces four of them

“I DEVELOP CUSTOM SOFTWARE ENVIRONMENTS.”

 **LARRY WILSON**

POSITION: Controls Engineer,
UNITED GRINDING North America, Miamisburg, USA

CONTACT: Larry.Wilson@grinding.com

“EVERY DAY BRINGS AN UNEXPECTED CHALLENGE; there’s never a dull moment,” says Larry Wilson. He enjoys the fast pace of his working day and often has to accommodate special customer requests at short notice. The trained computer technician has been with the company for 24 years and is currently working on CAD and CAM solutions for machine interfaces. He is also heavily involved in project management, for instance in the area of machine planning and configuration. Developing specialist software environments is particularly important. “Some customer machine configurations require a special software environment which we have to develop to close the sale of these machines,” Wilson explains. He contributes to the success of our customers with his knowledge and many years of experience.



“I WANT TO CONVINCe CUSTOMERS THAT OUR MACHINES ARE BETTER THAN THOSE OF THE COMPETITION.”

 **MARKUS ORSCHEL**

POSITION: Software Developer (C#),
EWAG, Etziken, Switzerland

CONTACT: Markus.Orschel@ewag.com

“I ENJOY CREATING APPLICATIONS that ultimately moves something on a machine,” says Markus Orschel. The engineer who specializes in IT is enthusiastic about interdisciplinary thinking in the machine tool industry. As a developer, he not only needs outstanding software expertise but also has to be able to think in terms of mechanics and electrics. In his day-to-day work, Orschel creates new laser developments in the programming language C#, maintains the ProGrind/LaserSoft software, and is learning to integrate new C.O.R.E. components. He has been with the company since 2017 and enjoys the teamwork and the pleasant working atmosphere. His day in the office begins with checking emails and a team meeting. After that there is a whole variety of tasks, from providing support in technical service, creating bug fixes, organizing a feature workshop, or testing machines. “Technology is constantly changing,” says Orschel, “and new functions and applications can convince customers that our machines are a better investment than those of the competition.”

“AS A PROGRAMMER, I LIKE TO KEEP AN EYE ON ALL AREAS OF THE MACHINE.”



ALEXANDER JASCHKE

POSITION: Software Developer (NC),
BLOHM JUNG, Hamburg, Germany

CONTACT: Alexander.Jaschke@blohmjung.com

“I LIKE WORKING THIS CLOSE TO THE MACHINE. I can immediately see the results of my programming work and have an overview of all areas from the user interface to the grinding cycles,” explains Alexander Jaschke. He joined the company in 2016 and studied mathematics with an emphasis on technology. “My focus has always been on programming and technical applications.” He is currently working on a new, complex machine type for the Chinese market. His tasks include the development of user interfaces and process cycles and adapting these to meet customer requirements. During his work, Jaschke exchanges ideas with colleagues in grinding technology who directly use and set up the software. This means that he learns about requirements and needs straight from the horse’s mouth. The young software developer explains: “It’s an atmosphere I enjoy working in.”



“WE DON'T MERELY WORK USING GENERAL GUIDELINES, BUT ACTIVELY HELP TO SHAPE THINGS.”



TOBIAS GEISELHART

POSITION: Project Manager and Software Architect,
WALTER, Tübingen, Germany

CONTACT: Tobias.Geiselhart@walter-machines.de



“IT’S GREAT that I can follow the entire life cycle of a machine,” says Tobias Geiselhart. This is one of the reasons why the graduate computer scientist decided to work for a machine tool company. In this way, he and his team can record and continuously improve all facets and processes of the product. “This is not simply working in line with documentary requirements, it takes both active creativity and responsibility,” explains Geiselhart, who has been with the company since 2017. Prior to that, he worked, among other things, in the photovoltaics industry in the field of production solutions and process automation. He is currently leading a project team working on the ProcessManager software. This software forms the basis of all machines in the HELITRONIC series in conjunction with the Robot loader25 automation option and will be a future component of C.O.R.E. Developing software using the latest technologies is what makes his work so enjoyable, says Geiselhart. “We are exploring new horizons and actively shaping the sector.”

CURRENT SITUATION

The more society and politicians prioritize climate protection, the more important efficiency and the sustainable use of resources will become in the manufacturing industry. A conversation about progress and setbacks along the way to climate-neutral production

INTERVIEW: Michael Hopp

PHOTOGRAPHY: Natalie Bothur



*Ready for our interview
at the Jungheinrich AG
headquarters in Hamburg
(from right to left):
Gabriele Maurer,
Nico Hanenkamp and
Stephan Nell*

The international community wants to drastically reduce CO₂ emissions in the coming years. Major automotive groups have declared their intention to move away from combustion engines, and the construction industry must also be more climate-neutral. Is the fossil age coming to an end?

Nico Hanenkamp: In the eyes of the wider public, this approach is now being followed. In fact, it started two decades ago. Let's take the example of Germany, where a good 40 percent of energy requirements are already covered by renewable sources. The post-fossil age has long since arrived. The pressing question of our time is how we can achieve absolute climate neutrality within the next 20 years.

Stephan Nell: Fossil fuels have a high energy density, are easy to store, and are cost-effective to handle. This is why I believe that they are still a valid option in certain applications. For example, I can't envisage aircraft using batteries because they are extremely heavy and would require the payload to be reduced. On the other hand, electric motors are perfect for small cars used in urban traffic. We need to differentiate and discuss the various energy sources and applications with regard to the respective technology. It frustrates me that people involved in current climate debates often argue dogmatically and not objectively.

Gabriele Maurer: I think both points are correct: yes, the fossil age is coming to an end but fossil fuels will continue to have a place where they offer major advantages over other forms of energy. In any case, the use of renewable energies has been growing organically for quite some time. Electric batteries will be used more often in some areas, and fuel cells in others. At the same time, extracting fossil fuels is becoming ever more expensive and the reserves are ultimately limited. The earlier we develop technically equivalent solutions using alternative energies, the better.

Ms. Maurer, Jungheinrich AG, is a leading international company in intralogistics. To what extent do your products influence the climate footprint of your customers?

Gabriele Maurer: Helping our customers to achieve their climate goals is at the heart of Jungheinrich's strategy. Our vehicles, such as forklifts, are powered by electric batteries, giving our customers a better CO₂ footprint than if they were using equipment with internal combustion engines. Warehouses can already work CO₂-neutrally if they use green electricity. Furthermore, we are constantly developing our designs to improve the installation of lithium-ion batteries, as is the case with the new Powerline series. This means that the vehicles take up less space and our customers can make their warehouses more efficient.

**"SMART, NETWORKED MACHINES
MAKE PRODUCTION MORE EFFICIENT."**

Stephan Nell





TAKING PART IN THE DISCUSSION

GABRIELE MAURER

As Head of the Sustainability and Environment department at Jungheinrich AG, a leading global intralogistics enterprise, Gabriele Maurer is responsible for compliance with environmental and quality standards.

NICO HANENKAMP

Nico Hanenkamp is Professor of Resource and Energy Efficient Production Machines at Friedrich Alexander University Erlangen-Nuremberg. He teaches and researches the efficient use of resources in industry.

STEPHAN NELL

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

Mr. Hanenkamp, efficiency is your byword because, as a professor at the University of Erlangen-Nuremberg, you work full-time on the efficient use of energy and resources. Where in the industry is there still room for improvement?

Nico Hanenkamp: The issue is not new to the industry, and a lot has happened over the last decade. However, the area where I think there is still a lot of catching up to do is the basic understanding that resources are not infinite. Many companies have so far paid little attention to what happens to their products over their entire life cycle. In the future, the issue of the circular economy will play a greater role in enterprise than before. And legislators need to create suitable conditions.

Gabriele Maurer: That is basically correct and is, of course, in a company's economic self-interest: if we have the opportunity to recover something from old products, this will also lead to better new products.



"THE POST-FOSSIL AGE HAS LONG SINCE BEGUN."

Nico Hanenkamp

“JUNGHEINRICH AG HELPS ITS CUSTOMERS TO ACHIEVE THEIR CLIMATE GOALS.”

Gabriele Maurer



Mr. Nell, how does the UNITED GRINDING Group, whose machines makes a significant contribution to the success of its customers, deal with the issue of resource efficiency?

Stephan Nell: We have the advantage that we have not used combustion engines for more than 100 years. No, seriously, all our machines are electrically powered. This means that companies who purchase green electricity for their production facilities can already work CO₂-neutral. In addition, all of our brands have been awarded the prestigious Blue Competence ecolabel, for which efficiency must be demonstrably and continuously improved. The point made by Mr. Hanenkamp is also very important to us: we want to follow our products' life cycles from start to finish and offer our customers the option of upgrading existing machines.

This ranges from overhauling to retrofitting the machines and can include updating control systems. Retooling or process improvements also help to reduce resource consumption. Furthermore, grinding machines—and I am not limiting this to only our brands—have a great impact on efficiency in general because they produce high-precision, high-quality surfaces and thus make entire systems more efficient.

New technologies are an important point, Mr. Hanenkamp. Which do you think are particularly suitable for making machine tools more resource-efficient in the coming years?

Nico Hanenkamp: Definitely hydrogen and fuel cells. One of the perpetual problems of renewable energy is how to store electricity, and hydrogen can help, even if the technology is not yet mature. Further digitalization and artificial intelligence based on digitalization are also important. One technology that, in my opinion, has not been discussed much so far but which has great potential is using DC voltage instead of alternating current to run factories. After all, photovoltaic systems generate direct current and could therefore be integrated more effectively.

Gabriele Maurer: I also believe that battery research has not yet reached its limits. Lithium-ion batteries have given us completely new installation options compared to lead-acid batteries, and their efficiency has increased significantly in recent years. Moreover, vehicle batteries can also be given a second life and used as stationary storage units for electrical energy.

Stephan Nell: In our industry, technological development has contributed to making machines more economical and efficient. For instance, 3D-printed coolant nozzles drastically reduce energy consumption during grinding. Digitalization also has the potential for optimizing process sequences in production. We are currently well-positioned in this regard thanks to our new hardware and software architecture C.O.R.E. At the same time, data security must always be a priority. Handling customer data confidentially is nothing new to us, only how the data is made available and stored.

“THE CLIMATE DEBATE MUST BE OBJECTIVE AND TECHNOLOGY-BASED.”

Stephan Nell



“I DON'T SEE EMPTY FACTORIES IN THE FUTURE.”

Nico Hanenkamp

When we talk about new technologies and, above all, automation, many people are worried that their jobs are endangered. Can you understand their fears?

Nico Hanenkamp: I don't see empty factories in the future so I don't think that this concern is justified. The same fear came up over ten years ago when computer-aided manufacturing was a hot topic, and that didn't come true. But what I do predict is that the more the manual work is taken over by robots, the more knowledge-intensive the role of humans becomes.

Gabriele Maurer: I'm more inclined to believe that automating certain tasks, such as moving heavy components, will keep employees at work longer and make it easier

for older people to remain in the workforce. We always have to consider the social consequences of change, which also applies to climate protection.

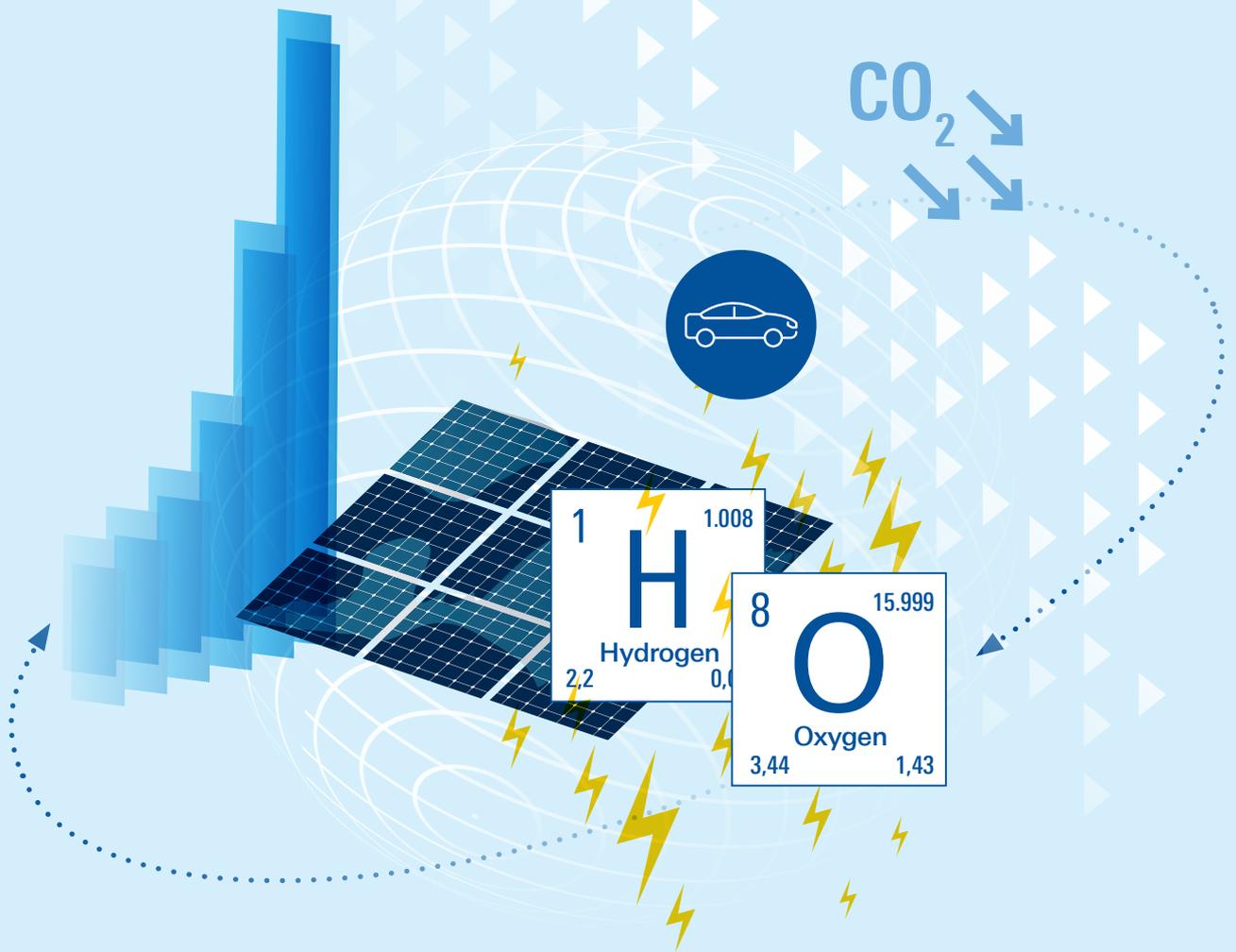
So we circle back to climate protection. Mr. Hanenkamp, what is the role of politics regarding this issue?

Nico Hanenkamp: Politicians have to pay attention to all sections of society and therefore also need to put suitable frameworks in place and define objectives. However, companies must be given a certain amount of leeway in how they implement these, ideally in combination with economic incentives. I think everyone has now understood that global warming is humanity's greatest chal-

lenge and that we need to drastically reduce CO₂ emissions.

Stephan Nell: A nice conclusion. Allow me to make one further comment: climate change is a global problem that also requires global solutions. It is of little use if we introduce ever-stricter rules in Germany or Switzerland but then other parts of the world do nothing. In my opinion, it would be much better if all countries would take advantage of the technical possibilities that we already have today. Politicians need to think about this. ○

GOOD FOR THE CLIMATE



GOOD FOR COMPANIES

The UNITED GRINDING Group is constantly working on the efficiency of its machines and our environmental balance as a whole to meet the requirements of this era of climate awareness. This is also a smart, long-term strategy that is very much in the interest of our companies. Motion gives you an overview

TEXT: Markus Huth

ILLUSTRATION: Tobias Zabell

THE UNITED GRINDING GROUP HAS BEEN continuously improving its environmental balance for many years, so it may now seem almost obvious that all of the eight companies have been awarded the prestigious Blue Competence ecolabel. This label is bestowed by the sustainability initiative of the equipment and facilities industry. It is only awarded to companies that regularly and demonstrably improve their efficiency and use resources sparingly.

One specific example illustrates the achievements involved: WALTER grinding machines built in 2018 consume up to 40 percent less energy than 2006 models. Furthermore, the company, based in Tübingen, Germany, has undergone an independent energy efficiency review (DIN EN 16247-1) and has joined the Tübinger climate protection pact, which aims to reduce CO₂ emissions by 25 percent from 2014 to 2022 following the Paris Agreement.

CLIMATE PROTECTION IN OUR OWN INTERESTS

STUDER is also constantly concerned with the topic of sustainability. "We actively pursue environmental and climate protection in our own interests," says Stephan Stoll, Chief Operating Officer (COO). Based in Thun, Switzerland, the company has been awarded the ISO 14001 environmental certificate and, together with in-house environmental officer Markus Rytz, has set up a management system that commits to a continuous improvement process for their environmental footprint. To increase efficiency and reduce emissions, says Stoll, STUDER recently replaced four older production machines with three new models, installed new boilers, and optimized the compressed air system in the assembly

plant. They also invested in a new lighting system that uses particularly efficient LED lamps.

SOLAR ENERGY

MÄGERLE in Fehraltorf, Switzerland, is also actively preparing for the era of climate awareness. They are currently planning a rooftop solar power system to generate CO₂-neutral electricity for their production plant and reduce emissions, says Chief Executive Officer (CEO) Arno Binder. They are also designing a new heating system that meets the latest efficiency criteria in coordination with the municipality of Fehraltorf. Climate protection and clever corporate strategy are once again combined: "In times of rising energy prices," says Binder, "this will make us self-sufficient in terms of heating, air conditioning, and electricity."

E-MOBILITY AND HYDROGEN

The transition to a climate-neutral industry also opens up new opportunities, for example in the field of electromobility. Arno Binder says: "We now support many customers who manufacture electromobility products since we took over the customer care business of SCHAUDT MIKROSA." According to Frank Fiebelkorn, Head of Research and Technology, the automotive industry is also traditionally a very important market for STUDER and is now a hotbed of exciting new product developments. "It is good news for us that Japan, China, and some EU countries are also using hydrogen for mobility purposes." Rotationally symmetrical special parts, such as compressors, are needed to produce the fuel cells, and these have to be ground with very high precision, says Fiebelkorn, adding: "This is also good for the climate and for the company." ○

40 %



**NEW MACHINES ARE
40% MORE
ENERGY-EFFICIENT
THAN OLDER
MODELS.**

*Example: WALTER HELITRONIC
comparing a 2018 with a 2006 model*

NO OFF-THE-SHELF MACHINES

As Head of Systems at STUDER, Daniel Schafroth is responsible for customized system solutions that meet the highest demands. Motion accompanied him through a long working day

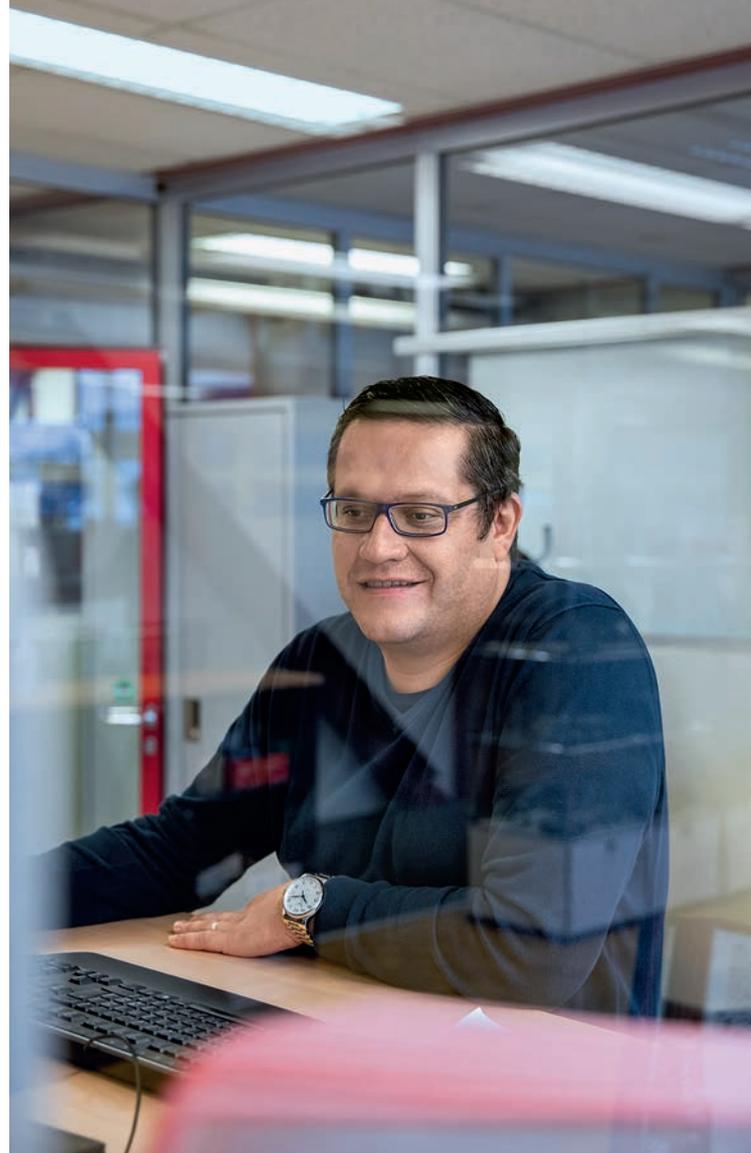
TEXT: Markus Huth

PHOTOS: Thomas Eugster

"I LOOK AFTER OUR SYSTEM SOLUTIONS from the pre-sales phase to final delivery to the customer," says Daniel Schafroth. Along with his 90-strong team at the Biel and Thun sites, he plans customized solutions for customers in cooperation with all departments of the company. Whether in the machine tool, chip production or medical technology, he puts together the perfect machine for every individual application. The process begins with the first meeting during which Schafroth records what the planned operating site actually produces and how it works. "We then select the most suitable standard machine from our range and plan individual adaptations," says the mechanical engineer. The result is a system machine. He particularly enjoys the interdisciplinary work in the areas of technology, engineering and mechanics and even has a technical draftsman in his team. Schafroth, who has been with STUDER since 1999, spent over seven years in Shanghai, China, and so brings international experience to the table. The most important thing, he says, is and will always be direct contact with the customer. "For us, the process does not end once we make a sale." Instead, Schafroth follows up and continues to develop the relationship: is everything working as required? What can be improved? Because, for him, quality and service go hand in hand.

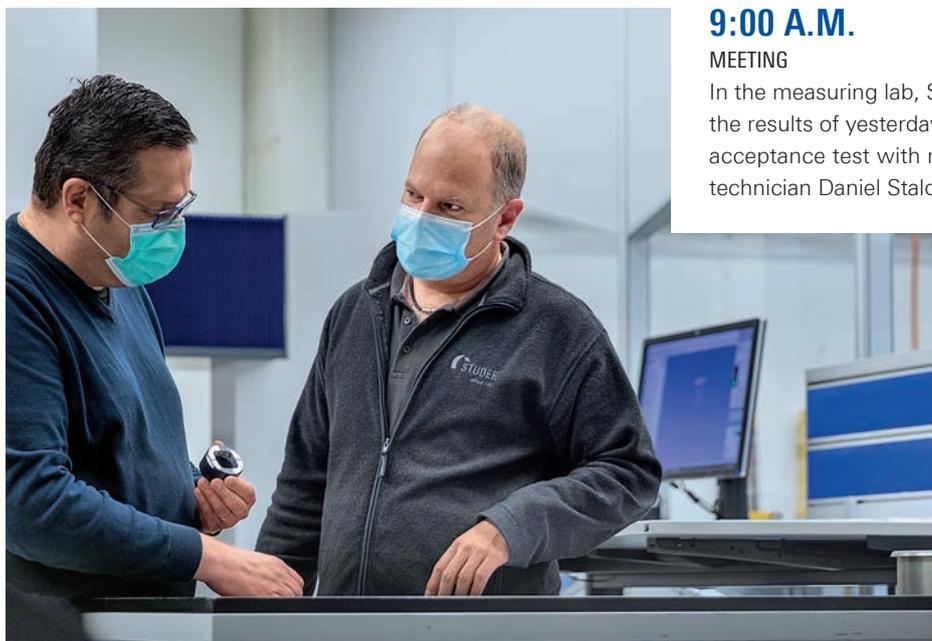
CONTACT:

Daniel.Schafroth@studer.com



8:30 A.M.

DANIEL SCHAFROTH STARTS work in his office in Thun. He starts his working day by finalizing a contract



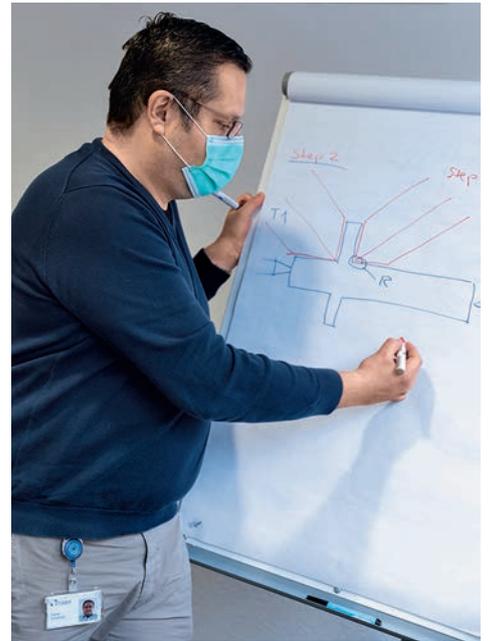
9:00 A.M.

MEETING

In the measuring lab, Schafroth evaluates the results of yesterday's preliminary acceptance test with measurement technician Daniel Stalder

10:00 A.M.**COORDINATION**

The team (here with grinding technician Fabian Wirz) exchanges information on how the parts need to be processed for a customer

**11:00 A.M.****TEAM MEETING**

Sketches and schematic planning are part of the daily work process. Here Schafroth illustrates the function of a compressor shaft

“CUSTOMER FEEDBACK IS ABSOLUTELY ESSENTIAL FOR SYSTEM MACHINES.”

Daniel Schafroth

1:00 P.M.**PLANNING**

When designing system machines, it is important that everyone in the team knows exactly what they are doing. Head of department Antonio Bertolino displays a workpiece





2:15 P.M.

MEETING

To keep the project to the agreed schedule, Schafroth coordinates all capacities with project coordinator Jürg Zimmermann at an early stage

3:30 P.M.

TEAM MEETING

The best way to clear up outstanding issues is with a short team meeting like this one involving department heads Antonio Bertolino (left) and Didier Krähenbühl



5:30 P.M.

SERVICE DISCUSSION

Schafroth takes a customer's call in the early evening. He is still available to answer any questions

TOOLS & TECHNOLOGY

NEWS FROM THE UNITED GRINDING GROUP

CONTENTS

- 30 **STUDER**
A new grinding machine for the age
of e-mobility
- 31 **STUDER**
The SmartJet® cooling concept
saves water and energy
- 32 **STUDER**
The *roboLoad* and *uniLoad* automatic
loading systems speed up work
- 33 **WALTER**
Optional 3D laser measurement
and a comprehensive update of
HELITRONIC TOOL STUDIO 3
- 34 **WALTER**
COMPACT LINE expands the
product range
- 35 **BLOHM**
A case study of the PLANOMAT XT

*New 3D laser system in the
WALTER HELICHECK PRO,
PLUS and LONG versions*



The new S36 external cylindrical grinding machine combines new and proven functions

THE NEW PRODUCTIVE GRINDING MACHINE

STUDER has responded to changing customer requirements by launching an additional external cylindrical grinding machine for the production sector

WITH THE RAPID DEVELOPMENT of e-mobility, the demand for suitable grinding machines for a new variety of components in the automotive industry is increasing. Which is why STUDER developed the new S36. It covers the applications between the compact S11 for small workpieces and the S22 for medium-sized workpieces.

Many features of the new S36 are similar to its very successful predecessor, which was sold well over 1000 times. New functions for changing requirements complement tried-and-tested concepts. "The need for economical grinding solutions for medium to large series remains consistently high, even in the field of e-mobility," says project manager Martin Habegger. In addition to automotive, the new machine will also have applications in the areas of hydraulics, pumps and tooling.

The S36 has a fixed wheelhead. The grinding wheel angle can be adjusted to 0, 15, or 30 degrees. The distance between centers is 650 millimeters and the maximum workpiece weight is 150 kilograms. The new machine was developed using tried-and-tested components. These include a Granitan

machine base and a workhead with high-precision roller bearings.

STATE-OF-THE-ART GRINDING TECHNOLOGY AND GOOD VALUE FOR MONEY

One outstanding feature of the new machine is its large grinding wheel, which is 600 millimeters in diameter and has a maximum width of 125 millimeters. This puts the S36 above the standard in its machine category. The machine is also supplied with C.O.R.E. technology and features a touch panel and intuitive operation.

The newly developed SmartJet® nozzles for efficient and automatic coolant supply are fitted as standard but can be replaced with conventional Loc-Line nozzles on request. "This allows us to offer customers a very good price-performance ratio," says Habegger. The new machine will be demonstrated for the first time at GrindingHub, the leading trade show for grinding technology being held in Stuttgart from May 17-20, 2022.

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KEY DATA AT A GLANCE

- Distance between centers: 650 mm
- Center height: 225 mm
- Workpiece weight 150 kg (max.)
- Grinding wheel D = 600 x 125 mm (max.)
- Adjustable grinding wheel angle: 0, 15, 30 degrees
- X axis travel: 370 mm
- Driving power: 9 kW (belt-driven spindle) or 15 kW (motor spindle)
- Cutting speed: 50, 63, 80 m/s
- Rotary dressing at 2.5 kW

BENEFITS AT A GLANCE

- High grinding power (cutting speed up to 80 m/s)
- Long grinding wheel service life (Dia. = 600 mm)
- State-of-the-art equipment (C.O.R.E., StuderGuide, SmartJet® cooling)
- High precision (robust Granitan base, high-precision bearings)
- Various loading options/automation concepts possible

SMART COOLING



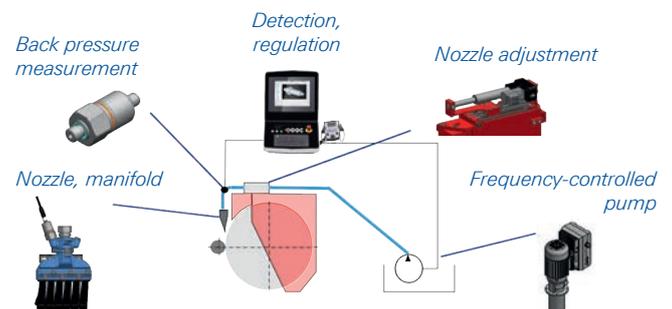
STUDER's new SmartJet® concept supplies a flow of coolant to the grinding wheel precisely and controlled by the machine. This saves costs and increases sustainability in production

ON MANY MACHINES, it is the operators' task to manually control the cooling of the grinding process. The nozzles must be positioned correctly and the ball valve must be operated by hand. A pump then pumps the cooling lubricant (usually oil and/or water) to the grinding process location. Often, more coolant is used than necessary or the nozzles are not optimally positioned, which is bad for efficiency and the environment. STUDER is now breaking new ground with the patented SmartJet® concept.

The word "smart" says it all: from now on, cooling will be the responsibility of the machine control unit. The central components are a frequency-controlled pump and a dynamic pressure measuring unit. This makes it possible to set the volume flow precisely to suit the process, whether for roughing, fine grinding or finishing. The coolant flows through a distributor piece and flow-optimized, adjustable nozzles to the grinding wheel. "The concept guarantees precise and reproducible cooling," emphasizes Martin Habegger, project manager. "We create a consistent jet of coolant with a high exit velocity in the range of 12 to 20 m/s, which effortlessly overcomes the air movement caused by the wheel." As a result, process reliability improves and less coolant is required to produce equivalent grinding results.

SIGNIFICANTLY REDUCED WATER AND ENERGY REQUIREMENTS

The SmartJet® nozzles developed for this purpose are state-of-the-art technology: they are slender and contain multiple adjacent channels that distribute the coolant evenly across the width. The manifold located behind can accommodate multiple nozzles in a row if required. Due to their complex design, SmartJet® nozzles and distributors are manufactured using 3D printing by our affiliated company IRPD in St. Gallen. The smart cooling concept was designed as a modular solution. Equipped with a quick-change system, the individual components can be combined in different configurations in next to no time.



In conclusion: SmartJet® not only accelerates set-up time for users, it also enables them to grind significantly more efficiently and sustainably. "It reduces water consumption by 40 percent and energy requirements even by 50 percent," says Habegger and adds: "SmartJet® makes a significant contribution to making machining more eco-friendly."

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BENEFITS AT A GLANCE

- Optimized coolant supply
- Adjustment via machine control unit
- Higher grinding power
- Increased process reliability
- Shorter set-up times
- Up to 40% lower water consumption and 50% lower energy requirements



The compact roboLoad for radius internal cylindrical grinding machines

SIMPLE OPERATION, SMALL INSTALLATION SPACE

The new STUDER *roboLoad* is an innovative loading system for CNC radius internal cylindrical grinding machines

LOADING SYSTEMS FOR CNC RADIUS INTERNAL CYLINDRICAL GRINDING machines have not been so easy to implement in the past. The design characteristics of these machines, such as the high workhead and the associated geometric restrictions, makes it challenging to develop a robotic solution. STUDER has now developed a system that meets the design requirements and has a small footprint.

The S121, S131, and S141 radius internal cylindrical grinding machines have an automatic B axis with a swiveling range of -60° to $+91^\circ$ and are used, among other things, to produce dies for the packaging industry. "That is why loading automation has to get out of the machine to give it the freedom to swivel," explains Daniel Schafroth, Systems Division Manager. For this reason, STUDER developed the *roboLoad*. This external loader is just 1.50 meters wide and half as wide as the machine itself, yet still provides ample space for workpieces on six trays.

The trays are loaded manually. "It's not about mass production, but about unmanned production during night shifts," says Schafroth. A huge variety of grinding programs can be called up for the workpieces. The STUDER *roboLoad* processes the parts and puts each workpiece back in the same place after machining. Another advantage is how easy it is to use. The digital assistant does not require the person setting up the machine or the operator to have any programming knowledge.

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NEW LOADING SYSTEM

The new *uniLoad* automatic loading system from STUDER enhances the reproducibility of high-quality grinding results generated by the universal cylindrical grinding machines S33 and S31



The new *uniLoad* loading system was designed for STUDER machine types S31 and S33

THE STUDER *uniLoad* loading system guarantees universality and speed. This allows the quality and productivity of the S31 and S33 external cylindrical grinding machines to be improved with the help of the automatic loading system. Thanks to the modern and intuitive controls, it is so easy to use that no special training is required. The system was developed by Wenger Automation and is a continuation of the STUDER operating philosophy. Programming knowledge is not required. Only the dimensions and weight of the workpiece must be known, then the software performs the necessary steps.

uniLoad is currently suitable for distances between centers of 650 and 1000 millimeters. The loading system is docked onto the machine from the left and achieves with full workpiece storage capacity an automated processing autonomy of about one hour. Fifty workpieces with an outer diameter of 34 millimeters and a gripping diameter of 22 millimeters can be loaded automatically. The aesthetic design of the machine is reflected in the loading system, which already impresses in the standard version with faster response and delivery times. It can also be individually adapted to suit customer requirements.

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LASER MEASUREMENT OPTION

WALTER now supplies a 3D laser sensor as an option for the HELICHECK PRO and PLUS measuring machines and their LONG versions



WHEN THE CUTTING GEOMETRY, PITCH AND SPIRAL PITCH OF CUTTING TOOLS vary from cutting edge to cutting edge, we are talking about high-performance tools. These are not only very demanding to produce, but also to measure. Due to the many and varying parameters, it makes sense to use much faster 3D laser measurement, such as a WALTER HELICHECK 3D measurement machine. However, some criteria required the use of a more precise conventional measuring machine to measure the complete tool. We previously required two measuring machines to record complex tools, such as those commonly used in the automotive, aerospace or medical sectors. Our new 3D laser measurement options make this a thing of the past.

TWO MACHINES IN THE SPACE OF ONE

3D laser measurement is available as an option for HELICHECK PRO and PLUS measuring machines. "This means that customers have two measuring machines in the space of one," explains Siegfried Hegele, Applications Product Manager at WALTER. First, the 3D laser sensor visualizes the workpiece as a point cloud. Measurements can then be carried out using this image. Deviations in the tool can be detected by superimposing the image over the 3D design drawings. "Customers with multiple production sites can compare scans from different machines to see at which operations manufacturing differences occur," says Hegele.

NEW GENERATION OF 3D SCANNERS

The optional laser sensor is the latest generation of scanning technology. The new 3D sensor has a four times higher resolution and the measuring machine with an integrated high-end PC can process four times as much data in the same time. The swivel angle of the scan head has also been extended to -55° making a complete scan of indexable inserts possible.

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UPDATES FOR GREATER EFFICIENCY

The new version of HELITRONIC TOOL STUDIO 3 (Release 4) features new functions for more efficient grinding processes in large and small series production

THERE IS A GLOBAL TREND towards fully automated production: grinding machines that produce consistently high quality without human intervention. WALTER has responded to this by comprehensively updating their grinding software and adding new functions. The tried-and-tested Integrated Measuring System (IMS) was already able to measure workpieces without needing to unclamp tools. The logical development – IMS Advanced – now monitors the workpiece diameter and core diameter throughout the entire grinding process. Different tools from the same tool family can also be manufactured automatically and to a specified tolerance in a single process.

SOFTWARE INDEPENDENTLY DETECTS DEVIATIONS

Any recorded deviations are fully traced to their origins so that production becomes almost self-teaching. Control point measurement is included in IMS Advanced. It can be used to manually define touchpoints "offline" in the workpiece simulation with a simple click of the mouse. The points are then approached by the machine from any direction and the grinding process is precisely adjusted according to the detected deviation.

HELITRONIC TOOL STUDIO video tutorials and demos are available on the WALTER-EWAG YouTube channel



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The tried-and-tested COMPACT LINE is the ideal tool grinding machine for producing indexable inserts, such as burring, milling, turning, and profiled inserts



THE VERSATILE CHOICE FOR INDEXABLE INSERTS

The tried-and-tested and versatile COMPACT LINE has now been added to the WALTER range

THANKS TO A NEW STRATEGIC ALIGNMENT within the WALTER and EWAG brands, COMPACT LINE has now been added to the WALTER product range. As part of this realignment, all activities for tool grinding and EDM will be bundled under the WALTER brand. In the future, EWAG will stand for tool machining with lasers. This will not change the benefits for the customer. The COMPACT LINE is still the perfect tool grinding machine for indexable inserts, such as burring, milling, turning and profile inserts, and has proven its worth across the world in tool production applications. It can be used to produce thread inserts, reamer inserts, cutting inserts, and much more. In addition to high-speed steel and carbide, the machine can process the materials cermet, ceramic, CBN and PC.D.

ECONOMICAL SERIES PRODUCTION THANKS TO SHORT SET-UP TIMES

“The COMPACT LINE is a flexible machine that can implement all customer requirements in the field of indexable inserts,” says Simon Kümmerle, who has taken over product management for the COMPACT LINE at WALTER. Thanks to the short set-up times, even small and medium-sized series can be produced economically. All grinding move-

ments are positioned close to the machining axis in the compact interior that gives the machine its name.

The clamping stations use the plug & play principle. In addition to the usual automatic clamping systems, nail, dogbone, and horizontal clamping yoke systems can also be used. The advantage of the COMPACT LINE lies in trouble-free automated operation over multiple shifts: a flexibly expandable tool magazine ensures a high degree of automation in combination with the optional FANUC robot.

CUSTOM OPTIONS

Individually adapted clamping systems, or the three-in-one sharpening unit (dressing, regeneration and crushing) for consistently perfect grinding wheels can also be delivered at the customer’s request. In addition, all grinding programs can be easily controlled with the user-friendly and versatile PROGRIND operating software. The COMPACT LINE also has a remote maintenance option.

CONTACT:

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KEY DATA AT A GLANCE

Transverse axis X

- Travel: 450 mm
- Rapid traverse: 15 m/min
- Axis drive: linear motor

Height adjustment axis Y

- Travel: 180 mm
- Rapid traverse: 10 m/min
- Axis drive: direct AC servo motor

Infeed axis Z

- Travel: 150 mm
- Rapid traverse: 10 m/min
- Axis drive: linear motor

Grinding head with tilting axis A

- Inclination range: -15° to +25°
- Grinding spindle motor, frequency-controlled: 20 Nm/5.5 kW
- Speed: max. 7000 rpm
- Grinding wheels: max. Ø 250 mm
- Interface: HSK-E 50

Swivel axis B

- Swiveling range: 360°
- Rapid traverse: 18,000°/min
- Axis drive: Direct drive



With the new PLANOMAT XT 612 (left to right): Axito employees Markus Beyerlin, Serhat Toykan, and Michael Ruchti

BENEFITS OF PLANOMAT XT AT A GLANCE:

- Robust surface and profile grinding machine with modular system design
- Flexibility from single-part production to complex production tasks
- Programmed using menu-guided grinding and dressing cycles
- High axis speeds and accelerations, grinding spindle power up to 24.5 kW
- Outstanding value for money

“THE SECOND MACHINE IS ALREADY ON ITS WAY”

Tool manufacturer Axito uses the BLOHM PLANOMAT XT to produce high-quality workpieces for pharmaceutical packaging machines for the Uhlmann Group

IN LAUPHEIM, BADEN-WÜRTTEMBERG, GERMANY, the 180 employees of Axito GmbH produce mechanical components for packaging machines in the pharmaceutical industry on behalf of Uhlmann Pac-Systeme GmbH. More than a year ago, the company decided to purchase a BLOHM PLANOMAT XT as a new surface and profile grinding machine for their production department. Motion spoke to Michael Ruchti, Axito Project Manager for Technology who has been in the profession for 34 years, about his experiences.

What technological requirements were on your agenda?

Our requirements for the new machine were ambitious. The top priority was to achieve surface qualities with a Ra value of less than 0.8 micrometers for components 420 x 480 millimeters in size. We did not want to compromise on service either. Response times and availability of spare parts are essential because our customer sets tight delivery deadlines.

And what ultimately tipped the scales in favor of the PLANOMAT XT?

We've had good experiences with BLOHM since 1999. That's why the machine was top of our list of three possible suppliers. In the first step, we had a tool test ground according to our wishes. The result exceeded our expectations and the machine was also great value for money.

Does the machine have any other advantages?

Apart from the aforementioned points, it has remarkably high inherent stability and very high drive power, which are not commonplace in this price range. The machine is designed for high-performance grinding—that's what it can do, and that's what it does. PLANOMAT XT 612 is the unrivaled choice for our project.

The machine has been producing components for you for about a year. How do you find working with it on a daily basis?

We were actually able to increase our productivity, and grinding time has been reduced by 20 percent. And I can only describe the BLOHM Service department as fantastic. Commissioning and training sessions are conducted together with BLOHM employees. And we get along very well, we're on the same wavelength. We have already ordered a second machine. It will be our backup machine, as is generally the case in our facility.

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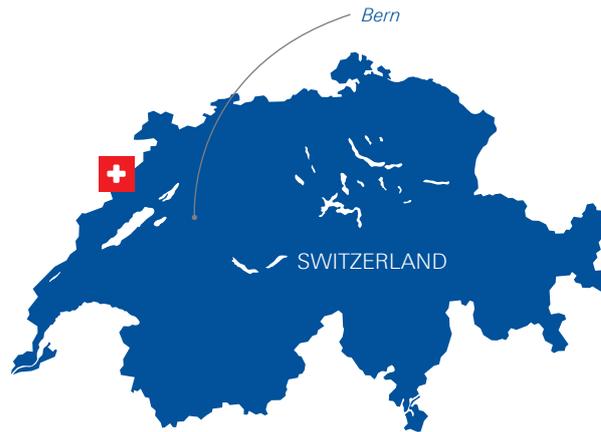
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RELIABILITY, QUALITY, AND TIMING

In Switzerland, the machine tool industry has recovered from the COVID-19 pandemic faster than in other countries. Why is that?

TEXT: Christoph Blättler



As strong as the Matterhorn in the Alps, the Swiss MEM industry has defied difficult times

THE SWISS MECHANICAL ENGINEERING INDUSTRY is heavily driven by exports. On average, 80 percent of production goes abroad, and the proportion of machine tools exported is even slightly higher. The highly dynamic export figures of the Swiss machine, electrical and metal industry (MEM) between January and September 2021 show how quickly it has taken off again after the outbreak of the COVID-19 pandemic. Overall, MEM exports increased by almost 15 percent compared with the same period last year. If we only look at exports to the EU, the figure looks even better at over 19 percent. Italy, France, and Germany are the driving forces of these exports. However, the third-largest single-country market, China, also performed above average with a growth of 18 percent.

IMPORTANT FOR THE WHOLE OF SWITZERLAND

This is good news for Switzerland. The following figures show how important the mechanical engineering sector is for the Swiss Confederation: in 2020, the total revenue of the Swiss MEM industry, which includes the electrotechnical and metal industries in addition to machines, amounted to almost 80 billion Swiss francs (around 76.8 billion euros), which was almost a third of all Swiss exports. In total, the MEM industry accounts for around seven percent of gross domestic product.

Important note: when we speak of the Swiss mechanical engineering market, we not only mean the order volumes in the domestic market, but also global sales of companies that are based here. More than 1250 companies in the MEM industry are members of the Swissmem industry association alone. This industry employs approximately 320,000 people in Switzerland as well as more than half a million people around the world.

Given the importance of the mechanical engineering market for the entire Swiss economy, it is very gratifying that the industry has recovered faster than in other countries. But what are the reasons for this?

SPECIALIZING IN NICHE MARKETS IS IN THE SWISS DNA

The basic economic structure intrinsic to Switzerland is largely formed by small and medium-sized enterprises. Although heavyweights of the machine industry, such as Siemens, GF, or ABB are also at home here, a typical Swiss industrial company often has no more than 100 employees. These relatively small companies not only manufacture their products at the highest technical level, but also sell them worldwide. The variety of fields of activity is always astonishing, as is their degree of specialization and manageable size. This is an integral part of the DNA of Swiss industry, and especially of mechanical engineering.

This goes hand in hand with great ambition to produce sophisticated products for a specialized and selective customer base around the world. The focus is always on quality and the customers' satisfaction with their purchases, which is why business contacts often last for many generations. As a result, the mechanical engineering industry in Switzerland supplies a larger number of niche markets worldwide than the industries of other countries. The companies then concentrate on filling these niches and con-

SOPHISTICATED PRODUCTS FOR A SPECIALIST CUSTOMER BASE.

*Switzerland unites technical
progress and modern architecture, such
as the Basel Congress Center, with
traditional virtues*

THE PANDEMIC CREATED NEW DIGITAL SKILLS

sistently expand the skills they need to do so. One good example is toolmaking, e.g., grinding processes or electrical discharge machining. For these applications, Swiss mechanical engineering even played a prominent role in industrialization as a whole and still does.

DECLINE IN ORDERS WAS FORESEEABLE EVEN WITHOUT A PANDEMIC

Another reason why Swiss mechanical engineering was able to recover more quickly is the timing of the pandemic. A downturn was forecast for 2019, even without COVID-19. In the preceding years, despite the challenging exchange rate of the franc to the euro, two record years followed a long sideways trend in certain sub-sectors. Such a trend simply cannot last forever. The decline in orders was already noticeable in some areas before the pandemic exacerbated the slump and accelerated the crisis to its lowest point.

Fortunately, an industry lockdown was largely avoided thanks to concentrated action by industry associations such as Swissmem, among other things. The only exception was a short lockdown period in the canton of Ticino. The associations credibly explained the importance of maintaining a functioning industrial infrastructure in this situation to the political powers that be. The companies also demonstrated that they actively implemented and applied the measures required to protect their workforce.

CHALLENGES OF THE PANDEMIC

However, this was only the first hurdle. Soon, further challenges arose with travel restrictions imposed on specialist staff and limited transport capacities available. This put great pressure on the industry to handle some order processing digitally, in virtual space, or even with the aid of virtual reality.



From Switzerland to the whole world: high-quality niche products for e.g., aircraft, watches, medical technology, and tooling

In some cases, the backlog in the supply chain forced enterprises to use newly built production buildings as interim storage for finished machines instead of using them as production facilities. However, some delays in deliveries were unavoidable.

This situation had drastic consequences for the marketing mix and the organization of sales channels. Trade shows were either postponed multiple times, canceled, or moved to digital space with great effort. This tied up a lot of capacity but also created new skills.

EXPANSION OF DIGITAL SKILLS

To say that the Swiss mechanical engineering industry has changed significantly due to the pandemic is doubtless an exaggeration. It is true that many smaller companies will continue to produce high-quality products for discerning customers around the world, and that is a good thing. However, the experience of the pandemic has led to increased acceptance and expansion of expertise in the digital world.

Video conferencing, virtual, or hybrid specialist seminars, workshops: all this and more has become the new standard. Switzerland may be more skeptical about comprehensive virtuality than other countries, but a new realistic attitude has now emerged, at least in the mechanical engineering industry. Virtual communication and working methods are increasingly welcomed wherever their intelligent application can save time and resources. This is good news for the global competitiveness of Swiss mechanical engineering. ○

CHRISTOPH BLÄTTLER heads the Machine Tools industrial sector at the Swiss industry association Swissmem and can look back over 15 years of experience in international sales of capital goods.

IS THE ECONOMY TOO



The global economy has become a highly complex system that can be thrown out of balance even by local disruptions. So how can we still hope to prepare for crisis?

TEXT: Stefan Thurner

COMPLEX?



FIRST OF ALL, THE BAD NEWS: it will never be possible to predict disasters, financial crashes, or accidents with certainty. After all, no artificial intelligence or even the best data model can see the future. Our world is too complex and chaotic, people and nature have far too many unknown factors, and chance always plays a part. But what we can do is this: once a crisis has occurred, its course can be predicted to a limited extent if corresponding models have been created and data collected in advance. Applied complexity research can make an important contribution.

Let's take the example of the disaster caused by the container ship Ever Given blocking the Egyptian Suez Canal in March 2021. Although this incident and the canal blockage it caused took only a few days to resolve, the impact on the global economy was felt for several months. Freight costs to Asia increased tenfold and many large ports around the world were suddenly short of containers. Raw materials, components, machines, and goods no longer reached their destination as usual or as agreed. The same happens if ships back up outside ports in China or elsewhere when work there is banned due to COVID-19.

Could researching complex systems have helped to limit the negative impact of this specific crisis? First of all, there is the challenge of collecting data at a global level: networks of supply relationships, shipping routes, goods bought and sold, customs data, container movements, average loading times and delays at ports, climate, and weather—all this and more must be fed

into one model. Nowadays, computer systems can master what would be an unmanageable flood of data for a human observer. They are able to compare huge data sets and recognize patterns. If a corresponding agent-based model is fed with all relevant data, we can ask the computer: what would be the consequences for everyone involved if the Suez Canal was blocked for several days? This would allow us to calculate areas of vulnerability in the system and the minimum reserves required by companies, ports, and warehouses around the world to handle incidents like these without the supply networks collapsing.

EUROPE HAS TO KEEP UP

This example reveals one major problem that explains why we are still surprised by such crises today and can only muster a poor response: the data required has to be collected over a long period of time and, of course, must be available in the first place. Would China, the US, European and other countries share such sensitive information with each other? And which digital infrastructures would be fast enough for the purpose? We can only model the economy on a global scale once these issues have been resolved. We can assume that China already collects such data at national, and probably also international, level and uses it for crisis management. Europe has some catching up to do here and must take care to keep abreast of digital developments. After all, those who can respond faster and better to crises always have an advantage.

SMALL ELEMENTS CAN BE CRITICAL TO THE SYSTEM

Some European countries are starting to apply complex systems models to various industries. I worked with a couple of colleagues to create a model of the financial flows in the Austrian economy to assess the dangers of a financial collapse, which ultimately would mostly affect taxpayers. To this end, we examined the relationships between the obligations of banks and their borrowers. The results were surprising. Even small banks can be system-critical, i.e., they would endanger the entire financial system of Austria if they were to fail. And the eighth most critical risk was not a bank, but a food company. Using our model, we were able to show that politicians have opportunities to redesign financial networks in such a way that they would be much safer but no less efficient. One solution would be to implement a smart systemic risk tax, i.e., a tax that makes transactions that bring risk into the system more expensive.

As the complexity of the systems increases, the consequences of crises will become ever more far-reaching. We only need to look at the current lack of computer chips, which has been causing production and delivery difficulties in the global electronics and automotive industry for months. Computer chips are one of the most complex products of our time and many companies across many countries are involved in their production. A chip changes location more than 100 times during production. There is a certain irony that this technology

“AS COMPLEXITY INCREASES, THE CONSEQUENCES OF CRISES WILL BECOME EVER MORE FAR-REACHING.”

Stefan Thurner

in particular is responsible for the ever-increasing complexity of our world.

COMPLEXITY INCREASES RAPIDLY WITH DIGITALIZATION

Complexity primarily means communication in and between networks, whether effected by people or machines. And communication has mushroomed due to the advent of the Internet and digitalization. Only 300 years ago, business people had access to a network of just 150 immediate acquaintances and could dispatch a maximum of one delivery at a time by pack animal or ship. Today, countless networks around the world communicate with each other in real-time, whether via email, social network, data transfer, or phone. In principle, everyone is always immediately available to everyone else, and soon this will also apply to machines.

The global economy has grown organically over time: a highly complex system of networks of companies, producers, service providers, and workers, usually controlled by a balance between profit and risk. To meet

humanity's greatest challenge in the coming years—the transition to a climate-neutral economy—we face the difficult task of changing these established networks. Collecting data and creating suitable models can help companies, consumers, states, and populations to make this transition in an orderly and non-violent manner.

The rapid communication of our modern world undoubtedly has advantages, but unfortunately also a major disadvantage. Some anthropologists believe that people are biologically only designed to handle around 150 social contacts and feel overwhelmed by disproportionate communication when they exceed this limit. However, since we cannot turn back the clock, we must rely on technological progress to shift administrative and technical communication to machines and to give us back the space that we need for our lives and our actual work. The more that different machines can be linked together in networks, the more we humans can focus on the communication that we really want. ○

ABOUT

STEFAN THURNER

is Professor of the Science of Complex Systems at the Medical University of Vienna and President of the Complexity Science Hub Vienna. He was Scientist of the Year 2017 and advises the Austrian Federal Government on the COVID-19 pandemic.

His latest book was published in 2020: *Die Zerbrechlichkeit der Welt* (The Fragility of the World).



150

This is the number of social contacts people can handle before they feel overwhelmed by excessive communication.



NEW TECHNOLOGIES AND TRENDS

SEPTEMBER 12–17, 2022,
CHICAGO, USA



THE INTERNATIONAL MANUFACTURING TECHNOLOGY SHOW (IMTS) is one of the world's leading trade shows for manufacturing technology and will take place in September 2022 for the 33rd time. The previous IMTS attracted around 130,000 visitors. With the motto "Be here when it happens," the leading trade show is known for presenting the latest, innovative technologies that are being applied in practice to software, processes, equipment, and products, throughout the industry. It is a meeting place for experts from industry to discuss trends and new solutions. This year, the IMTS will once again focus on the latest developments in grinding technology and its production environment, which is why the UNITED GRINDING Group will be represented by a large booth in the Grinding pavilion. Here, we will present our latest technologies such as C.O.R.E., laser measurement and 3D measurement systems, and automated loading solutions. "After the cancellation of IMTS 2020, we are looking forward to seeing our customers and partners in Chicago this year," says Paul Kössl, Head of Global Marketing at UNITED GRINDING Group.

IMTS, September 12–17, 2022, Chicago, USA
www.imts.com

THE INTERNATIONAL MANUFACTURING TECHNOLOGY SHOW (IMTS) is one of the world's leading trade shows for manufacturing technology and will take place in September 2022 for the 33rd time. The previous IMTS

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JUNE 2022

JUNE 13–17, 2022
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BEIJING, CHINA



SEPTEMBER 2022

SEPTEMBER 07–11, 2022,
SWISSKILLS –
BERN, SWITZERLAND



SEPTEMBER 12–17, 2022

IMTS –
CHICAGO, USA



OCTOBER 2022

OCTOBER 12–15, 2022
BI-MU –
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NOVEMBER 2022

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